

Bibliography Section

Liquid Column Chromatography

1. REVIEWS AND BOOKS

- 1292 Bertrand, A.: (Ion chromatography). In: *Acquis. Recent. Chromatogr. Vin Cours Eur. Form. Contin.* 1992, 1993, pp. 33-43; C.A., 121 (1994) 299381p - a review with 1 ref.
1293 Bryant, C.H., Adam, A., Taylor, D.R. and Rowe, R.C.: A review of expert systems for chromatography. *Anal. Chim. Acta*, 297 (1994) 317-347 - a review with 88 refs.
1294 Dughan, L.: Perfusion confusion: how does high-speed chromatography work? *BioTechnology*, 12 (1994) 1090 - a review with no refs.
1295 Feistner, G.J.: Profiling of bacterial metabolites by liquid chromatography-electrospray mass spectrometry: a perspective. *Am. Lab. (Shelton)*, 26 (1994) 32L, 32M, 32N, 32O, 32P, 32Q; C.A., 121 (1994) 296211x - a review with 11 refs.
1296 Kumar, M.: Recent trends in chromatographic procedures for separation and determination of rare earth elements. A review. *Analyst (Cambridge)*, 119 (1994) 2013-2024.
1297 Lederer, M.: *Chromatography for Inorganic Chemistry* Wiley, Chichester, 1994, 221 p.; C.A., 121 (1994) 220570t.
1298 Miyazaki, M.: (Contribution of ion chromatography directed to the field of public health). *Hokuriku Koshu Eisei Gakkaishi*, 19 (1992) 1-7; C.A., 121 (1994) 296217d - a review with 38 refs.
1299 Szepesy, L.: (Development and importance of separation techniques in instrumental analysis). *Magy Kern. Foly.*, 100 (1994) 340-353; C.A., 121 (1994) 270751y.
1300 Watanabe, Y. and Yamada, N.: (Column chromatography). *Lipid*, 5 (1994) 285-287; C.A., 122 (1995) 4559z - a review with 7 refs.
1301 Welinder, B.S., Kornfelt, T. and Sorensen, H.H.: Stationary phases: the Achilles heel in HPLC of protein pharmaceuticals? *Anal. Chem.*, 67 (1995) 39A-43A.
1302 Zhou, X., Wu, C. and Chen, Y.: (Application of crown ether compounds to chromatographic analysis). *Sepu*, 12 (1994) 175-179; C.A., 121 (1994) 220614k - a review with 68 refs.

See also 1304, 1316, 1321, 1322, 1325, 1346, 1366, 1368, 1369, 1375, 1380, 1382, 1392, 1407, 1425, 1434, 1436, 1440, 1446, 1447, 1449, 1452, 1456, 1458, 1460, 1468, 1470, 1471, 1473, 1474, 1479, 1481, 1482, 1484, 1491, 1492, 1507, 1518, 1523, 1551, 1579, 1639, 1640, 1647, 1651, 1660, 1817, 1856, 1876, 1895, 1914, 2102, 2118, 2179, 2252, 2270, 2272, 2460, 2461, 2469, 2496, 2525.

2. FUNDAMENTALS, THEORY AND GENERAL

- 2a. General
- 1303 Arutyunov, Yu.A. and Vigdergauz, M.S.: (Instrumental and methodological realization of some specific features of chromatography). *Zh. Anal. Khim.*, 49 (1994) 796-803; C.A., 121 (1994) 314871u.
1304 Beinert, W.D.: (Principles and advantages of the narrow-bore HPLC). *GIT Spez. Chromatogr.*, 14 (1994) 17-20; C.A., 122 (1995) 22799g - a review without refs.
1305 Brooks, C.A. and Cramer, S.M.: Investigation of displacer equilibrium properties and mobile phase operating conditions in ion-exchange displacement chromatography. *J. Chromatogr. A*, 693 (1995) 187-196.
1306 Cuesta Sánchez, F. and Massart, D.L.: Application of SIMPLISMA for the assessment of peak purity in liquid chromatography with diode array detection. *Anal. Chim. Acta*, 298 (1994) 331-339.
1307 De Ligny, C.L.: Some uncommon applications of chromatography. *Acta Chromatogr.*, 1 (1992) 7-22; C.A., 122 (1995) 65617p.
1308 Deinhammer, R.S., Ting, E.-Y. and Porter, M.D.: Dynamic modification of separations using electrochemically modulated liquid chromatography. *Anal. Chem.*, 67 (1995) 237-246.
1309 Dolan, J.W.: Case study - irreproducible retention times. *LC-GC Int.*, 8, No. 1 (1995) 10-13.
1310 Dolan, J.W.: Obtaining separations, part II: adjusting selectivity. *LC-GC*, 12 (1994) 446-450; C.A., 121 (1994) 314879c.
1311 Foti, G., Hajos, P. and Kovats, E.Sz.: Retention in analytical ion exchange chromatography-I. Strong electrolytes on strong ion exchangers. *Talanta*, 42 (1994) 1073-1081; C.A., 121 (1994) 270553k.
1312 Freeman, D.C. and Byrd, D.W.: Statistical treatment of large digital chromatographic data sets. *J. Chromatogr. A*, 686 (1994) 225-233.
1313 Giona, M. and Spera, D.: An integral approximation for the optimization of size-exclusion chromatographic column performance. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 193-199; C.A., 121 (1994) 296300a.
1314 Grize, Y.-L., Schmidli, H. and Born, J.: Effect of integration parameters on high-performance liquid chromatographic method development and validation. *J. Chromatogr. A*, 686 (1994) 1-10.

- 1315 Hamoir, T. and Massart, D.L.: Strategic approach for method selection in high-performance liquid chromatography. *Anal. Chim. Acta*, 298 (1994) 319-329.
- 1316 Hubert, P. and Dellacherie, E.: Molecular interactions in hydrophobic chromatography. *Mol. Interact. Biosep.*, (1993) 333-359; C.A., 121 (1994) 249863b - a review with no refs.
- 1317 Lee, S.T. and Olesik, S.V.: Comparison of enhanced-fluidity and elevated-temperature mobile phases in reversed-phase high-performance liquid chromatography. *Anal. Chem.*, 66 (1994) 4498-4506.
- 1318 Mizrotsky, N., Kristol, L. and Grushka, E.: Use of chromatographic system peaks for continuous quantitative analysis. *J. Chromatogr. A*, 691 (1995) 21-27.
- 1319 Nelson, D.C.: A status report on the Analytical Instruments Association data communications standards program. *Chemom. Intell. Lab. Syst.*, 26 (1994) 43-46; C.A., 121 (1994) 124081p.
- 1320 Olsen, B.A. and Sullivan, G.R.: Chemometric categorization of octadecylsilyl bonded-phase silica columns using test mixtures and confirmation of results with pharmaceutical compound separations. *J. Chromatogr. A*, 692 (1995) 147-159.
- 1321 Scott, R.P.W.: LC applications. *Chromatogr. Sci. Ser.*, 67 (1994) 281-320; C.A., 122 (1995) 45011h - a review with no refs.
- 1322 Soler, G.: Validation of chromatographic processes. *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 6th European Congress on Biotechnology, 1993, Pt. 2) (1994) 977-980; C.A., 121 (1994) 249789g - a review with no refs.
- 1323 Walczak, B.: Study on the mobile and stationary phase interactions in the reversed-phase liquid chromatography. *Pol. J. Chem.*, 66 (1992) 2015-2023; C.A., 121 (1994) 264520f.
- 1324 Wang, R., Ottmar, K., Huddleston, J. and Lyddiatt, A.: Salting out phenomena in aqueous two-phase partition, hydrophobic interaction chromatography, and fractional precipitation. *Spec. Publ.-R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 532-538; C.A., 122 (1995) 4846r.
- For additional information see C.A.:
121 (1994) 287381a, 308504k.
- See also 1299, 1335, 1376, 1431, 1588.
- 2b. *Thermodynamics and theoretical relationships*
- 1325 Davis, J.M.: Statistical theories of peak overlap in chromatography. *Adv. Chromatogr. (N.Y.)*, 34 (1994) 109-176; C.A., 121 (1994) 238951c - a review with 52 refs.
- 1326 Hansen, R.L. and Harris, J.M.: Lateral diffusion of molecules partitioned into C-18 ligands on silica surfaces. *Anal. Chem.*, 67 (1995) 492-498.
- 1327 Jenke, D.R.: Prediction of retention characteristics of multiprotonic anions in ion chromatography. *Anal. Chem.*, 66 (1994) 4466-4470.
- 1328 Jiang, D.G., Wang, F., Zhou, C.R., Cao, T.Z. and Zhao, Y.: The relationship between retention values of homologs and the column temperature in reverse-phase liquid chromatography. *Chin. Chem. Lett.*, 5 (1994) 321-324; C.A., 121 (1994) 220655z.
- 1329 Kalinichev, A.I.: (Describing the stationary concentration waves for Langmuir isotherms in the sorption of a mixture based on the theory for multicomponent chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1658-1662; C.A., 122 (1995) 65255u.
- 1330 Lebedev, Yu.Ya.: (Conditions of motion of the chromatographic zone for the case of intradiffusion kinetics of interfacial mass transfer). *Zh. Fiz. Khim.*, 68 (1994) 1733-1739; C.A., 122 (1995) 12761z.
- 1331 Li, J. and Pardue, H.L.: Predictive steady-state chromatography. 1. Algorithms for leading and trailing edges of resolved and unresolved peaks in liquid chromatography. *Anal. Chem.*, 66 (1994) 3765-3772.
- 1332 Lochmüller, C.H., Reese, C. and Hsu, S.-H.: Cross-column retention prediction in reversed-phase liquid chromatography using factor analytical modeling. *Anal. Chem.*, 66 (1994) 3806-3813.
- 1333 Lübke, M., le Quéré, J.-L. and Barron, D.: Normal-phase high-performance liquid chromatography of volatile compounds. Selectivity and mobile phase effects on polar bonded silica. *J. Chromatogr. A*, 690 (1995) 41-54.
- 1334 Schure, M.R.: Molecular dynamics of liquid chromatography: Chain and solvent structure visualization. *Spec. Publ.-R. Soc. Chem.*, 139 (1994) 181-189; C.A., 121 (1994) 239081f.
- 1335 Tchapla, A. and Héron, S.: Property-structure relationship of solute-stationary phase complexes occurring in a molecular mechanism by penetration of eluite in bonded alkyl chains in reversed-phase liquid chromatography. *J. Chromatogr. A*, 684 (1994) 175-188.
- 1336 Toft, J. and Kvalheim, O.M.: Multi-array resolution parameter for multidetermination chromatography. Performance of alternating regression, iterative target transformation factor analysis and heuristic evolving latent projections. *Chemom. Intell. Lab. Syst.*, 25 (1994) 61-75; C.A., 121 (1994) 314695q.
- 1337 Wasiak, W.: Thermodynamic characteristics of the specific interactions between alkenes and chromatographic packings with chemically bonded copper(II) complexes. *Chem. Anal. (Warsaw)*, 39 (1994) 325-333; C.A., 121 (1994) 287144a.
- 1338 Yang, S. and Khaledi, M.G.: Linear solvation energy relationships in micellar liquid chromatography and micellar electrokinetic capillary chromatography. *J. Chromatogr. A*, 692 (1995) 301-310.

For additional information see C.A.:

121 (1994) 220417y, 239104r, 239105s, 287069e, 296322j.

See also 1306, 1387, 1408, 1421, 1499, 1525, 1879, 2503, 2532.

2c. *Relationship between structure and chromatographic behaviour*

- 1339 Varga-Defterdarovic, L., Horvat, S., Skuric, M. and Horvat, J.: Correlation of structure and retention behaviour in reversed-phase high-performance liquid chromatography. I. Leucine-enkephalin-related glycoconjugates. *J. Chromatogr. A*, 687 (1994) 101-106.
- 1340 Varga-Defterdarovic, L., Horvat, S., Skuric, M. and Horvat, J.: Correlation of structure and retention behaviour in reversed-phase high-performance liquid chromatography. II. Methionine-enkephalin-related glycoconjugates. *J. Chromatogr. A*, 687 (1994) 107-112.

For additional information see C.A.:
121 (1994) 270777m.

See also 1335, 1559, 1586, 1794.

2d. Measurement of physico-chemical and related values

- 1341 Abraham, M.H., Chadha, H.S. and Leo, A.J.: Hydrogen bonding. XXXV. Relationship between high-performance liquid chromatography capacity factors and water-octanol partition coefficients. *J. Chromatogr. A.*, 685 (1994) 203-211.
- 1342 Barnikol, W.K.R. and Potschke, H.: Calibration of gel-permeation columns in the high-molecular-mass range: Fixed human thrombocytes for the estimation of interstitial volume and the haemocyanin of the Vineyard snail *Helix pomatia* as a molecular mass calibration substance. *J. Chromatogr. A.*, 685 (1994) 221-227.
- 1343 Bignotti, F., Sozzani, P., Ranucci, E. and Ferruti, P.: NMR Studies, molecular characterization and degradation behavior of poly(amino amine)s. 1. Poly(amido amine) deriving from the polyaddition of 2 Methylpiperazine to 1,4-bis(acryloyl)piperazine. *Macromolecules*, 27 (1994) 7171-7178; C.A., 121 (1994) 281336t.
- 1344 Fischer, C.-H., Berek, D. and Macko, T.: Determination of complexation equilibria of macromolecules with small molecules by means of size exclusion chromatography. *Polym. Bull. (Berlin)*, 33 (1994) 339-346; C.A., 121 (1994) 256692y.
- 1345 Hsieh, M.-M. and Dorsey, J.G.: Bioavailability estimation by reversed-phase liquid chromatography: high bonding density C-18 phases for modeling biopartitioning processes. *Anal. Chem.*, 67 (1995) 48-57.
- 1346 Kiso, Y.: (Application of HPLC to the research of semipermeable membranes. HPLC using cellulose acetate as a stationary phase). *Shinsozai*, 5 (1994) 22-25; C.A., 121 (1994) 258114k - a review with 17 refs.
- 1347 Ong, S., Liu, H., Qiu, X., Bhat, G. and Pidgeon, C.: Membrane partition coefficients chromatographically measured using immobilized artificial membrane surfaces. *Anal. Chem.*, 67 (1995) 755-762.
- 1348 Pasch, H.: (Liquid chromatography at critical point of adsorption. A new method for block copolymer analysis) *GIT Fachz. Lab.*, 37 (1993) 1068-1070; C.A., 121 (1994) 206437y.
- 1349 Rosset, R., Hui, F., Xie, J., Machtalere, G., Kolodziejczyk, H. and Sassiati, P.: (New calibration methods in size exclusion chromatography). *Analisis*, 22 (1994) 293-304; C.A., 121 (1994) 206447b.
- 1350 Shortt, D.W.: Measurement of narrow-distribution polydispersity using multiangle light scattering. *J. Chromatogr. A.*, 686 (1994) 11-20.
- 1351 Wallis, K.H. and Mueller, R.H.: Determination of the surface hydrophobicity of colloidal dispersions by miniaturized hydrophobic-interaction chromatography. *Pharm. Ind.*, 55 (1993) 1124-1128; C.A., 121 (1994) 238221q.

For additional information see C.A.:
121 (1994) 206698j, 282576h, 291602r.

See also 1375, 1523, 1541, 1543, 1584, 1585, 1735, 1863, 1899, 1945, 2245, 2248, 2250, 2251, 2252, 2253, 2255, 2256, 2259, 2260, 2481.

3. GENERAL TECHNIQUES

3a. Apparatus and accessories

- 1352 De Santis, F.: Comment on wet effluent denuder coupled liquid/ion chromatography systems: annular and parallel plate denuders. *Anal. Chem.*, 66 (1994) 3503-3504.
 - 1353 Kalousek, J., Gunter, J., Varek, T. and Rosenberg, I.: Liquid chromatography column head. *Czech. Rep. CZ* 278,574 (Cl. B01D15/08), 16 Mar. 1994, Appl. 1,075, 16 Apr. 1991; 5 p.; C.A., 122 (1995) 45397p.
 - 1354 Njamfa, S. and Joron, L.: High performance liquid chromatography instrument with controlling device and process for controlling its functioning. *Eur. Pat. Appl. EP* 628,813 (Cl. G0130/32), 14 Dec. 1994, FR Appl. 93/6,825, 08 Jun. 1993; 10 p.; C.A., 122 (1995) 71025k.
 - 1355 Rieger, H.: Sample dosing system. *Ger. Offen. DE* 4,318,919 (Cl. G01N1/14), 08 Dec. 1994, Appl. 07 Jun. 1993; 13 p.; C.A., 122 (1995) 71024j.
 - 1356 Schick, H.G.: Inlet filter for solvents in liquid chromatography. *U.S. US* 5,366,620 (Cl. 210-198.2; B01D15/08), 22 Nov. 1994, Appl. 41,481, 01 Apr. 1993; 10 p.; C.A., 122 (1995) 71008g.
 - 1357 Simpson, R.C.: Modification of a conventional high-performance liquid chromatography autoinjector for use with capillary liquid chromatography. *J. Chromatogr. A.*, 691 (1995) 163-170.
 - 1358 Takahashi, T., Shizukuishi, K., Katho, Y., Senda, N. and Bando, T.: Liquid chromatograph mass spectrometer. *U.S. US* 5,368,727 (Cl. 210-198.2; B01D15/08), 29 Nov. 1994, JP Appl. 91/256,409, 03 Oct. 1991; 8 p.; C.A., 122 (1995) 71010b.
- For additional information see C.A.:
121 (1994) 220589f, 220591a, 220595e, 233885z, 270702h, 270713n, 282781w, 291557e, 296600y, 296603b, 314846q, 314928t; 122 (1995) 45326q.
- See also 1343, 1392, 1413, 1452, 1457, 2118.
- 3b. Detectors and detection reagents*
- 1359 Abbas, A.A. and Shelly, D.C.: Optical properties of axial-illumination flow cells for simultaneous absorbance-fluorescence detection in micro liquid chromatography. *J. Chromatogr. A.*, 691 (1995) 37-53.
 - 1360 Allen, L.B., Koropchak, J.A. and Szostek, B.: Condensation nucleation light scattering detection for conventional reversed-phase liquid chromatography. *Anal. Chem.*, 67 (1995) 659-666.
 - 1361 Aue, W.A., Singh, H. and Sun, X.-Y.: Fundamental noise in three chromatographic detectors. *J. Chromatogr. A.*, 687 (1994) 283-290.
 - 1362 Frolov, F.Ya. and Vrazhnikov, V.V.: Spectrophotometric detector for liquid chromatograph. *U.S.S.R. SU* 1,821,692 (Cl. G01N21/03), 15 Jun. 1993, Appl. 4,890,352, 14 Nov. 1990; C.A., 122 (1995) 45398q.
 - 1363 Kurata, S. and Hirano, H.: (Fluorescent substances for development of multipurpose markers). *Hanzeigaku Zasshi*, 60 (1994) 95-100; C.A., 121 (1994) 275699x.

- 1364 Lee, K.S., Shin, J.H., Cha, M.J., Cha, G.S., Trojanowicz, M., Liu, D., Goldberg, H.D., Hower, R.W. and Brown, R.B.: Multionophore-based solid-state potentiometric ion sensor as a cation detector for ion chromatography. *Sens. Actuators, B*, 20 (1994) 239-246; *C.A.*, 122 (1995) 22659m.
- 1365 Lima, L.R., III, Synovec, R.E.: Laser-based dynamic surface tension detection for liquid chromatography by probing a repeating drop radius. *J. Chromatogr. A*, 691 (1995) 195-204.
- 1366 Lingeman, H. and Brinkman, U.A.T.: (Post-column) reaction-detection: an alternative to improve sensitivity and selectivity in column liquid chromatographic analysis. In: Stevenson, D. and Wilson, I.D. (Editors), *Sample Prep. Biomed. Environ. Anal. / Proc. Chromatogr. Soc. Int. Symp. I*, Plenum, New York, 1994, pp. 21-36; *C.A.*, 121 (1994) 275562x - a review with 35 refs.
- 1367 Novak, T.J. and Grayeski, M.L.: Acridinium-based chemiluminescence for high-performance liquid chromatographic detection of chlorophenols. *Microchem. J.*, 50 (1994) 151-160; *C.A.*, 121 (1994) 291660h.
- 1368 Rozhitskii, N.N., Belash, E.M. and Bykh, A.I.: (Electrochemiluminescent analysis: advances, problems, and prospects). *Zh. Anal. Khim.*, 49 (1994) 920-925; *C.A.*, 122 (1995) 22803d - a review with 58 refs.
- 1369 Scott, R.P.W.: Liquid chromatography detectors. *Chromatogr. Sci. Ser.*, 67 (1994) 157-193; *C.A.*, 122 (1995) 45009p - a review with 6 refs.
- 1370 Siddiqui, A. and Shelly, D.C.: Amperostatic-potentiometric detection for micro high-performance liquid chromatography. *J. Chromatogr. A*, 691 (1995) 55-65.
- 1371 Singh, H., Millier, B. and Aue, W.A.: Dual-channel response ratios from an integrative algorithm. *J. Chromatogr. A*, 687 (1994) 291-301.
- 1372 Sun, X.-Y., Singh, H., Millier, B., Warren, C.H. and Aue, W.A.: Noise, filters and detection limits. *J. Chromatogr. A*, 687 (1994) 259-281.
- 1373 Traoré, F., Prognon, P. and Mahuzier, G.: Solvent study on the 9-substituted quinolizinocoumarins used as precolumn fluorescent and chemiluminescent reagents in liquid chromatography. *Anal. Chim. Acta*, 294 (1994) 75-84.
- For additional information see *C.A.*:
121 (1994) 220358e, 270873q, 291695y.
- See also 1350, 1532, 1590, 1593, 1613, 1638, 1671, 1717, 1744, 1757, 1814, 1883, 2088, 2100, 2108, 2141, 2161, 2194, 2297, 2302, 2353, 2359, 2439, 2511.
- 3c. Sorbents and columns, packing procedures
- 1374 Alvarez, C., Bertorello, H., Strumia, M. and Sanchez, E.I.: Synthesis and characterization of biospecific adsorbents containing glucose, usable to retain concanavalin A. *J. Chromatogr. A*, 686 (1994) 333-338.
- 1375 Baba, N.: (Gel permeation chromatography (GPC). Determination of molecular weight of macromolecular material). *Shinsozai*, 5 (1994) 35-39; *C.A.*, 121 (1994) 231696q - a review with 11 refs.
- 1376 Barry, A.R. and Chojnacki, R.: Biotechnology product validation. Part 8: Chromatography media and column quantification. *BioPharm (Eugene)*, 7 (1994) 43-47; *C.A.*, 122 (1995) 38800m.
- 1377 Ciucanu, I. and König, W.A.: Immobilization of peralkylated β -cyclodextrin on silica gel for high-performance liquid chromatography. *J. Chromatogr. A*, 685 (1994) 166-171.
- 1378 Cummings, L.J., Ogawa, T. and Tunon, P.: Macro-Prep ceramic hydroxyapatite-new life for an old chromatographic technique. *Spec. Publ. -R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 134-140; *C.A.*, 122 (1995) 4617s.
- 1379 Daub, J. and Schlieper, T.: Manufacture of solid stationary phases for liquid chromatography in environmental sampling. *Ger. Offen. DE 4,413,319 (Cl. B01D15/08)*, 08 Sep. 1994, Appl. 18 Apr. 1994; 3 p.; *C.A.*, 121 (1994) 262473u.
- 1380 Dimov, N.: High-performance liquid chromatography. The column. *Acta Chromatogr.*, 2 (1993) 21-32; *C.A.*, 121 (1994) 314597j - a brief survey with 9 refs.
- 1381 Dumont, P.J. and Fritz, J.S.: Effect of resin sulfonation on the retention of polar organic compounds in solid-phase extraction. *J. Chromatogr. A*, 691 (1995) 123-131.
- 1382 Forgács, E. and Cserháti, T.: Retention strength and selectivity of porous graphitized carbon columns. Theoretical aspects and practical applications. *TrAC*, 14 (1995) 23-29 - a review with 30 refs.
- 1383 Freitag, R., Frey, D. and Horváth, C.: Effect of bed compression on high-performance liquid chromatography columns with gigaporous polymeric packings. *J. Chromatogr. A*, 686 (1994) 165-177.
- 1384 Grieb, S.J., Matlin, S.A., Phillips, J.G., Belenguer, A.M. and Ritchie, H.J.: Chiral HPLC with carbohydrate carbamates: influence of support structure on enantioselectivity. *Chirality*, 6 (1994) 129-134; *C.A.*, 122 (1995) 45352v.
- 1385 Guan, H. and Guiochon, G.: Properties of some C₁₈ stationary phases for preparative liquid chromatography. I. Equilibrium isotherms. *J. Chromatogr. A*, 687 (1994) 179-200.
- 1386 Guan, H. and Guiochon, G.: Properties of some C₁₈ stationary phases for preparative liquid chromatography. II. Column efficiency. *J. Chromatogr. A*, 687 (1994) 201-212.
- 1387 Hashimoto, K., Kawase, M., Adachi, S. and Shirai, Y.: Comparison of efficiency in the separation of binary components between a conventional batch chromatographic system and a simulated moving bed adsorber. In: *Off. Proc. Comb. Conf., 6th Conf. Asia Pac. Confed. Chem. Eng., 21st Australas Chem. Eng. Conf., Inst. Eng., Aust.*, Barton, 1993, pp. 307/2-312/2; *C.A.*, 122 (1995) 59134n.
- 1388 Hosoya, K., Kishii, Y., Kimata, K., Araki, T., Tanaka, N., Svec, F. and Fréchet, J.M.J.: Uniform-size hydrophobic polymer-based separation media selectively modified with a hydrophilic external polymeric layer. *J. Chromatogr. A*, 690 (1995) 21-28.
- 1389 Ichikawa, H., Yokoyama, A., Kawai, T., Wakizaka, H., Moriyama, H. and Komiya, K.: Packing for liquid chromatography and process for producing them. *Eur. Pat. Appl. EP 610,490 (Cl. G01N30/52)*, 12 Oct. 1994, JP Appl. 93/105,904, 09 Apr. 1993; 13 p.; *C.A.*, 122 (1995) 22864z.
- 1390 Jinno, K., Nakagawa, K., Saito, Y., Ohta, H., Nagashima, H., Itoh, K., Archer, J. and Chen, Y.-L.: Nano-scale design of novel stationary phases to enhance selectivity for molecular shape and size in liquid chromatography. *J. Chromatogr. A*, 691 (1995) 91-99.
- 1391 Kimata, K., Tsuboi, R., Hosoya, K. and Tanaka, N.: Chemically bonded chiral stationary phase prepared by the polymerization of cellulose π -vinylbenzoate. *Anal. Methods Instrum.*, 1 (1993) 23-29; *C.A.*, 121 (1994) 220637v.

- 1392 Kirkland, J.J.: Trends in HPLC column design for improved method development. *Am. Lab. (Shelton)*, 26 (1994) 28K, 28L, 28N-28R; C.A., 122 (1995) 45332p - a review with 20 refs.
- 1393 Kirkland, J.J. and Henderson, J.W.: Reversed-phase HPLC selectivity and retention characteristics of conformationally different bonded alkyl stationary phases. *J. Chromatogr. Sci.*, 32 (1994) 473-480.
- 1394 Kirkland, J.J., van Straten, M.A. and Claessens, H.A.: High pH mobile phase effects on silica-based reversed-phase high-performance liquid chromatographic columns. *J. Chromatogr. A*, 691 (1995) 3-19.
- 1395 Kobayashi, T., Yamaguchi, A., Imai, Y. and Kakimoto, M.: Optically active polyurethanes, their preparation and use as stationary phase for chromatographic resolution of enantiomers. *Jpn. Kokai Tokkyo Koho JP 06,100,648* (94,100,648) (Cl. C08G18/32), 12 Apr. 1994, Appl. 92/247, 640, 17 Sep. 1992; 8 p.; C.A., 122 (1995) 56848n.
- 1396 Loth, F. and Fanter, C.: (Pearl-shaped cellulose products and their use as separating and supporting material). *Papier (Darmstadt)*, 47 (1993) 703-710; C.A., 121 (1994) 258149a.
- 1397 Moriyama, H., Anegayama, M., Komiya, K. and Kato, Y.: Characterization of a new reversed-phase chromatographic column on a 2- μ m porous microspherical silica gel. *J. Chromatogr. A*, 691 (1995) 81-89.
- 1398 Neue, U.D., Phillips, J., Walter, T.H., Capparella, M., Alden, B. and Fisk, R.P.: Reversed-phase column quality and its effect on the quality of a pharmaceutical analysis. *LC-GC Int.*, 8, No. 1 (1995) 26-33.
- 1399 Nirmura, N., Itoh, H. and Kinoshita, T.: Diol-bonded silica gel as a restricted access packing forming a binary-layered phase for direct injection of serum for the determination of drugs. *J. Chromatogr. A*, 689 (1995) 203-210.
- 1400 Oscarsson, S., Angulo-Tatis, D., Chaga, G. and Porath, J.: Amphiphilic agarose-based adsorbents for chromatography. Comparative study of adsorption capacities and desorption efficiencies. *J. Chromatogr. A*, 689 (1995) 3-12.
- 1401 Pesek, J.J. and Matyska, M.T.: Synthesis and spectrometric characterization of a true diol bonded phase. *J. Chromatogr. A*, 687 (1994) 33-44.
- 1402 Petro, M., Berek, D. and Novak, I.: Composite sorbents for liquid chromatography. A size exclusion study of dextran gel incorporated into porous solid particles. *React. Polym.*, 23 (1994) 173-182; C.A., 122 (1995) 11701t.
- 1403 Rhee, D., Markovich, R., Chae, W.G., Qiu, X. and Pidgeon, C.: Chromatographic surfaces prepared from lyso phosphatidyl-choline ligands. *Anal. Chim. Acta*, 297 (1994) 377-386.
- 1404 Rodrigues, A.E., Loureiro, J.M., Chenou, C., de la Vega, M.R.: Bioseparations with permeable particles. *J. Chromatogr. B*, 664 (1995) 233-240.
- 1405 Sarker, M. and Guiochon, G.: The packing stability of dynamically compressed preparative chromatography columns. *LC-GC*, 12 (1994) 300-306; C.A., 122 (1995) 70796a.
- 1406 Scholten, A.B., de Haan, J.W., Claessens, H.A., van de Ven, L.J.M. and Cramers, C.A.: ^{29}Si NMR model dissolution study of the degradation of reversed phases for high-performance liquid chromatography. *Anal. Chem.*, 66 (1994) 4085-4092.
- 1407 Seely, R.J., Wight, H.D., Fry, H.H., Rudge, S.R. and Slaff, G.F.: Biotechnology product validation. Part 7: Validation of chromatography resin useful life. *BioPharm (Eugene)*, 7 (1994) 41-48; C.A., 121 (1994) 278870g - a review with 7 refs.
- 1408 Sentell, K.B., Bliesner, D.M. and Shearer, S.T.: ^2H and ^{13}C NMR studies of reversed phase liquid chromatographic stationary phases: Solvation and temperature effects. *Spec. Publ. - R. Soc. Chem.*, 139 (1994) 190-202; C.A., 121 (1994) 239082g.
- 1409 Shurygina, V.V., Stepnova, Z.N., Sturchak, S.V., Ryltsev, V.V. and Fulatov, V.N.: Method of sorbent preparation for affinity chromatography. *U.S.S.R. SU 1,816,143* (Cl. B01J20/22), 30 May 1993, Appl. 4,488,422, 30 Sep. 1988; C.A., 122 (1995) 45399r.
- 1410 Smigol, V., Svec, F. and Frechet, J.M.J.: Two-dimensional high-performance liquid chromatography using monodisperse polymer beads containing segregated chemistries prepared by pore size specific functionalization. Single-column combinations of size exclusion or ion exchange with reversed-phase chromatography. *Anal. Chem.*, 66 (1994) 438-4315.
- 1411 Steenackers, D. and Sandra, P.: Preparation of small diameter thick film capillary columns for microcolumn separations. *J. Microcolumn Sep.*, 6 (1994) 361-367; C.A., 122 (1995) 22819p.
- 1412 Swart, R., Kraak, J.C. and Poppe, H.: Performance of an ethoxyethylacrylate stationary phase for open-tubular liquid chromatography. *J. Chromatogr. A*, 689 (1995) 177-187.
- 1413 Upchurch, P.E. and Schick, H.G.: Column for liquid chromatography. *Eur. Pat. Appl. EP 624,795* (Cl. G01N30/60), 17 Nov. 1994, US Appl. 62,402, 14 May 1993; 14 p.; C.A., 122 (1995) 45289e.
- 1414 Van Zanten, J.H.: Terminally anchored chain interphases: their chromatographic properties. *Macromolecules*, 27 (1994) 6797-6807; C.A., 121 (1994) 264590d.
- 1415 Verhulst, H.A.M., van de Ven, L.J.M., de Haan, J.W., Claessens, H.A., Eisenbeiss, F. and Cramers, C.A.: Patching in reversed-phase high-performance liquid chromatographic materials studied by solid-state NMR spectrometry. *J. Chromatogr. A*, 687 (1994) 213-221.
- 1416 Vermeulen, D.M. and Cantwell, F.F.: Slow change in the electrical potential at glass and silica surfaces due to Na^+ sorption in the hydrated layer. *J. Chromatogr. A*, 693 (1995) 205-216.
- 1417 Welch, C.J.: Imprintable brush-type chiral stationary phase. *J. Chromatogr. A*, 689 (1995) 189-193.
- 1418 Whitman, D.A., Weber, T.P. and Blackwell, J.A.: Chemometric characterization of Lewis base-modified zirconia for normal phase chromatography. *J. Chromatogr. A*, 691 (1995) 205-212.
- 1419 Yu, J. and El Rassi, Z.: Chromatographic properties of zirconia-based stationary phases for ion exchange chromatography having surface bound cationic functions. *J. High Resolut. Chromatogr.*, 17 (1994) 705-712.
- 1420 Yu, J. and El Rassi, Z.: Preparation of amino-zirconia bonded phases and their evaluation in hydrophilic interaction chromatography of carbohydrates with pulsed amperometric detection. *J. High Resolut. Chromatogr.*, 17 (1994) 773-778.

For additional information see C.A.:

- 121 (1994) 233318s, 234008c, 244520c, 244549u, 270714p, 270858p, 270859q, 270864n, 270866q, 270867r, 270868s, 270869t, 270871n, 281074f, 283012h, 291616y, 291695y, 296323k, 301965c; 122 (1995) 22863y, 32663x, 39752j, 45400j, 70989r.

See also 1301, 1326, 1346, 1353, 1435, 1464, 1466, 1469, 1482, 1492, 1493, 1496, 1499, 1504, 1511, 1512, 1549, 1567, 1588, 1595, 1623, 1746, 1759, 1767, 1792, 1796, 1853, 1872, 1873, 1884, 1917, 2220, 2263, 2269, 2497, 2520, 2534.

3d. Quantitative analysis

- 1421 Bahowick, T.J. and Synovec, R.E.: Correlation of quantitative analysis precision to retention time precision and chromatographic resolution for rapid, short column analysis. *Anal. Chem.*, 67 (1995) 631-640.
 1422 Van den Bogaert, B., Boelens, H.F.M. and Smit, H.C.: Quantification of overlapping chromatographic peaks using a matched filter. *Chemom. Intell. Lab. Syst.*, 25 (1994) 297-311; C.A., 122 (1995) 22813g.

For additional information see C.A.:
 121 (1994) 258979w.

See also 1704, 2364.

3e. Preparative scale chromatography

- 1423 Charton, F., Bailly, M. and Guiuchon, G.: Recycling in preparative liquid chromatography. *J. Chromatogr. A*, 687 (1994) 13-31.
 1424 Crétier, G., Neffati, J. and Rocca, J.L.: Preparative LC and preparative SFC: two complementary techniques in the fractionation of an impurity from a major component. *J. Chromatogr. Sci.*, 32 (1994) 449-454.
 1425 Unger, K.K. (Editor): *Handbook of HPLC, Part 2: Preparative Liquid Column Chromatography*. GIT-Verlag, Darmstadt, 1994, 280 pp.; C.A., 121 (1994) 229992q.

See also 1386, 1405, 1433, 1494, 1536, 1538, 1553, 1601, 1610, 1761, 1851, 1852, 1858, 1864, 1874, 1914, 1920, 1929, 1933, 1948, 1982, 2017, 2116, 2237, 2345, 2451, 2495.

3f. Programmed temperature, pressure, vapors, gradients

- 1426 Dolan, J.W.: Obtaining separations, part III: adjusting column conditions. *LC-GC*, 12 (1994) 520-524; C.A., 122 (1995) 70797b.
 1427 Lukulay, P.H. and McGuffin, V.L.: Solvent modulation in liquid chromatography: extension to serially coupled columns. *J. Chromatogr. A*, 691 (1995) 171-185.

See also 1354, 1530, 1547, 1797.

4. SPECIAL TECHNIQUES

4a. Automation

- 1428 Cooper, J.D.H., Buick, A.R., Sheung, C.T.F.: The development of a new automated configuration to extend the analytical capability of the ASTED system using the high-pressure liquid chromatographic analysis of a nucleoside in plasma as a model. *Lab. Rob. Autom.*, 6 (1994) 15-20; C.A., 121 (1994) 250049x.
 1429 Smead, F.: A guide to the next step in data management. *Int. Lab.*, 24, No. 11 (1994) 14-16.
 1430 Wieling, J., Jonkman, J.H.G., Hempenius, J. and Mensink, C.K.: Integration of robotics and chemometrics for the automated optimization of drug extractions. *Chemom. Intell. Lab. Syst.*, 25 (1994) 355-366; C.A., 122 (1995) 17325v.

See also 1668, 1980, 2210, 2227, 2277, 2298, 2336, 2343, 2412, 2421, 2435.

4b. Computerization and modelling

- 1431 Andrews, M.: Adapting to a chemist's environment: the future trend in chromatography data management. *Am. Lab. (Shelton)*, 26 (1994) 49-55; C.A., 121 (1994) 314863t.
 1432 Cepria, G. and Castillo, J.R.: Influence of the detection system on chromatographic profiles. Comparison of a refractive index and surface plasmon resonance based detector for HPLC. *Quim. Anal. (Barcelona)*, 13 (1994) 63-66; C.A., 122 (1995) 71066z.
 1433 Felinger, A. and Guiuchon, G.: Computer simulations in non-linear chromatography. *TrAC*, 14 (1995) 6-10.
 1434 Guillemin, C.L.: The deferred standard. *Process Control Qual.*, 6 (1994) 9-25; C.A., 122 (1995) 45331n - a review with 19 refs.
 1435 Hamoir, T., Sanchez, F.C., Bourguignon, B. and Massart, D.L.: Spectral mapping analysis: a method for the characterization of stationary phases. *J. Chromatogr. Sci.*, 32 (1994) 488-498.
 1436 Head, M. and Yellin, B.: Review of the benefits of a chromatography data system on Windows NT. *Am. Lab. (Shelton)*, 26 (1994) 48T, 48U, 48V, 48X, 48Y; C.A., 121 (1994) 291609y.
 1437 Malmquist, G. and Danielsson, R.: Alignment of chromatographic profiles for principal component analysis: a prerequisite for fingerprinting methods. *J. Chromatogr. A*, 687 (1994) 71-88.
 1438 Mowry, D. and Doll, G.: How software beta testing enhances product quality. *Int. Lab.*, 24, No. 11 (1994) 17-20.
 1439 Reh, E.: Peak-shape analysis for unresolved peaks in chromatography: comparison of algorithms. *TrAC*, 14 (1995) 1-5.
 1440 Tobis, J.: (Methods for evaluation of channeling effect in fixed-bed columns with granular packing). *Przem. Chem.*, 73 (1994) 257-259; C.A., 121 (1994) 233595e - a review with 12 refs.
 1441 Wiblin, D.J.: Computer aided desk-top scale-up and optimization of chromatographic processes. *Spec. Publ.-R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 572-578; C.A., 122 (1995) 8106x.
 1442 Zhao, G.-I., Zhao, Y.-m. and Liu, L.-n.: Microcomputer simulation of elution behavior for dicarboxylic acids in ion-exclusion chromatography. *Chem. Res. Chin. Univ.*, 10 (1994) 79-84; C.A., 122 (1995) 45358b.

For additional information see C.A.:

- 121 (1994) 291557e;
- 122 (1995) 11185c.

See also 1293, 1325, 1330, 1331, 1332, 1345, 1421, 1429, 1430, 1498, 1586, 1830, 2249, 2253, 2270, 2290, 2442, 2515, 2533.

4c. Combination with other physico-chemical techniques (MS, IR etc.)

- 1443 Bendicho, C.: Evaluation of an automated thermospray interface for coupling electrothermal atomization atomic absorption spectrometry and liquid chromatography. *Anal. Chem.*, 66 (1994) 4375-4381.
- 1444 Capiello, A. and Famiglini, G.: Evaluation of the performance of a microflow rate LC/MS particle beam interface. *Anal. Chem.*, 66 (1994) 3970-3976.
- 1445 Capiello, A. and Famiglini, G.: Analysis of thermally unstable compounds by a liquid chromatography/mass spectrometry particle beam interface with a modified ion source. *Anal. Chem.*, 67 (1995) 412-419.
- 1446 Caprioli, R.M.: Online LC/MS and CE/MS. In: Matsuo, T. (Editor), *Biol. Mass Spectrom.: Present Future, [Proc. Kyoto '92 Int. Conf.]*, Wiley, Chichester, 1994, pp. 75-100; C.A., 121 (1994) 249811h - a review with 65 refs.
- 1447 Engelhardt, U.H. and Wagner-Redeker, W.: (HPLC-MS (mass spectrometry). Techniques and applications. Part 1. HPLC/MS coupling techniques). *GIT Spez. Chromatogr.*, 14 (1994) 5-9; C.A., 122 (1995) 22801b - a review with 8 refs.
- 1448 Gummersbach, J.: (Chromatography-mass spectrometry combination widened. The MD 800 family from Fison: routine mass spectrometric systems for chromatography). *GIT Fachz. Lab.*, 38 (1994) 846-847; C.A., 121 (1994) 270768j.
- 1449 Harada, K., Suzuki, M. and Oka, H.: Chromatography and mass spectrometry for analysis of natural products. In: Matsuo, T. (Editor), *Biol. Mass Spectrom.: Present Future, [Proc. Kyoto '92 Int. Conf.]* 1992, Wiley, Chichester, 1994, pp. 605-630; C.A., 121 (1994) 225275k - a review with many refs.
- 1450 Hutta, M., Kaniansky, D., Kovalcikova, E., Marak, J., Chalanyova, M., Madajova, V. and Simunicova, E.: Preparative capillary isoelectric focusing as a sample pretreatment technique for complex ionic matrices in high-performance liquid chromatography. *J. Chromatogr. A*, 689 (1995) 123-133.
- 1451 Krull, I.S., Mhatre, R. and Cunniff, J.: Biopolymer detection, Part I - Mass spectrometry. *LC-GC Int.*, 8, No. 1 (1995) 14-20.
- 1452 Linscheid, M. and Westmoreland, D.G.: Analytical techniques for trace organic compounds. VI. Application of liquid chromatography-mass spectrometry. *Pure Appl. Chem.*, 66 (1994) 1913-1930; C.A., 122 (1995) 71049w - a review with 203 refs.
- 1453 Pálmarsdóttir, S. and Edholm, L.-E.: Enhancement of selectivity and concentration sensitivity in capillary zone electrophoresis by on-line coupling with column liquid chromatography and utilizing a double stacking procedure allowing for microliter injections. *J. Chromatogr. A*, 693 (1995) 131-143.
- 1454 Rottmann, L. and Heumann, K.G.: Development of an on-line isotope dilution technique with HPLC/ICP-MS for accurate determination of elemental species. *Fresenius J. Anal. Chem.*, 350 (1994) 221-227.

1455 Seubert, A.: On-line coupling between chromatography and inductively coupled plasma mass spectrometry - a current assessment. *Fresenius J. Anal. Chem.*, 350 (1994) 210-220.

- 1456 Stroh, J.G. and Rinehart, K.L.: Liquid chromatography/fast atom bombardment mass spectrometry. *Top Mass Spectrom.*, 1(Experimental Mass Spectrometry) (1994) 287-311; C.A., 122 (1995) 4564x - a review with 54 refs.

- 1457 Wang, A.P.L., Guo, X. and Li, L.: Liquid chromatography/time-of-flight mass spectrometry with a pulsed sample introduction interface. *Anal. Chem.*, 66 (1994) 3664-3675.

For additional information see C.A.:

- 121 (1994) 220589f, 220591a, 244386p, 291568j;
- 122 (1995) 19999s.

See also 1358, 1432, 1517, 1535, 1634, 1641, 1649, 1695, 1728, 1736, 1741, 1742, 1760, 1772, 1775, 1777, 1780, 1819, 1824, 1849, 1850, 1861, 1877, 1985, 1996, 2053, 2060, 2073, 2077, 2117, 2128, 2143, 2183, 2185, 2191, 2211, 2221, 2233, 2245, 2258, 2260, 2265, 2271, 2303, 2324, 2353, 2357, 2362, 2368, 2377, 2385, 2402, 2411, 2416, 2423, 2446, 2447, 2461, 2462, 2487, 2517, 2521, 2527.

4d. Affinity chromatography (advances)

1458 Benes, M.J., Stambergova, A. and Scouten, W.H.: Affinity chromatography with immobilized benzeneboronates. *Mol. Interact. Biosep.*, (1993) 313-322; C.A., 121 (1994) 249861z - a review with many refs.

- 1459 Boschetti, E.: New diffusive matrix to improve throughput in affinity chromatography applications. *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 6th European Congress on Biotechnology, 1993, Pt. 1) (1994) 547-550; C.A., 121 (1994) 225372q.

- 1460 Chaiken, I.: Affinity chromatography using immobilized anti-sense-family peptides. *Mol. Interact. Biosep.*, (1993) 169-177; C.A., 121 (1994) 249854z - a review with many refs.

- 1461 Clonis, Y.D.: Affinity methods in bioseparation. *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 6th European Congress on Biotechnology, 1993, Pt. 1) (1994) 527-533; C.A., 121 (1994) 225265g.

- 1462 Galaev, I.Yu. and Mattiasson, B.: Polymer-shielded dye-affinity chromatography. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 179-185; C.A., 121 (1994) 296299g.

- 1463 Godfrey, M.A.J., Kwasowski, P., Clift, R. and Marks, V.: Rivanol-silica: a dye-ligand solid phase for affinity purifying proteins. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 200-206; C.A., 121 (1994) 296301b.

- 1464 Gu, J., Stephenson, G. and Iadarola, M.J.: Recombinant proteins attached to a nickel-NTA column: use in affinity purification of antibodies. *BioTechniques*, 17 (1994) 257-262; C.A., 121 (1994) 228115u.

- 1465 Hage, D.S., Noctor, T.A.G. and Wainer, I.W.: Characterization of the protein binding of chiral drugs by high-performance affinity chromatography. Interactions of R- and S-ibuprofen with human serum albumin. *J. Chromatogr. A*, 693 (1995) 23-32.

- 1466 Hermanson, G.T., Mattson, G.R. and Krohn, R.I.: Preparation and use of immunoglobulin-binding affinity supports on Emphaze beads. *J. Chromatogr. A.*, 691 (1995) 113-122.
- 1467 Katoh, S., Terashima, M., Sada, E., Utsumi, H., Kamiya, Y., Yamada, K. and Majima, T.: Characteristics of a perfusion-type support in affinity chromatography. *J. Ferment. Bioeng.*, 78 (1994) 246-249; C.A., 121 (1994) 225415f.
- 1468 Lindgren, G.E.S.: Immobilized metal affinity chromatography (IMAC). *Am. Biotechnol. Lab.*, 12 (1994) 36; C.A., 121 (1994) 225267j - a review with 7 refs.
- 1469 Liu, X.-C. and Scouten, W.H.: New ligands for boronate affinity chromatography. *J. Chromatogr. A.*, 687 (1994) 61-69.
- 1470 Mattiasson, B., Linne, E. and Kaul, R.: Use of heterobifunctional ligands in affinity chromatographic processes. *Mol. Interact. Biosep.*, (1993) 395-401; C.A., 121 (1994) 249866e - a review with many refs.
- 1471 Nachman-Clewner, M., Spence, C. and Bailon, P.: Receptor-affinity chromatography (RAC). *Mol. Interact. Biosep.*, (1993) 139-149; C.A., 121 (1994) 249853y - a review with many refs.
- 1472 Narinesingh, D. and Ngo, T.T.: 2-Fluoro-1-methylpyridinium (FMP) salt-activated gels: properties and uses in affinity chromatography and enzyme immobilization for analytical applications. *Mol. Interact. Biosep.*, (1993) 49-68; C.A., 121 (1994) 275501b.
- 1473 Ohlson, S. and Zopf, D.: Weak-affinity chromatography. *Mol. Interact. Biosep.*, (1993) 15-25; C.A., 121 (1994) 249849b - a review with many refs.
- 1474 Parikh, I. and Cuatrecasas, P.: Affinity chromatography: an overview. *Mol. Interact. Biosep.*, (1993) 3-13; C.A., 121 (1994) 249848a - a review with many refs.
- 1475 Sada, E. and Katoh, S.: Suitable antibodies as ligands in affinity chromatography of biomolecules. *Mol. Interact. Biosep.*, (1993) 205-211; C.A., 121 (1994) 250405k.
- 1476 Safi, A., Saunier, M., Gastin, I., Alibada, Y., Dugue, B. and Gueant, J.-L.: Intrinsic factor covalently bound to Sepharose as affinity medium for the purification of a soluble intrinsic factor receptor from human urine. *J. Chromatogr. B*, 644 (1995) 253-259.
- 1477 Santambien, P., Sdiqui, S., Hubert, E., Girot, P., Roche, A.C., Monsigny, M. and Boschetti, E.: *In vitro* toxicity assays for dye ligands used in affinity chromatography. *J. Chromatogr. B*, 664 (1995) 241-246.
- 1478 Stellwagen, E.: Affinity chromatography with immobilized dyes. *Mol. Interact. Biosep.*, (1993) 247-255; C.A., 121 (1994) 250060u.
- 1479 Tosa, T., Sato, T., Watanabe, T. and Minobe, S.: Affinity chromatographic removal of pyrogens. *Mol. Interact. Biosep.*, (1993) 323-332; C.A., 121 (1994) 249862a - a review with many refs.
- 1480 Velandier, W.H., Kaster, J.A. and Glasser, W.G.: Lignocellulosic and cellulosic beads for use in affinity and immunoaffinity chromatography of high molecular weight proteins. *U.S. US 5,328,603 (Cl. 210-198.2; BO1D15/08)*, 12 Jul. 1994, US Appl. 496,314, 20 Mar. 1990, 24 pp.; C.A., 121 (1994) 276172g.
- 1481 Vijayalakshmi, M.A.: Pseudo-biospecific affinity ligand chromatography: the case of immobilized histidine as a universal ligand. *Mol. Interact. Biosep.*, (1993) 257-275; C.A., 121 (1994) 249859e - a review with many refs.
- 1482 Weetall, H.H.: Affinity chromatography on inorganic support materials. *Mol. Interact. Biosep.*, (1993) 27-48; C.A., 121 (1994) 249850v - a review with many refs.
- 1483 West, I. and Goldring, O.: Lectin affinity chromatography. *Mol. Biotechnol.*, 2 (1994) 147-155; C.A., 122 (1995) 4625t.
- 1484 Wulff, G.: Biorecognition in molecularly imprinted polymers: concept, chemistry, and application. *Mol. Interact. Biosep.*, (1993) 363-381; C.A., 121 (1994) 249864c - a review with many refs.
- 1485 Zhao, C., Wang, L., Xie, S.-s. and Long, Z.-z.: (Preparation of Cibacron Blue Sephadex and its application on affinity chromatography). *Shengwu Huaxue Zazhi*, 10 (1994) 621-625; C.A., 121 (1994) 298620d.
- For additional information see C.A.:
121 (1994) 250632g, 250635k.
- See also 1374, 1409, 1789, 1796, 1848, 1867, 1868, 1881, 1882, 1893, 1904, 1914, 1915, 1919, 1928, 1935, 1947, 1948, 1978, 1980, 1987, 1989, 2031, 2043, 2044, 2066, 2226, 2227.
- 4e. Functional analysis
- 1486 Morley, J.A., Elrod, L., Jr. and Bauer, J.F.: Determination of the active hydrogen content in pyridine-borane complex by Schiff base reduction and high-performance liquid chromatography. *Anal. Chem.*, 66 (1994) 4283-4287.
- See also 1385.
- 4f. Trace analysis and preseparation techniques
- 1487 Capparella, M., Foster, W., III, Larrousse, M., Phillips, D.J., Pomfret, A. and Tuvim, Y.: Characteristics and applications of a new high-performance liquid chromatography guard column. *J. Chromatogr. A*, 691 (1995) 141-150.
- 1488 Fritz, J.S., Dumont, P.J. and Schmidt, L.W.: Methods and materials for solid-phase extraction. *J. Chromatogr. A*, 691 (1995) 133-140.
- 1489 Gelencsér, A., Kiss, G., Krivácsy, Z., Varga-Puchony, Z. and Hlavay, J.: A simple method for the determination of capacity factor on solid-phase extraction cartridges. I. *J. Chromatogr. A*, 693 (1995) 217-225.
- 1490 Schlabach, M., Biseth, A., Gunderson, H. and Oehme, M.: Online GPC/carbon clean-up method for determination of PCDD/F in sediment and sewage sludge samples. *Organohalogen Compd.*, 11 (1993) 71-74; C.A., 121 (1994) 212154v.
- For additional information see C.A.:
121 (1994) 220508d.
- See also 1757, 2218, 2225, 2507, 2515, 2525, 2526, 2529.
- 4g. Enantiomers, separation
- 1491 Allenmark, S. and Andersson, S.: Chromatographic resolution of chiral compounds by means of immobilized proteins. *Mol. Interact. Biosep.*, (1993) 179-187; C.A., 121 (1994) 249855a - a review with many refs.

- 1492 Andersson, L.I., Ekberg, B. and Mosbach, K.: Bioseparation and catalysis in molecularly imprinted polymers. *Mol. Interact. Biosep.*, (1993) 383-394; C.A., 121 (1994) 249865d - a review with no refs.
- 1493 Aubry, A.-F., Markoglou, N., Descamps, V., Wainer, I.W. and Félix, G.: Evaluation of a chiral stationary phase based on mixed immobilized proteins. *J. Chromatogr. A*, 685 (1994) 1-6.
- 1494 Camacho-Torralba, P.L. and Vigh, G.: High-performance chiral displacement chromatographic separations in the normal-phase mode. III. Separation of the enantiomers of 5-vinylpyrrolidin-2-one using the Chiralcel-OD stationary phase. *J. Chromatogr. A*, 691 (1995) 213-216.
- 1495 Hu, R., Takeuchi, T., Jin, J.-Y. and Miwa, T.: Separation of enantiomers by microcolumn liquid chromatography with methylated β -cyclodextrin as mobile phase additive. *Anal. Chim. Acta*, 295 (1994) 173-179.
- 1496 Hyun, M.H. and Min, C.S.: A new chiral stationary phase bearing both π -acidic and π -basic sites derived from (S)-tyrosine for the liquid chromatographic resolution of racemates. *Chem. Lett.*, (1994) 1463-1466; C.A., 121 (1994) 229986r.
- 1497 Hyun, M.H., Ryoo, J.-J., Cho, Y.J. and Jin, J.S.: Unusual examples of the liquid chromatographic resolution of racemates. Resolution of π -donor analytes on a π -donor chiral stationary phase. *J. Chromatogr. A*, 692 (1995) 91-96.
- 1498 Lipkowitz, K.B. and Anderson, A.G.: Computational aspects in supramolecular chemistry: Chiral discrimination in chromatography. *NATO ASI Ser., Ser. C*, 426 (1994) 183-198; C.A., 122 (1995) 71070w.
- 1499 Loun, B. and Hage, D.S.: Chiral separation mechanisms in protein-based HPLC columns. 1. Thermodynamic studies of (R)- and (S)-warfarin binding to immobilized human serum albumin. *Anal. Chem.*, 66 (1994) 3814-3822.
- 1500 Mano, N., Oda, Y., Asakawa, N., Yoshida, Y., Sato, T. and Miwa, T.: Studies of ovomucoid-, avidin-, conalbumin- and flavoprotein-conjugated chiral stationary phases for separation of enantiomers by high-performance liquid chromatography. *J. Chromatogr. A*, 687 (1994) 223-232.
- 1501 Pullen, R.H., Brennan, J.J. and Patonay, G.: Chiral separation retention mechanisms in high-performance liquid chromatography using bare silica stationary phase and β -cyclodextrin as a mobile phase additive. *J. Chromatogr. A*, 691 (1995) 187-193.
- 1502 Quintero, G., Vo, M., Farkas, G. and Vigh, G.: Series of homologous displacers for preparative chiral displacement chromatographic separations on Cyclobond-II columns. *J. Chromatogr. A*, 693 (1995) 1-5.
- 1503 Sellergren, B. and Shea, K.J.: Origin of peak asymmetry and the effect of temperature on solute retention in enantiomer separations on imprinted chiral stationary phases. *J. Chromatogr. A*, 690 (1995) 29-39.
- 1504 Simek, Z. and Vespalet, R.: Interpretation of enantioselective activity of albumin used as the chiral selector in liquid chromatography and electrophoresis. *J. Chromatogr. A*, 685 (1994) 7-14.
- 1505 Tittelbach, V. and Gilpin, R.K.: Species dependency of the liquid chromatographic properties of silica-immobilized serum albumins. *Anal. Chem.*, 67 (1995) 44-47.
- 1506 Welch, C.J. and Perrin, S.R.: Improved chiral stationary phase for β -blocker enantioseparations. *J. Chromatogr. A*, 690 (1995) 218-225.
- 1507 Williams, K.L. and Stalcup, A.M.: Chromatography with cyclodextrin-based stationary phases. *Mol. Interact. Biosep.*, (1993) 189-202; C.A., 121 (1994) 249856b - a review with many refs.
- For additional information see C.A.:
 121 (1994) 244520c, 270805u, 270869t, 291695y, 301311m.
- See also 1377, 1384, 1391, 1395, 1417, 1453, 1545, 1610, 1611, 1623, 1630, 1726, 1737, 1738, 1739, 1746, 1753, 1766, 1773, 1776, 1785, 1788, 1800, 1811, 2086, 2149, 2173, 2267, 2269, 2276, 2281, 2282, 2291, 2297, 2299, 2302, 2303, 2305, 2306, 2315, 2337, 2344, 2348, 2349, 2354, 2403, 2433.
- 4h. Other special techniques*
- 1508 Chen, A. and Lunte, C.E.: Microdialysis sampling coupled on-line to fast microbore liquid chromatography. *J. Chromatogr. A*, 691 (1995) 29-35.
- 1509 Cui, Y. and Olesik, S.V.: Reversed-phase high-performance liquid chromatography using enhanced-fluidity mobile phases. *J. Chromatogr. A*, 691 (1995) 151-162.
- 1510 Goto, M., Imamura, T. and Hirose, T.: Axial dispersion in liquid magnetically stabilized fluidized beds. *J. Chromatogr. A*, 690 (1995) 1-8.
- 1511 Guerrier, L., Flayeur, I., Boschetti, E. and Radosevich, M.B.: Specific sorbent to remove solvent-detergent mixtures from virus-inactivated biological fluids. *J. Chromatogr. B*, 664 (1995) 119-125.
- 1512 Jungbauer, A., Lettner, H.P., Guerrier, L. and Boschetti, E.: Chemical sanitization in process chromatography. Part 2: *In situ* treatment of packed columns and long-term stability of resins. *BioPharm (Eugene)*, 7 (1994) 37-42; C.A., 121 (1994) 225374s.
- 1513 Kitagawa, S. and Tsuda, T.: Effects of pH and organic solvent on chromatographic behavior in capillary electrochromatography. *J. Microcolumn Sep.*, 6 (1994) 91-96; C.A., 121 (1994) 148022w.
- 1514 Mayer, M.L. and Poole, C.F.: Identification of the procedural steps that affect recovery of semi-volatile compounds by solid-phase extraction using cartridge and particle-loaded membrane (disk) devices. *Anal. Chim. Acta*, 294 (1994) 113-126.
- 1515 Oosterkamp, A.J., Irth, H., Tjaden, U.R. and van der Greef, J.: On-line coupling of liquid chromatography to biochemical assays based on fluorescent-labeled ligands. *Anal. Chem.*, 66 (1994) 4295-4301.
- 1516 Ricker, R.D., Sandoval, L.A., Justice, J.D. and Geiser, F.O.: Multivariate visualization in the size-exclusion chromatography and pattern recognition of biological samples. *J. Chromatogr. A*, 691 (1995) 67-79.
- 1517 Roessner, D. and Kulicke, W.-M.: On-line coupling of flow field-flow fractionation and multi-angle laser light scattering. *J. Chromatogr. A*, 687 (1994) 249-258.
- 1518 Strobel, G.J.: (Perfusion chromatography). *GIT Spez. Chromatogr.*, 14 (1994) 25-28; C.A., 122 (1995) 22802c.

- 1519 Van Buel, M.J., van der Wielen, L.A.M., Meester, R., Verpoorte, R. and Luyben, K.C.A.M.: Modeling of centrifugal partition chromatography. *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 6th European Congress on Biotechnology, 1993, Pt. 1) (1994) 515-519; C.A., 121 (1994) 225370n.
- 1520 Wenzel, U. and Deron, S.: Design parameters of a decontamination process by solvent extraction chromatography. *Solvent Extr. Ion Exch.*, 12 (1994) 789-801; C.A., 121 (1994) 266078s.
- 1521 Zhang, J. and Fang, Q.: Application of high speed counter-current chromatography to the separation of stilbene derivatives from the roots of *Lindera reflexa*. *Planta Med.*, 60 (1994) 190-191; C.A., 121 (1994) 65385r.

For additional information see C.A.:

121 (1994) 244386p, 270705m, 270805u.

See also 1308, 1338, 1351, 1495, 1544, 1549, 1610, 1668, 1873, 1880, 1996, 2116, 2134, 2141, 2452, 2489.

5. HYDROCARBONS AND HALOGEN DERIVATIVES

5a. Aliphatic hydrocarbons

- 1522 Thelin, A., Peterson, E., Hutson, J.L., McCarthy, A.D., Ericsson, J. and Dallner, G.: Effect of squalostatin 1 on the biosynthesis of the mevalonate pathway lipids. *Biochim. Biophys. Acta*, 1215 (1994) 245-249.

See also 1337.

5b. Cyclic hydrocarbons, fullerenes

- 1523 Diack, M. and Quiocho, G.: Analysis and purification of the fullerenes by liquid chromatography. *Quím. Anal. (Barcelona)*, 12 (1993) 75-82; C.A., 121 (1994) 291379y - a review with 39 refs.
- 1524 Fladung, N.C.: Optimization of automated solid-phase extraction for quantitation of polycyclic aromatic hydrocarbons in aqueous media by high-performance liquid chromatography-UV detection. *J. Chromatogr. A*, 692 (1995) 21-26.

- 1525 Garcia, M.A. and Marina, M.L.: Study of the k' or $\log k' \cdot \log P_{ow}$ correlation for a group of benzene derivatives and polycyclic aromatic hydrocarbons in micellar liquid chromatography with a C_8 column. *J. Chromatogr. A*, 687 (1994) 233-239.

- 1526 Heymann, D., Chibante, L.P.F. and Smalley, R.E.: Determination of C_{60} and C_{70} fullerenes in geologic materials by high-performance liquid chromatography. *J. Chromatogr. A*, 689 (1995) 157-163.

- 1527 Inukai, Y., Attalla, M.I., Pang, I.S.K. and Wilson, M.A.: Separation of fullerenes by chromatography on coal. *Fuel*, 74 (1995) 83-87; C.A., 122 (1995) 59888m.

- 1528 Kayali, M.N., Rubio-Barroso, S. and Polo-Diez, L.M.: Determination of PAHs in particulate air by micellar liquid chromatography. *J. Liq. Chromatogr.*, 17 (1994) 3623-3640.

- 1529 Lai, F. and White, L.: Automated precolumn concentration and high-performance liquid chromatographic analysis of polynuclear aromatic hydrocarbons in water using a single pump and a single valve. *J. Chromatogr. A*, 692 (1995) 11-20.

- 1530 Lubda, D., Mueller, M., Battermann, G. and Mayer, B.: (A stationary phase HPLC-separation of 18 polycyclic aromatic hydrocarbons (PAH's)). *GIT Fachz. Lab.*, 38 (1994) 12-15; C.A., 121 (1994) 307772j.

- 1531 McKinney, D.E., Clifford, D.J., Hou, L., Bogdan, M.R. and Hatcher, P.G.: High performance liquid chromatography of coal liquefaction process streams using normal-phase separation with diode array detection. *Prepr. Pap.-Am. Chem. Soc., Div. Fuel Chem.*, 39 (1994) 835-839; C.A., 121 (1994) 259415w.

- 1532 Niederländer, H.A.G., Nuijens, M.J., Dozy, E.M., Gooijer, C. and Velthorst, N.H.: Dioxetane chemiluminescence detection in liquid chromatography based on photosensitized on-line generation of singlet molecular oxygen; a thorough examination of experimental parameters and application to polychlorinated biphenyls. *Anal. Chim. Acta*, 297 (1994) 349-368.

- 1533 Rodríguez Delgado, M.A., Sánchez, M.J., González, V. and García Montelongo, F.: Influence of alcoholic modifiers on the selectivity of the separation of a group of polycyclic aromatic hydrocarbons by micellar liquid chromatography. *Anal. Chim. Acta*, 298 (1994) 423-430.

- 1534 Selegue, J.P., Shaw, J.P., Guarr, T.F. and Meier, M.S.: Purification and characterization of the larger fullerenes: New aspects of C_{76} , C_{78} and C_{84} . *Proc.-Electrochem. Soc.*, 94-24 (1994) 1274-1291; C.A., 122 (1995) 22362j.

- 1535 Sim, P.G., Quilliam, M.A., Leblanc, M.D. and Karunanthi, S.: Development and application of isotope dilution internal standard solutions for the chromatographic/mass spectrometric determination of polycyclic aromatic compounds in complex mixtures. *Polycyclic Aromat. Compd.*, 3 (1993) 55-63; C.A., 121 (1994) 270821w.

- 1536 Story, J.N.: Preparative separation and characterization of coal liquid aromatics. *Prepr. Pap.-Am. Chem. Soc., Div. Fuel Chem.*, 39 (1994) 772-776; C.A., 121 (1994) 283358a.

- 1537 Visser, T., Vredenbregt, M.J. and de Jong, A.P.J.M.: Confirmational analysis of polycyclic aromatic hydrocarbons in soil extracts by cryotrapping gas chromatography-Fourier transform infrared spectrometry. *J. Chromatogr. A*, 687 (1994) 303-313.

- 1538 Wu, Y., Sun, Y., Gu, Z., Zhou, X., Xiong, Y., Sun, B. and Jin, Z.: A combined recrystallization and preparative liquid chromatographic method for the isolation of pure C_{70} fullerene. *Carbon*, 32 (1994) 1180-1182; C.A., 121 (1994) 291198p.

For additional information see C.A.:

121 (1994) 220664b, 220693k, 233989m, 258979w.

See also 1418, 1427, 1435.

5c. Halogen derivatives

- 1539 Johansen, H.R., Becher, G. and Greibrokk, T.: Determination of planar PCBs by combining on-line SFE-HPLC and GC-ECD or GC/MS. *Anal. Chem.*, 66 (1994) 4068-4073.

- 1540 Picó, Y., Redondo, M.J., Font, G. and Mañes, J.: Solid-phase extraction on C_{18} in the trace determination of selected polychlorinated biphenyls in milk. *J. Chromatogr. A*, 693 (1995) 339-346.

For additional information see C.A.:

121 (1994) 259019v.

See also 1381, 2220.

5d. *Complex hydrocarbon mixtures (incl. analysis of tars, bitumens and mineral oils)*

- 1541 Acevedo, S., Escobar, G., Ranaudo, M.A. and Gutierrez, L.B.: Discotic shape of asphaltenes obtained from GPC (gel permeation chromatography) data. *Fuel*, 73 (1994) 1807-1809; C.A., 121 (1994) 259312k.
 1542 Andersen, S.I.: Concentration effects in HPLC-SEC analysis of petroleum asphaltenes. *J. Liq. Chromatogr.*, 17 (1994) 4065-4079.
 1543 Garrick, N.W.: Use of gel-permeation chromatography in predicting properties of asphalt. *J. Mater. Civ. Eng.*, 6 (1994) 376-389; C.A., 121 (1994) 262029d.
 1544 Saini, A.K. and Song, C.: Two-dimensional HPLC and GC-MS of oils from catalytic coal liquefaction. *Prepr. Pap.-Am. Chem. Soc., Div. Fuel Chem.*, 39 (1994) 796-800; C.A., 121 (1994) 259410r.

6. ALCOHOLS

- 1545 Kim, J.-H., Nishida, Y., Ohrui, H. and Meguro, H.: Simple and highly sensitive high-performance liquid chromatographic method for separating enantiomeric diacylglycerols by direct derivatization with a fluorescent chiral agent, (S)-(+)-2-tert.-butyl-2-methyl-1,3-benzodioxole-4-carboxylic acid. *J. Chromatogr. A*, 693 (1995) 241-249.
 1546 Rollag, J., Liu, T. and Hage, D.S.: Determination of 3-methoxy-4-hydroxyphenylethylene glycol in urine using reversed-phase liquid chromatography with column switching and electrochemical detection. *J. Chromatogr. B*, 663 (1995) 193-200.

See also 1381, 1514, 1565, 1569, 1570, 1606, 2254.

7. PHENOLS

- 1547 Leal, E.R., Rodriguez-Vazquez, R. and Galindo, T.: Separation of phenolic compounds from sugarcane bagasse pith and their determination by HPLC. *J. Wood Chem. Technol.*, 14 (1994) 369-382; C.A., 121 (1994) 207794z.
 1548 Liu, Y., Lopez-Avila, V., Alcaraz, M. and Jones, T.L.: Centrifugal partition chromatographic extraction of phenols and organochlorine pesticides from water sample. *Anal. Chem.*, 66 (1994) 4483-4489.
 1549 Yang, S. and Khaledi, M.G.: Stationary phase effects on retention behavior of phenols in micellar liquid chromatography: Perfluorooctane vs. C₁₈. *Anal. Chim. Acta*, 294 (1994) 135-143.

See also 1367, 1381, 1418, 1525.

8. SUBSTANCES CONTAINING HETEROCYCLIC OXYGEN

8a. Flavonoids

- 1550 Costa, S.S., Jossang, A., N'Bodo, B., Souza, M.L.M. and Moraes, V.L.G.: Patuletin acetylhamnosides from *Kalanchoe brasiliensis* as inhibitors of human lymphocyte proliferative activity. *J. Natural Prod.*, 57 (1994) 1503-1510.
 1551 Das, D.K.: Naturally occurring flavonoids: structure, chemistry, and high-performance liquid chromatography methods for separation and characterization. *Methods Enzymol.*, 234(Oxygen Radicals in Biological Systems, Pt. D) (1994) 410-420 - a review with 45 refs.
 1552 Franke, A.A. and Custer, L.J.: High-performance liquid chromatographic assay of isoflavonoids and coumestrol from human urine. *J. Chromatogr. B*, 662 (1994) 47-60.
 1553 Häberlein, H. and Tschiessch, K.-P.: 2,5-Dihydroxy-7-methoxy-6,8-dimethylflavan-3-one, a new flavonoid from *Leptospermum scoparium*: *in vitro* affinity to the benzodiazepine binding site of the GABA_A receptor-chloride channel complex. *Pharmazie*, 49 (1994) 860.
 1554 Schulz, H.-U., Schürer, M., Krumbiegel, G., Wächter, W., Weyhenmeyer, R. and Seidel, G.: Untersuchungen zum Freisetzungsvorverhalten und zur Bioläquivalenz von Silymarin-Präparaten. *Arzneim.-Forsch.*, 45 (1995) 61-64.

For additional information see C.A.:

121 (1994) 213096q, 213107u, 308460t.

See also 2233.

8b. Aflatoxins and other mycotoxins

- 1555 Gelosa, M. and Buzzetti, I.: (Chromatographic techniques for aflatoxin determination in milk). *Ind. Aliment. (Pinerolo)*, 33 (1994) 315-317; C.A., 121 (1994) 229127m.
 1556 Holcomb, M., Thompson, H.C., Jr., Lipe, G. and Hankins, L.J.: HPLC with electrochemical and fluorescence detection of the OPA/2-methyl-2-propanethiol derivative of fumonisin B₁. *J. Liq. Chromatogr.*, 17 (1994) 4121-4129.
 1557 Shephard, G.S., Thiel, P.G. and Sydenham, E.W.: Liquid chromatographic determination of the mycotoxin fumonisin B₂ in physiological samples. *J. Chromatogr. A*, 692 (1995) 39-43.

See also 2458.

8c. Other compounds with heterocyclic oxygen (incl. tannins)

- 1558 Steinert, J., Khalaf, H. and Rimpler, M.: HPLC separation and determination of naphthol[2,3-b]furan-4,9-diones and related compounds in extracts of *Tabebuia avellanedae* (Bignoniaceae). *J. Chromatogr. A*, 693 (1995) 281-287.

See also 1373, 1514, 2415, 2451.

9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

- 1559 Baj, S. and Dawid, M.: Correlation between the chemical structures of dialkyl peroxides and their retention in reversed-phase high-performance liquid chromatography. *J. Liq. Chromatogr.*, 17 (1994) 3933-3949.
- 1560 Nakashima, K., Hidaka, Y., Yoshida, T., Kuroda, N. and Akiyama, S.: High-performance liquid chromatographic determination of short-chain aliphatic aldehydes using 4-(N,N-dimethylaminosulphonyl)-7-hydrazino-2,1,3-benzoxadiazole as a fluorescence reagent. *J. Chromatogr. B*, 661 (1994) 205-210.
- 1561 Wei, D., Sun, A., Jing, X. and Geng, A.: (Analysis of the reaction solution of bromination and methoxylation of *p*-hydroxybenzaldehyde by high performance liquid chromatography). *Sepu*, 12 (1994) 371-372; C.A., 122 (1995) 22858a.
- 1562 Wen, Y.-H., Lin, S.-J., Wu, S.-S. and Wu, H.-L.: Trace analysis of acetaldehyde as fluorogenic derivative by high performance liquid chromatography. *Gaoxiong Yixue Kexue Zazhi*, 10 (1994) 295-300; C.A., 121 (1994) 275687s.
- 1563 Wu, R. and White, L.B.: Automated procedure for determination of trace amounts of aldehydes in drinking water. *J. Chromatogr. A*, 692 (1995) 1-9.

For additional information see C.A.:
121 (1994) 308489.

See also 1373, 1381, 1418, 1514, 1522, 1658, 1885, 2002, 2361, 2370, 2455, 2486.

10. CARBOHYDRATES

10a. Mono and oligosaccharides. Structural studies

- 1564 Abelian, V.H., Yamamoto, T. and Afrikian, E.G.: (On the action mechanism of cyclomaltodextrin glucanotransferases from alkalophilic, thermophilic and mesophilic microorganisms). *Biokhimiya (Moscow)*, 59 (1994) 1122-1129.
- 1565 Adachi, S., Panintrarux, C., Araki, Y., Kimura, Y. and Matsuno, R.: Separation of alkyl β -D-glucosides and *n*-alcohols by using a porous trimethylolpropane trimethacrylate homopolymer gel. *Biosci., Biotechnol., Biochem.*, 58 (1994) 1558-1563; C.A., 121 (1994) 250082c.
- 1566 Andersen, D.C., Goochee, C.F., Cooper, G., Weitzhandler, M.: Monosaccharide and oligosaccharide analysis of isoelectric focusing-separated and blotted granulocyte colony-stimulating factor glycoforms using high-pH anion-exchange chromatography with pulsed amperometric detection. *Glycobiology*, 4 (1994) 459-467; C.A., 121 (1994) 225404b.
- 1567 Corradini, C., Corradini, D., Huber, C.G. and Bonn, G.K.: Synthesis of a polymeric-based stationary phase for carbohydrate separation by high-pH anion-exchange chromatography with pulsed amperometric detection. *J. Chromatogr. A*, 685 (1994) 213-220.
- 1568 Corradini, C., Cristalli, A. and Corradini, D.: Determination of carbohydrates in fruit-based beverages by high-performance anion-exchange chromatography with pulsed amperometric detection (HPAEC-PAD). *Ital. J. Food Sci.*, 6 (1994) 103-111; C.A., 121 (1994) 254042n.

- 1569 Dennis, M.J., Massey, R.C. and Bigwood, T.: Investigation of sorbitol content in wines and an assessment of its authenticity using stable isotope ratio mass spectrometry. *Analyst (Cambridge)*, 119 (1994) 2057-2060.
- 1570 Dona, A.-M. and Verchere, J.-F.: High-performance liquid chromatography of alditoins with indirect photometric detection. *J. Chromatogr. A*, 689 (1995) 13-21.
- 1571 Herbreteau, B., Villette, V., Lafosse, M. and Dreux, M.: Analysis of oligosaccharides using aminobonded silica gel and ternary eluent with evaporative scattering detection. *Fresenius J. Anal. Chem.*, 351 (1995) 246-250.
- 1572 Lehtonen, P. and Hurme, R.: Liquid chromatographic determination of sugars in beer by evaporative light scattering detection. *J. Inst. Brew.*, 100 (1994) 343-346; C.A., 122 (1995) 8303j.
- 1573 Matsui, T., Mizuochi, T., Titani, K., Okinaga, T., Hoshi, M., Bousfield, G.R., Sugino, H. and Ward, D.N.: Structural analysis of N-linked oligosaccharides of equine chorionic gonadotropin and lutropin β -subunits. *Biochemistry*, 33 (1994) 14039-14048.
- 1574 Mattsson, P., Battchikova, N., Sippola, K. and Korpela, T.: The role of histidine residues in the catalytic act of cyclomaltodextrin glucanotransferase from *Bacillus circulans* var. *alkalophilus*. *Biochim. Biophys. Acta*, 1247 (1995) 97-103.
- 1575 Nishida, Y., Bai, C., Ohru, H. and Meguro, H.: A highly sensitive method to identify the DL-configurations of monosaccharides based on (-)-TBMB carboxylic acid and HPLC. *J. Carbohydr. Chem.*, 13 (1994) 1003-1008; C.A., 121 (1994) 250078f.
- 1576 Pitkanen, E. and Kanninen, T.: Determination of mannose and fructose in human plasma using deuterium labelling and gas chromatography/mass spectrometry. *Biol. Mass Spectrom.*, 23 (1994) 590-595; C.A., 121 (1994) 225794d.
- 1577 Ruan, S. and Lloyd, K.O.: Analysis of glycosphingolipid-derived oligosaccharides by high pH anion exchange chromatography. *Glycoconjugate J.*, 11 (1994) 249-256; C.A., 122 (1995) 4614p.
- 1578 Senn, H., Lendenmann, U., Snozzi, M., Hamer, G. and Egli, T.: The growth of *Escherichia coli* in glucose-limited chemostat cultures: a re-examination of the kinetics. *Biochim. Biophys. Acta*, 1201 (1994) 424-436.
- 1579 Tsuji, T., Yamamoto, K. and Osawa, T.: Affinity chromatography of oligosaccharides and glycopeptides with immobilized lectins. *Mol. Interact. Biosep.*, (1993) 113-126; C.A., 121 (1994) 249852x - a review with many refs.
- 1580 Zuercher, U., Muehlemann, C. and Amado, R.: (Determination of the neutral sugar constituents of dietary fiber as *N*-*p*-methoxyphenyl-glycosylamines by HPLC with automated pre-column derivatization). *Mitt. Geb. Lebensmittelunters. Hyg.*, 85 (1994) 31-45; C.A., 121 (1994) 253991j.

For additional information see C.A.:
121 (1994) 299329c.

See also 1420, 1432, 1590, 1592, 1606, 1981, 2484.

10b. Polysaccharides, mucopolysaccharides, lipopolysaccharides

- 1581 Altmann, F.: (Analysis of glycoprotein N-glycans in the form of fluorescent pyridylamino-oligosaccharides by 2D-HPLC. An example of glycoproteins of insect cells). *Lebensm.-Biotechnol.*, 11 (1994) 63-66; C.A., 121 (1994) 250047v.
- 1582 Duflot, P.: Preparation of hypocaloric soluble glucose polymers. *Eur. Pat. Appl.* EP 593,368 (Cl. C08B37/00), 20 Apr. 1994, FR Appl. 92/12,447, 16 Oct. 1992; 17 p.; C.A., 121 (1994) 303414w.
- 1583 Hermann, K., Frank, G. and Ring, J.: Contamination of heparin by histamine: measurement and characterization by high-performance liquid chromatography and radioimmunoassay. *Allergy (Copenhagen)*, 49 (1994) 569-572; C.A., 121 (1994) 286698x.
- 1584 Huber, A. and Praznik, W.: Characterization of branching-characteristics of starch-glucans by means of combined application of complexation, enzymatically catalyzed modification, and liquid-chromatography. *J. Liq. Chromatogr.*, 17 (1994) 4031-4056.
- 1585 Kennedy, J.F., Melo, E.H.M., Lloyd, L.L., Warner, F.P. and Jumel, K.: Gel permeation and gel filtration chromatography in the analysis of cellulose derivatives. In: Kennedy, J.F., Phillips, G.O. and Williams, P.A. (Editors), *Ligno-Cellul.* 1990, Horwood, Chichester, 1992, pp. 529-539; C.A., 121 (1994) 258158c.
- 1586 Nowakowski, R., Cardot, P.J.P., Coleman, A.W., Billard, E. and Guiochon, G.: Elution mechanisms of cyclodextrins in reversed phase chromatography. *Anal. Chem.*, 67 (1995) 259-266.
- 1587 Ronkko, R., Pennanen, T., Smolander, A., Kitunen, V., Kortearmaa, H. and Haahrtela, K.: Quantification of *Frankia* strains and other root-associated bacteria in pure cultures and in the rhizosphere of axenic seedlings by high-performance liquid chromatography-based muramic acid assay. *Appl. Environ. Microbiol.*, 60 (1994) 3672-3678; C.A., 121 (1994) 250081b.
- 1588 Shah, G. and Dubin, P.L.: Adsorptive interaction of Ficoll standards with porous glass size-exclusion chromatography columns. *J. Chromatogr. A*, 693 (1995) 197-203.
- 1589 Shimada, E. and Nakamura, K.T.: Determination of Stokes radii and molecular masses of sodium hyaluronates by Sephadryl gel chromatography. *J. Chromatogr. A*, 685 (1994) 172-177.
- 1590 Thomas, J. and Mort, A.J.: Continuous postcolumn detection of underivatized polysaccharides in high-performance liquid chromatography by reaction with permanganate. *Anal. Biochem.*, 223 (1994) 99-104.
- 1591 Vilim, V. and Fosang, A.J.: Proteoglycans isolated from dissociative extracts of differently aged human articular cartilage: characterization of naturally occurring hyaluronan-binding fragments of aggrecan. *Biochem. J.*, 304 (1994) 887-894.

For additional information see C.A.:
121 (1994) 212862z, 213081f.

10c. Glycoproteins and their constituents

- 1592 Almeida, I.C., Ferguson, M.A.J., Schenkman, S. and Travassos, L.R.: Lytic anti- α -galactosyl antibodies from patients with chronic Chagas disease recognize novel O-linked oligosaccharides on mucin-like glycosylphosphatidylinositol-anchored glycoproteins of *Trypanosoma cruzi*. *Biochem. J.*, 304 (1994) 793-802.

- 1593 Goso, Y. and Hotta, K.: Dot blot analysis of rat gastric mucin using histochemical staining methods. *Anal. Biochem.*, 223 (1994) 274-279.
- 1594 Gulino, D., Martinez, P., Delachanal, E., Concord, E., Duperray, A., Alemany, M. and Marguerie, G.: Expression and purification of a soluble functional form of the platelet α IIb β 3 integrin. *Eur. J. Biochem.*, 227 (1995) 108-115.
- 1595 Ivanov, A.E., Zhigis, L.S., Rapoport, E.M., Lisutina, O.E. and Zubov, V.P.: Characterization of weak hydrophobic composite sorbents and their application to the isolation of bacterial lectin. *J. Chromatogr. B*, 664 (1995) 219-223.
- 1596 Matsui, T., Ozeki, Y., Suzuki, M., Hino, A. and Titani, K.: Purification and characterization of two Ca^{2+} -dependent lectins from coelomic plasma of sea cucumber, *Stichopus japonicus*. *J. Biochem. (Tokyo)*, 116 (1994) 1127-1133.
- 1597 Nikitina, V.E., Alenkina, S.A., Italyanskaya, Yu.V. and Ponomareva, E.G.: (Purification and comparison of lectins from the cell surface of active and inactive in hemagglutination azospirilla). *Biokhimiya (Moscow)*, 59 (1994) 656-662.
- 1598 Saito, T., Nakamura, T., Kabuki, T., Kitazawa, H. and Itoh, T.: Fractionation of glycopeptides from bovine κ -casein and hen ovomucin via lysozyme affinity chromatography. *Anim. Sci. Technol.*, 65 (1994) 624-630; C.A., 121 (1994) 250075c.
- 1599 Smith, K.D., Elliott, M.A., Elliott, H.G., McLaughlin, C.M., Wightman, P. and Wood, G.C.: Heterogeneity of α_1 -acid glycoprotein in rheumatoid arthritis. *J. Chromatogr. B*, 661 (1994) 7-14.
- 1600 Van de Lest, C.H.A., Versteeg, E.M.M., Veerkamp, J.H. and van Kuppevelt, T.H.: A spectrophotometric method for the determination of heparan sulfate. *Biochim. Biophys. Acta*, 1201 (1994) 305-311.
- 1601 Zenteno, E., Ortega, M., Qin, Z., Montrouet, J., Debray, H.: Fast purification of *Phaseolus vulgaris* isolectins. *Prep. Biochem.*, 24 (1994) 175-183; C.A., 121 (1994) 275704v.

For additional information see C.A.:

121 (1994) 222989k, 276046u, 296287b.

See also 1339, 1340, 1579, 1581, 1875, 2048.

11. ORGANIC ACIDS AND LIPIDS

11a. Organic acids and simple esters

- 1602 Adlof, R.O. and Ernken, E.A.: Silver ion high-performance liquid chromatographic separation of fatty acid methyl esters labelled with deuterium atoms on the double bonds. *J. Chromatogr. A*, 685 (1994) 178-181.
- 1603 Bernwieser, I., Paetzold, R., Galensa, R. and Sontag, G.: (HPLC with coulometric electrode array detection. Determination of 1-O-trans-p-coumaroylglycerol in sorghum, maize, and beer). *Z. Lebensm.-Unters. Forsch.*, 198 (1994) 40-43; C.A., 121 (1994) 299391s.
- 1604 Cano, M.P., Torija, E., Marin, M.A. and Camara, M.: A simple ion-exchange chromatographic determination of non-volatile organic acids in some Spanish exotic fruits. *Z. Lebensm.-Unters. Forsch.*, 199 (1994) 214-218; C.A., 122 (1995) 8296j.

- 1605 Chase, G.W., Jr., Akoh, C.C. and Eitenmiller, R.R.: Evaporative light-scattering mass detection for high-performance liquid chromatographic analysis of sucrose polyester blends in cooking oils. *J. Am. Oil Chem. Soc.*, 71 (1994) 1273-1276.
- 1606 Chong, R.W. and Moore, B.J.: Determination of citrate, inositol and gentisic acid in a pharmaceutical diagnostic formulation by ion-modulated partition chromatography. *J. Chromatogr. A*, 692 (1995) 203-205.
- 1607 Czajkowska, T., Hrabovsky, I., Buszewski, B., Gilpin, R.K. and Jaroniec, M.: Comparison of the retention of organic acids on alkyl and alkylamide chemically bonded phases. *J. Chromatogr. A*, 691 (1995) 217-224.
- 1608 Daood, H.G., Biacs, P.A., Dakar, M.A. and Hajdu, F.: Ion-pair chromatography and photodiode-array detection of vitamin C and organic acids. *J. Chromatogr. Sci.*, 32 (1994) 481-487.
- 1609 De Swaeef, S.I., de Beer, J.O. and Vlietinck, A.J.: Quantitative determination of *p*-coumaric acid in *Echinacea purpurea* press juice and urgenin. A validated method. *J. Liq. Chromatogr.*, 17 (1994) 4169-4183.
- 1610 Denekamp, C., Mandelbaum, A., Weisz, A. and Ito, Y.: Preparative separation of stereoisomeric 1-methyl-4-methoxymethylclohexanecarboxylic acids by pH-zone-refining counter-current chromatography. *J. Chromatogr. A*, 685 (1994) 253-257.
- 1611 Gubitz, G. and Mihellyes, S.: Resolution of 2-hydroxydicarboxylic acid enantiomers by ligand exchange chromatography on chemically bonded chiral phases. *J. High Resolut. Chromatogr.*, 17 (1994) 733-734.
- 1612 Hagen, S.R. and Thompson, J.D.: Analysis of mycolic acids by high-performance liquid chromatography and fluorimetric detection. Implications for the identification of mycobacteria in clinical samples. *J. Chromatogr. A*, 692 (1995) 167-172.
- 1613 Iwata, T., Hirose, T., Nakamura, M. and Yamaguchi, M.: 4-(1-Methylphenanthro[9,10-d]imidazol-2-yl)-benzohydrazide as derivatization reagent for carboxylic acids in high-performance liquid chromatography with conventional and laser-induced fluorescence detection. *Analyst (Cambridge)*, 119 (1994) 1747-1751.
- 1614 Jackson, P.E.: Analysis of oxalate in Bayer liquors: a comparison of ion chromatography and capillary electrophoresis. *J. Chromatogr. A*, 693 (1995) 155-161.
- 1615 Lagoutte, D., Lombard, G., Nisseron, S., Papet, M.P. and Saint-Jalm, Y.: Determination of organic acids in cigarette smoke by high-performance liquid chromatography and capillary electrophoresis. *J. Chromatogr. A*, 684 (1994) 251-257.
- 1616 Lange, M. and Malyusz, M.: Fast method for the simultaneous determination of 2-oxo acids in biological fluids by high-performance liquid chromatography. *J. Chromatogr. B*, 662 (1994) 97-102.
- 1617 Lee, B.L., Ong, H.Y., Koh, D. and Ong, C.N.: High-performance liquid chromatographic method for determination of dehydroabietic and abietic acids, the skin sensitizers in bindi adhesive. *J. Chromatogr. A*, 685 (1994) 263-269.
- 1618 Lian, H.-Z., Mao, L. and Miao, J.: Determination of hexadecanoic and octadecanoic acids in stearin for industrial use by reversed-phase ion suppression high-performance liquid chromatography. *J. Liq. Chromatogr.*, 17 (1994) 4081-4086.
- 1619 MacMillan, D.K., Hill, E., Sala, A., Sigal, E., Shuman, T., Henson, P.M. and Murphy, R.C.: Eosinophil 15-lipoxygenase is a leukotriene A₄ synthase. *J. Biol. Chem.*, 269 (1994) 26663-26668.
- 1620 Nikolova-Damyanova, B., Christie, W.W. and Herslöf, B.: Silver ion high-performance liquid chromatography of esters of isomeric octadecenoic fatty acids with short-chain monounsaturated alcohols. *J. Chromatogr. A*, 693 (1995) 235-239.
- 1621 Notsumoto, S., Kobayashi, K., Hirauchi, K., Igimi, H. and Uchida, K.: (Determination of vanilmandelic acid in urine by high-performance liquid chromatography with ultraviolet detection). *Rinsho Kagaku (Nippon Rinsho Kagakkai)*, 23 (1994) 243-247; *C.A.*, 121 (1994) 272379g.
- 1622 O'Flaherty, J.T., Cordes, J.F., Lee, S.L., Samuel, M. and Thomas, M.J.: Chemical and biological characterization of oxo-eicosatetraenoic acids. *Biochim. Biophys. Acta*, 1201 (1994) 505-515.
- 1623 Oi, N., Kitahara, H., Aoki, F. and Kisu, N.: Direct separation of carboxylic acid enantiomers by high-performance liquid chromatography with amide and urea derivatives bonded to silica gel as chiral stationary phases. *J. Chromatogr. A*, 689 (1995) 195-201.
- 1624 Pathy, M., Király, I. and Sziráki, I.: Separation of dihydroxybenzoates, indicators of *in vivo* hydroxyl free radical formation, in the presence of transmitter amines and some metabolites in rodent brain, using high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 664 (1995) 247-252.
- 1625 Pourfarzam, M., Schaefer, J., Turnbull, D.M. and Bartlett, K.: Analysis of fatty acid oxidation intermediates in cultured fibroblasts to detect mitochondrial oxidation disorders. *Clin. Chem. (Washington)*, 40 (1994) 2267-2275.
- 1626 Powell, W.S., Gravelle, F. and Gravel, S.: Phorbol myristate acetate stimulates the formation of 5-oxo-6,8,11,14-eicosatetraenoic acid by human neutrophils by activating NADPH oxidase. *J. Biol. Chem.*, 269 (1994) 25373-25380.
- 1627 Reid, R.H.P.: Studies on the retention behaviour of a group of organic anions of biochemical interest on quaternary bonded silica columns equilibrated with a functionally coherent series of counterions. Use of 2-(N-morpholino)ethanesulphonate as a counterion and N-tris(hydroxymethyl)methyl-3-aminopropane-sulphonate as an eluent. *J. Chromatogr. A*, 684 (1994) 221-234.
- 1628 Reynaud, D., Demin, P. and Pace-Asciak, C.R.: Hepoxilin A₃ formation in the rat pineal gland selectively utilizes (12S)-hydroperoxyeicosatetraenoic acid (HPETE), but not (12R)-HPETE. *J. Biol. Chem.*, 269 (1994) 23976-23980.
- 1629 Schnurr, K., Kühn, H., Rapoport, S.M. and Schewe, T.: 3,5-Di-t-butyl-4-hydroxytoluene (BHT) and probucol stimulate selectively the reaction of mammalian 15-lipoxygenase with biomembranes. *Biochim. Biophys. Acta*, 1254 (1995) 66-72.
- 1630 Takagi, T.: Resolution of vic-dihydroxy acid diastereomers to four enantiomers by high-performance liquid chromatography. *Am. Oil Chem. Soc.*, 71 (1994) 547-548; *C.A.*, 121 (1994) 169294b.
- 1631 Toyoshima, S., Saido, H., Watanabe, F., Miyatake, K. and Nakano, Y.: Assay for urinary methylmalonic acid by high-pressure liquid chromatography. *Biosci. Biotechnol. Biochem.*, 58 (1994) 1882-1883; *C.A.*, 121 (1994) 296320g.
- 1632 Ueda, N., Yamamoto, K., Yamamoto, S., Tokunaga, T., Shirakawa, E., Shinkai, H., Ogawa, M., Sato, T., Kudo, I., Inoue, K., Takizawa, H., Nagano, T. et al.: Lipoxygenase-catalyzed oxygenation of arachidonylethanolamide, a cannabinoid receptor agonist. *Biochim. Biophys. Acta*, 1254 (1995) 127-134.

- 1633 Weimar, A. and Stuurman, H.W.: (HPLC as analysis method for quality control of food. Determination of organic acids and the preservatives benzoic and sorbic acid in beverages and other foods). *GIT Fachz. Lab.*, 37 (1993) 652-654; C.A., 121 (1994) 253981f.
- 1634 Yamane, M., Abe, A. and Nakajima, M.: High-performance liquid chromatography-thermospray mass spectrometry of ω -hydroxy polyunsaturated fatty acids from rat brain homogenate. *J. Chromatogr. B*, 662 (1994) 91-96.
- 1635 Yurawecz, M.P., Hood, J.K., Roach, J.A.G., Mossoba, M.M., Daniels, D.H., Ku, Y., Pariza, M.W. and Chin, S.F.: Conversion of allylic hydroxy oleate to conjugated linoleic acid and methoxy oleate by acid-catalyzed methylation procedures. *J. Am. Oil Chem. Soc.*, 71 (1994) 1149-1155.
- For additional information see C.A.:
 121 (1994) 230483f, 253892c;
 122 (1995) 4610j.
- See also 1373, 1381, 1442, 1504, 1647, 1724, 2012, 2232, 2280.
- 11b. *Prostaglandins*
- 1636 Hardcastle, J.E., He, M., Begum, B. and Vermillion-Salsbury, R.: Use of secondary chemical equilibria in liquid chromatography to determine dissociation constants of leukotriene B₄ and prostaglandin B₂. *J. Chromatogr. A*, 691 (1995) 225-229.
- 1637 Lloyd-Evans, P., Barrow, S.E., Hill, D.J., Bowden, L.A., Rainger, G.E., Knight, J. and Rowley, A.F.: Eicosanoid generation and effects on the aggregation of thrombocytes from the rainbow trout, *Oncorhynchus mykiss*. *Biochim. Biophys. Acta*, 1215 (1994) 291-299.
- 1638 Rosenfeld, J.M. and Fang, X.: Simultaneous sorption and analytical derivatization on a polystyrene-divinylbenzene polymer. Preparation of chromophoric and fluorophoric derivatives of the prostaglandins. *J. Chromatogr. A*, 691 (1995) 231-237.
- See also 1993.
- 11c. *Lipids and their constituents*
- 1639 Bartle, K.D. and Clifford, T.A.: Supercritical fluid extraction and chromatography of lipids and related compounds. *Adv. Appl. Lipid Res.*, 1 (1992) 217-264; C.A., 121 (1994) 249949j - a review with 141 refs.
- 1640 Blank, M.L. and Snyder, F.L.: Chromatographic analysis of ether-linked glycerolipids, including platelet-activating factor and related cell mediators. *Chromatogr. Sci. Ser.*, 65(Lipid Chromatographic Analysis) (1994) 291-316; C.A., 121 (1994) 24990w - a review with 118 refs.
- 1641 Borgeat, P., Picard, S., Braquet, P., Allen, M. and Shushan, B.: LC-MS-MS with ion spray: a promising approach for analysis of underivatized platelet activating factor (PAF). *J. Lipid Mediators Cell Signalling*, 10 (1994) 11-12; C.A., 121 (1994) 250140v.
- 1642 Bruch, J., Gono, E., Malkusch, W. and Rehn, B.: Improved method for quantitative analysis of lung surfactant phospholipids in bronchoalveolar lavage fluids by high-performance liquid chromatography. *Clin. Chim. Acta*, 231 (1994) 193-204.
- 1643 Brüttig, R. and Spiteller, G.: Produkte der Dimerisierung ungesättigter Fettsäuren XII: Die Dimerisierung von Konjuensäure. *Fat. Sci. Technol.*, 96 (1994) 445-451.
- 1644 Chang, M.-K., Conkerton, E.J., Chapital, D. and Wan, P.J.: Behavior of diglycerides and conjugated fatty acid triglycerides in reverse-phase chromatography. *J. Am. Oil Chem. Soc.*, 71 (1994) 1173-1175.
- 1645 Damiani, P., Santinelli, F., Simonetti, M.S., Castellini, M. and Rosi, M.: Comparison between two procedures for stereospecific analysis of triacylglycerols from vegetable oils - I: olive oil. *J. Am. Oil Chem. Soc.*, 71 (1994) 1157-1162.
- 1646 Hansen, S.L., Myers, M.R. and Artz, W.E.: Nonvolatile components produced in triolein during deep-fat frying. *J. Am. Oil Chem. Soc.*, 71 (1994) 1239-1243.
- 1647 Hayakawa, M., Sugiyama, S. and Ozawa, T.: HPLC analysis of lipids: analysis of fatty acids and their derivatives by a microcolumn HPLC system. *Chromatogr. Sci. Ser.*, 65(Lipid Chromatographic Analysis) (1994) 273-290; C.A., 121 (1994) 249908v - a review with 23 refs.
- 1648 Hopia, A.: Application of high-performance size exclusion chromatography (HPSEC) when analyzing the quality of edible oils. In: Maikki, Y. and Lambertsen, G. (Editors), *Nord. Lipid Symp., Proc.*, 17th, Scand. Forum Lipid Res. Technol., Bergen, 1993, pp. 222-225; C.A., 121 (1994) 279157s.
- 1649 Hori, M., Sahashi, Y., Koike, S., Yamaoka, R. and Sato, M.: Molecular species analysis of polyunsaturated fish triacylglycerol by high-performance liquid chromatography/fast atom bombardment mass spectrometry. *Anal. Sci.*, 10 (1994) 719-724; C.A., 122 (1995) 8306n.
- 1650 Hussain, A.A., Jona, J.A., Yamada, A. and Dittert, L.W.: Chloramine-T in radiolabeling techniques. II. A nondestructive method for radiolabeling biomolecules by halogenation. *Anal. Biochem.*, 224 (1995) 221-226.
- 1651 Kuksis, A.: Modern trends in the analysis of fats and oils. In: Maikki, Y. and Lambertsen, G. (Editors), *Nord. Lipid Symp., Proc.*, 17th, Scand. Forum Lipid Res. Technol., Bergen, 1993, pp. 188-195; C.A., 121 (1994) 279107a - a review with 57 refs.
- 1652 Mahungu, S.M., Hansen, S.L. and Artz, W.E.: Quantitation of volatile compounds in heated trilinolein by static headspace-capillary gas chromatography/infrared spectroscopy - mass spectrometry. *J. Am. Oil Chem. Soc.*, 71 (1994) 1169-1171.
- 1653 Miyazawa, T., Fujimoto, K., Suzuki, T. and Yasuda, K.: Determination of phospholipid hydroperoxides using luminol chemiluminescence-high-performance liquid chromatography. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. Q) (1994) 324-332; C.A., 121 (1994) 225360j.
- 1654 Neff, W.E., Adolf, R.O., List, G.R. and El-Agaimy, M.: Analyses of vegetable oil triacylglycerols by silver ion high performance liquid chromatography with flame ionization detection. *J. Liq. Chromatogr.*, 17 (1994) 3951-3968.
- 1655 Neff, W.E., El-Agaimy, M.A. and Mounts, T.L.: Oxidative stability of blends and interesterified blends of soybean oil and palm olein. *J. Am. Oil Chem. Soc.*, 71 (1994) 1111-1116.
- 1656 Neff, W.E., Mounts, T.L., Rinsch, W.M., Konishi, H. and El-Agaimy, M.A.: Oxidative stability of purified canola oil triacylglycerols with altered fatty acid compositions as affected by triacylglycerol composition and structure. *J. Am. Oil Chem. Soc.*, 71 (1994) 1101-1109.

- 1657 Nilsson, Å., Chen, Q. and Dahlman, E.: Metabolism of chylomicron phosphatidylinositol in the rat: fate *in vivo* and hydrolysis with lipoprotein lipase and hepatic lipase *in vitro*. *J. Lipid Res.*, 35 (1994) 2151-2160.
- 1658 Piironen, V. and Kankare, M.: Analysis of lipid hydroperoxides using high-performance liquid chromatography with chemiluminescence detection. In: Maikki, Y. and Lambertsen, G. (Editors), *Nord. Lipid Symp., Proc., 17th, Scand. Forum Lipid Res. Technol.*, Bergen, 1993, pp. 226-229; C.A., 121 (1994) 279158t.
- 1659 Schenk, T., Schuphan, I. and Schmidt, B.: High-performance liquid chromatographic determination of the rhamnolipids produced by *Pseudomonas aeruginosa*. *J. Chromatogr. A*, 693 (1995) 7-13.
- 1660 Shibamoto, T.: *Lipid Chromatographic Analysis*. Dekker, New York, 1994, 412 pp.; C.A., 121 (1994) 225828t.
- 1661 Smith, K.W., Perkins, J.M., Jeffrey, B.S.J. and Phillips, D.L.: Separation of molecular species of *cis* and *trans*-triacylglycerols in *trans*-hardened confectionery fats by silver ion high-performance liquid chromatography. *J. Am. Oil Chem. Soc.*, 71 (1994) 1219-1222.
- 1662 Swe, P.Z., Che Man, Y.B., Ghazali, H.M. and Wei, L.S.: Identification of major triglycerides causing the clouding of palm olein. *J. Am. Oil Chem. Soc.*, 71 (1994) 1141-1144.
- 1663 Weete, J.D.: Preferential degradation of noncholine phosphatides in soybean lecithin by thermalization. *J. Am. Oil Chem. Soc.*, 71 (1994) 1195-1199.
- 1664 Zhang, F., Koseoglu, S.S. and Rhee, K.C.: Effects of expander process on the phospholipids in soybean oil. *J. Am. Oil Chem. Soc.*, 71 (1994) 1145-1148.
- See also 1577, 1672, 1693, 1700, 1702, 2142, 2143, 2399, 2482, 2493.
- 11d. Lipoproteins and their constituents*
- 1665 Maeba, R., Shimasaki, H. and Ueta, N.: Conformational changes in oxidized LDL recognized by mouse peritoneal macrophages. *Biochim. Biophys. Acta*, 1215 (1994) 79-86.
- 1666 Pursiainen, M., Jauhainen, M. and Ehnholm, C.: Low-density lipoprotein activates the protease region of recombinant apo(a). *Biochim. Biophys. Acta*, 1215 (1994) 170-175.
- 1667 Sattler, W., Mohr, D. and Stocker, R.: Rapid isolation of lipoproteins and assessment of their peroxidation by high-performance liquid chromatography postcolumn chemiluminescence. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 469-489; C.A., 121 (1994) 225365q.
- 1668 Shibusawa, Y., Mugiyama, M., Matsumoto, U. and Ito, Y.: Complementary use of counter-current chromatography and hydroxyapatite chromatography for the separation of three main classes of lipoproteins from human serum. *J. Chromatogr. B*, 664 (1995) 295-301.
- 1669 Verges, B., Rader, D., Schaefer, J., Zech, L., Kindt, M., Fariwell, T., Gambert, P. and Breuer, H.B., Jr.: *In vivo* metabolism of apolipoprotein A-IV in severe hypertriglyceridemia: a combined radiotracer and stable isotope kinetic study. *J. Lipid Res.*, 35 (1994) 2280-2291.
- 1670 Wiegel, D., Meyer, C. and Arnold, K.: Partitioning of high-density lipoproteins in charge-sensitive two-phase systems. *J. Chromatogr. B*, 661 (1994) 159-164.
- 1671 Yamamoto, Y.: Chemiluminescence-based high-performance liquid chromatography assay of lipid hydroperoxides. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 319-324; C.A., 121 (1994) 225359r.
- For additional information see C.A.:
121 (1994) 296610b.
- See also 1694.
- 12. ORGANIC PEROXIDES**
- 1672 Thomas, J.P., Kalyanaraman, B. and Girotti, A.W.: Involvement of preexisting lipid hydroperoxides in Cu²⁺-stimulated oxidation of low-density lipoprotein. *Arch. Biochem. Biophys.*, 315 (1994) 244-254.
- See also 1635, 1653, 1656, 1658, 1671.
- 13. STEROIDS**
- 13a. General techniques*
- 1673 Boschi, S., de Iasio, R., Mesini, P., Boletti, G.F., Sciajno, R., Pasquali, R. and Capelli, M.: Measurement of steroid hormones in plasma by isocratic high performance liquid chromatography coupled to radioimmunoassay. *Clin. Chim. Acta*, 231 (1994) 107-113.
- 1674 Hooijerink, D., Schilt, R., van Bennekom, E. and Brouwer, B.: Determination of anabolic esters in oily formulation and plasma in husbandry using high-performance liquid chromatography and gas chromatography-mass selective detection. *Analyst (Cambridge)*, 119 (1994) 2617-2622.
- 1675 Lensmeyer, G.L., Onsager, C., Carlson, I.H. and Wiebe, D.A.: Use of particle-loaded membranes to extract steroids for high-performance liquid chromatographic analyses. Improved analyte stability and detection. *J. Chromatogr. A*, 691 (1995) 239-246.
- 13b. Pregnane and androstane derivatives*
- 1676 Dolezalova, M.: Routine high-performance liquid chromatographic determination of urinary unconjugated cortisol using solid-phase extraction and ultraviolet detection. *Clin. Chim. Acta*, 231 (1994) 129-137.
- 1677 El-Dawy, M.A., Habeeb, A.A., Mabrouk, M.M. and Bastawissky, I.A.E.: HPLC assay of lidocaine hydrochloride and prednisolone acetate in anti-hemorrhoidal preparations. *Egypt. J. Pharm. Sci.* 1993, 34 (1994) 683-690; C.A., 122 (1995) 64547d.
- 1678 Hansen-Møller, J.: Rapid high-performance liquid chromatographic method for simultaneous determination of androstenone, skatole and indole in back fat from pigs. *J. Chromatogr. B*, 661 (1994) 219-230.

- 1679 Inoue, S., Inokuma, M., Harada, T., Shibutani, Y., Yoshitake, T., Charles, B., Ishida, J. and Yamaguchi, M.: Simultaneous high-performance liquid chromatographic determination of 6β -hydroxycortisol and cortisol in urine with fluorescence detection and its application for estimating hepatic drug-metabolizing enzyme induction. *J. Chromatogr. B*, 661 (1994) 15-23.
- 1680 Los, L.E., Pitzenberger, S.M., Ramjit, H.G., Coddington, A.B. and Colby, H.D.: Hepatic metabolism of spironolactone. Production of 3-hydroxy-thiomethyl metabolites. *Drug Metab. Disp.*, 22 (1994) 903-908.
- 1681 Prein, A., Mehnert, W. and Frömming, K.-H.: Penetration of hydrocortisone into excised human skin under the influence of cyclodextrins. *Pharmazie*, 50 (1995) 121-126.
- 1682 Valenta, C. and Schmatzberger-Wagerer, M.: Stabilitätsuntersuchungen von Progesteron-Hydrogelen. *Pharmazie*, 50 (1995) 69-70.
- 1683 Wong, Y.N., Chien, B.M. and D'mello, A.P.: Analysis of corticosterone in rat plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 211-218.
- 13c. Estrogens**
- 1684 Guo, L. and Ma, S.: (Determination of urinary estriol by high performance liquid chromatography with fluorescence detection). *Zhonghua Yixue Jianyan Zazhi*, 17 (1994) 158-160; *C.A.*, 121 (1994) 292940m.
- 1685 Paris, A., Dolo, L., Debrauwer, L., Rao, D. and Terqui, M.: Analysis of [3 H]estradiol-17beta metabolites in calf perirenal fat. *Analyst (Cambridge)*, 119 (1994) 2623-2626.
- 1686 Smales, C.M., Cooke, D. and Blackwell, L.F.: Use of ion-exchange and hydrophobic-interaction chromatography for the rapid purification of lysozyme-estrone glucuronide conjugates. *J. Chromatogr. B*, 662 (1994) 3-14.
- For additional information see *C.A.*:
121 (1994) 213109w.
- 13d. Sterols**
- 1687 Ansari, G.A.S. and Smith, L.L.: Assay of cholesterol autoxidation. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 332-338; *C.A.*, 121 (1994) 225361k.
- 1688 Bragagnolo, N., Rodriguez-Amaya, D.B.: (Evaluation of the cholesterol concentration as a quality control parameter for egg noodles). *Rev. Inst. Adolfo Lutz*, 53 (1993) 21-26; *C.A.*, 121 (1994) 299406a.
- 1689 Caboni, M.F., Gallina, T.T., Lercker, G. and Capella, P.: Analytical problems of oxisterols determination in lipid-containing foods. *Riv. Ital. Sostanze Grasse*, 71 (1994) 243-246; *C.A.*, 121 (1994) 299599r.
- 1690 Gu, Y.-F., Chen, Y. and Hammond, E.G.: Use of cyclic anhydrides to remove cholesterol and other hydroxy compounds from fats and oils. *J. Am. Oil Chem. Soc.*, 71 (1994) 1205-1209.
- 1691 Iorizzi, M., de Riccardis, F., Minale, L., Palgiano, E., Riccio, R., Debitus, C. and Duhet, D.: Polyoxygenated marine steroids from the deep water starfish *Styrcaster caroli*. *J. Natural Prod.*, 57 (1994) 1361-1373.
- 1692 Kermasha, S., Kubow, S. and Goetghebeur, M.: Comparative high-performance liquid chromatographic analyses of cholesterol and its oxidation products using diode-array ultraviolet and laser light-scattering detection. *J. Chromatogr. A*, 685 (1994) 229-235.
- 1693 Nota, G., Naviglio, D., Romano, R., Spagna, M.S. and Improta, C.: (HPLC determination of trienanthoin, β -sitosterol, stigmasterol and capsaicin as anhydrous butter denaturing agents). *Riv. Ital. Sostanze Grasse*, 71 (1994) 197-202; *C.A.*, 122 (1995) 8273z.
- 1694 Okazaki, M., Sasamoto, K., Muramatsu, T. and Hosaki, S.: (Binding capacities of immunoassay reagents for remnant-like particles to LDL and HDL by the improved HPLC method). *Rinsho Kagaku (Nippon Rinsho Kagakkai)*, 23 (1994) 236-242; *C.A.*, 121 (1994) 275697v.
- 1695 Sevanian, A., Seraglia, R., Traldi, P., Rossato, P., Ursini, F. and Hodis, H.: Analysis of plasma cholesterol oxidation products using gas- and high-performance liquid chromatography/mass spectrometry. *Free Radical Biol. Med.*, 17 (1994) 397-409; *C.A.*, 121 (1994) 250594w.
- 1696 Teng, J.I. and Smith, L.L.: High-performance liquid chromatographic analysis of human erythrocyte oxysterols as Δ^4 -3-ketone derivatives. *J. Chromatogr. A*, 691 (1995) 247-254.
- See also 1522, 1990.
- 13e. Bile acids and alcohols**
- 1697 Chaplin, M.F.: Analysis of bile acids and their conjugates using high-pH anion-exchange chromatography with pulsed amperometric detection. *J. Chromatogr. B*, 664 (1995) 431-434.
- 1698 Roda, A., Pellicciari, R., Cerre, C., Polimeni, C., Sadeghpour, B., Marinozzi, M., Forti, G.C. and Sapigni, E.: New 6-substituted bile acids: physico-chemical and biological properties of 6α -methyl ursodeoxycholic acid and 6α -methyl-7-epicholic acid. *J. Lipid Res.*, 35 (1994) 2268-2279.
- 14. STEROID GLYCOSIDES AND SAPONINS**
- For additional information see *C.A.*:
122 (1995) 38963s.
- See also 2448, 2450, 2455.
- 15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS**
- 15a. Terpenes**
- 1699 Ando, M., Arai, K., Kikuchi, K. and Isogai, K.: Synthetic studies of sesquiterpenes with a *cis*-fused decalin system. 4. Synthesis of (+)- 5β H-eudesma-3,11-diene, (-)- 5β H-eudesmane-4 β ,11-diol, and (+)- 5β H-eudesmane-4 α ,11-diol, and structure revision of a natural eudesmane-4,11-diol isolated from *Pluchea arguta*. *J. Natural Prod.*, 57 (1994) 1189-1199.

- 1700 Moreau, R.A., Powell, M.J., Osman, S.F., Whitaker, B.D., Fett, W.F., Roth, L. and O'Brien, D.J.: Analysis of intact hopanoids and other lipids from the bacterium *Zymomonas mobilis* by high-performance liquid chromatography. *Anal. Biochem.*, 224 (1995) 293-301.
- 1701 O'Mathona, D.P. and Doskotch, R.W.: Five new labdane diterpenes from *Amphiachyris amoena*. *J. Natural Prod.*, 57 (1994) 1382-1390.
- 1702 Roth, L., Moreau, R.A., Powell, M.J. and O'Brien, D.J.: Semi-preparative separation of intact hopanoids from *Zymomonas mobilis*. *Anal. Biochem.*, 224 (1995) 302-308.
- 1703 Stadler, M., Anke, H. and Sterner, O.: New nematicidal and antimicrobial compounds from the basidiomycete *Cheimonophyllum candidissimum* (Berch & Curt.) Sing. *J. Antibiot.*, 47 (1994) 1284-1289.
- 1704 Yoshikawa, M., Yamaguchi, S., Chatani, N., Nishino, Y., Matsuoka, T., Yamahara, J., Murakami, N., Matsuda, H. and Kubo, M.: (Crude drugs from aquatic plants. III. Quantitative analysis of triterpene constituents in alismatis rhizoma by means of high performance liquid chromatography on the chemical change of the constituents during *Alismatis rhizoma* processing) *Yakugaku Zasshi*, 114 (1994) 241-247; C.A., 121 (1994) 65665g.

See also 2154, 2393.

15b. Essential oils

For additional information see C.A.:
121 (1994) 213090h.

15c. Bitter substances

- 1705 Buckee, G.K.: Determination of iso-alpha-, alpha- and beta-acids in hop and isomerized hop extracts. A collaborative trial. *Cerevisia Biotechnol.*, 19 (1994) 46-49; C.A., 121 (1994) 229122f.
- 1706 Szucs, R., Vindevogel, J., Everaert, E., de Cooman, L., Sandra, P. and de Keukeleire, D.: Separation and quantification of all main hop acids in different hop cultivars by microemulsion electrokinetic chromatography. *J. Inst. Brew.*, 100 (1994) 293-296; C.A., 122 (1995) 8305m.

16. NITRO AND NITROSO COMPOUNDS

- 1707 Ahmad, F. and Roberts, D.J.: Use of narrow-bore high-performance liquid chromatography-diode array detection for the analysis of intermediates of the biological degradation of 2,4,6-trinitrotoluene. *J. Chromatogr. A*, 693 (1995) 167-175.
- 1708 Barek, J., Hai, P.T., Pacakova, V., Stulik, K., Svagrova, I. and Zima, J.: A study of HPLC separation and spectrophotometric, polarographic and voltammetric detection of 4-substituted derivatives of N-nitroso-N-methylaniline. *Fresenius J. Anal. Chem.*, 350 (1994) 678-683.
- 1709 Chen, C.-Z. and Xiao, A.: Development of GPC method for characterizing aging behavior of propellants. *Int. Annu. Conf. ICT*, 25th (1994) 80/1-80/12; C.A., 121 (1994) 304146x.

- 1710 Posyniak, A., Niedzielska, J., Semeniuk, S. and Zmudzki, J.: Solid-phase extraction and liquid chromatography analysis of nitrofuran compounds in meat. *Chem. Anal. (Warsaw)*, 39 (1994) 289-294; C.A., 121 (1994) 254039s.

See also 1418, 2301.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17a. Amines and polyamines

- 1711 Hornero-Mendez, D. and Garrido-Fernandez, A.: Biogenic amines in table oil. Analysis by high-performance liquid chromatography. *Analyst (Cambridge)*, 119 (1994) 2037-2041.
- 1712 Lee, H.K. and Hoffman, N.E.: Retention of some simple organic cations on an anion exchange column. *J. Liq. Chromatogr.*, 17 (1994) 4273-4284.
- 1713 Skarping, G., Dalene, M.D. and Tinnerberg, H.: Biological monitoring hexamethylene- and isophorone-diisocyanate by the determination of hexamethylene- and isophorone-diamine in hydrolysed urine using liquid chromatography and mass spectrometry. *Analyst (Cambridge)*, 119 (1994) 2051-2055.

For additional information see C.A.:

122 (1995) 71121p.

See also 1343, 1373, 1758, 2353, 2417, 2485.

17b. Catecholamines and their metabolites

- 1714 Abate, V.M., Overdorf, G.W. and Huang, T.: The determination of free urinary catecholamines using a new kit for liquid chromatography/electrochemistry. *Curr. Sep.*, 13 (1994) 53-55; C.A., 121 (1994) 246527.
- 1715 Egger, D., Reisbach, G. and Hültner, L.: Simultaneous determination of histamine and serotonin in mast cells by high-performance liquid chromatography. *J. Chromatogr. B*, 662 (1994) 103-107.
- 1716 Fornstedt-Wallin, B. and Bergh, I.: Sensitive high-performance liquid chromatographic method for the determination of 5-S-cysteinyl dopamine, 5-S-cysteinyl-3,4-dihydroxyphenylacetic acid and 5-S-cysteinyl-3,4-dihydroxyphenylalanine. *J. Chromatogr. B*, 663 (1995) 9-14.
- 1717 Kubalec, P., Brandsteterova, E., Lehotay, J. and Cizmarik, J.: Electrochemical detection in HPLC determination of catecholamines and their main metabolites. *Pharmazie*, 49 (1994) 897-899.
- 1718 Lowe, D.R., March, C., James, J.E. and Karnes, H.T.: A high performance liquid chromatographic method for histamine in plasma using solid phase extraction and fluorescamine derivatization. *J. Liq. Chromatogr.*, 17 (1994) 3563-3570.
- 1719 Murai, S., Saito, H., Masuda, Y., Ohkubo, N. and Itoh, T.: Rapid HPLC assay with coulometric detection for norepinephrine and 3-methoxy-4-hydroxyphenylglycol in the mouse brain. *J. Pharmacol. Toxicol. Methods*, 32 (1994) 99-103; C.A., 122 (1995) 1212v.
- 1720 Nappi, A.J. and Vass, E.: The effects of glutathione and ascorbic acid on the oxidations of 6-hydroxydopa and 6-hydroxy-dopamine. *Biochim. Biophys. Acta*, 1201 (1994) 498-504.

- 1721 Pastoris, A., Cerutti, L., Sacco, R., de Vecchi, L. and Sbaffi, A.: Automated analysis of urinary catecholamines by high-performance liquid chromatography and on-line sample pretreatment. *J. Chromatogr. B*, 664 (1995) 287-293.
- 1722 Ragab, G.H., Nohta, H., Kai, M. and Ohkura, Y.: Chemiluminescence determination of catecholamines in human blood plasma and urine using 1,2-diphenylethylenediamine as precolumn derivatization reagent in liquid chromatography. *Anal. Chim. Acta*, 298 (1994) 431-438.
- 1723 Yamaguchi, M., Monji, H., Aoki, I. and Yashiki, T.: High-performance liquid chromatographic determination of phenylephrine in human serum using column switching with fluorescence detection. *J. Chromatogr. B*, 661 (1994) 93-99.
- 1724 Zumarraga, M., Andia, I., Davila, R. and Zamalloa, M.I.: Homovanillic acid in plasma determined by HPLC with direct injection of plasma filtrates. *Clin. Chem. (Washington)*, 40 (1994) 2119-2120.

See also 1583, 1627, 1769, 2074.

17c. Urea and guanidine derivatives

- 1725 Koebel, M. and Elsener, M.: Determination of urea and its thermal decomposition products by high-performance liquid chromatography. *J. Chromatogr. A*, 689 (1995) 164-169.
- 1726 Nicholson, L.W., Pfeiffer, C.D., Goralski, C.T., Singaram, B. and Fisher, G.B.: High-performance liquid chromatographic separation of β -amino alcohols. I. Separation of (R,S)-1-(dialkylamino)-2-alkanols on an amylose-based chiral stationary phase. *J. Chromatogr. A*, 687 (1994) 241-248.
- 1727 Shintani, H. and Inoue, T.: (Determination of blood urea using cation exchange column solid phase extraction combined with HPLC). *Bunseki Kagaku*, 43 (1994) 805-807; *C.A.*, 121 (1994) 275696u.

See also 1751, 2098.

17d. Other amine derivatives and amides (excl. peptides)

- 1728 Jemal, M. and Hawthorne, D.: High performance liquid chromatography/ion-spray mass spectrometry of N-ethylmaleimide and acrylic acid ester derivatives for bioanalysis of thiol compounds. *Rapid Commun. Mass Spectrom.*, 8 (1994) 854-857; *C.A.*, 122 (1995) 4878c.
- 1729 Stålberg, O. and Arvidsson, T.: Liquid chromatographic determination of ethylenediaminetetraacetic acid as metal complexes on a porous graphitic carbon column. *J. Chromatogr. A*, 684 (1994) 213-219.
- 1730 Valladao, M. and Sandine, W.E.: Quaternary ammonium compounds in milk: detection by reverse-phase high performance liquid chromatography and their effect on starter growth. *J. Dairy Sci.*, 77 (1994) 1509-1514; *C.A.*, 121 (1994) 229123g.

For additional information see *C.A.*:
121 (1994) 220927q.

See also 1418, 1514, 1632.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS
- 18a. Amino acids and their derivatives*
- 1731 Alfano, M., Casari, E., Stenico, A., Murone, M. and Grazioli, V.: Improved HPLC determination of urinary hydroxylysine glycosides to study turnover rate of bone in humans and rats. *Clin. Chem. (Washington)*, 40 (1994) 2113-2114.
- 1732 Alonso, M.L., Alvarez, A.I. and Zapico, J.: Rapid analysis of free amino acids in infant foods. *J. Liq. Chromatogr.*, 17 (1994) 4019-4030.
- 1733 Amin, M.R., Tomita, Y. and Onodera, R.: Rapid determination of phenylalanine and its related compounds in rumen fluid by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 201-207.
- 1734 Baffi, F., Ianni, M.C., Ravera, M. and Magi, E.: Study of the influence of free dissolved amino acids on copper(II) adsorption/remobilization from inorganic fractions of marine sediments using a reversed-phase liquid chromatographic procedure. *Anal. Chim. Acta*, 294 (1994) 127-134.
- 1735 Basink, V.A., Gromovoy, T.Yu. and Khil'chevskaya, E.G.: Free energies of amino acid adsorption on silica in neutral aqueous medium: estimation from high-performance liquid-chromatographic retention data. *Pol. J. Chem.*, 68 (1994) 777-781; *C.A.*, 121 (1994) 287143z.
- 1736 Bonnot, G. and Febvay, G.: Fourier processing of liquid chromatograms using flow-radioactive detection. *Anal. Biochem.*, 224 (1995) 254-263.
- 1737 Brueckner, H., Keller-Hoehl, C. and Wittner, R.: New reagents for chiral amino acid analysis by HPLC. *Chem. Pept. Proteins*, 5/6(Pt. A) (1993) 145-156; *C.A.*, 122 (1995) 4619u.
- 1738 Brueckner, H., Strecker, B. and Langer, M.: Design of new reagents for the HPLC separation of DL-amino acids. *Chem. Pept. Proteins*, 5/6(Pt. A) (1993) 157-169; *C.A.*, 121 (1994) 296304e.
- 1739 Brueckner, H., Strecker, B. and Wachsmann, M.: Use of chiral monohalo-s-triazines as novel derivatizing reagents for DL-amino acids. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp.*, 22nd 1992, ESCOM, Leiden, 1993, pp. 449-450; *C.A.*, 122 (1995) 4608q.
- 1740 Carratu, B., Boniglia, C., Filesi, C. and Bellomonte, G.: (Effects of technological treatments on food: ion-exchange chromatographic determination of pyridosine and furosine in food and dietetic products). *Riv. Sci. Aliment.*, 22 (1993) 455-457; *C.A.*, 121 (1994) 229115f.
- 1741 Chen, S.: Partial characterization of the molecular species of phosphatidylserine from human plasma by high-performance liquid chromatography and fast atom bombardment mass spectrometry. *J. Chromatogr. B*, 661 (1994) 1-5.
- 1742 Chowdhury, S.K., Eshraghi, J., Wolfe, H., Forde, D., Hlavac, A.G. and Johnston, D.: Mass spectrometric identification of amino acid transformations during oxidation of peptides and proteins: modification of methionine and tyrosine. *Anal. Chem.*, 67 (1995) 390-398.
- 1743 De Vos, F. and Slegers, G.: High-performance liquid chromatographic determination of (4-[^{11}C methoxyphenyl)-(S-fluoro-2-hydroxyphenyl)-methyleneaminobutyric acid and its benzophenone metabolite. *J. Chromatogr. A*, 692 (1995) 97-102.

- 1744 DeSilva, K., Strojek, J. and Kuwana, T.: Dual wavelength excitation method for the off-line liquid chromatographic analysis of derivatized amino acids. *Anal. Sci.*, 10 (1994) 573-578; C.A., 122 (1995) 22830k.
- 1745 Gorennewegen, M.G.M., van de Merbel, N.C., Slobodnik, J., Lingeman, H. and Brinkman, U.A.T.: Automated determination of weakly acid and basic pollutants in surface water by on-line electrodialysis sample treatment and column liquid chromatography. *Analyst (Cambridge)*, 119 (1994) 1752-1758.
- 1746 Hyun, M.H., Yang, D.H., Kim, H.J. and Ryoo, J.-J.: Mechanistic evaluation of the resolution of α -amino acids on dynamic chiral stationary phases derived from amino alcohols by ligand-exchange chromatography. *J. Chromatogr. A*, 684 (1994) 189-200.
- 1747 Irvine, G.B.: Amino acid analysis. *Methods Mol. Biol. (Totowa)*, 32(Basic Protein and Peptide Protocols) (1994) 257-265; C.A., 121 (1994) 250057y.
- 1748 Iwase, H., Ozawa, S., Ikuta, M. and Ono, I.: Determination of amino acids in human plasma by liquid chromatography with postcolumn ninhydrin derivatization using a hydroxyapatite cartridge for precolumn deproteinization. *J. Chromatogr. B*, 663 (1995) 15-24.
- 1749 Kamel, S., Brazier, M., Picard, C., Boitte, F., Samson, L., Desmet, G. and Sebert, J.L.: Urinary excretion of pyridinolines crosslinks measured by immunoassay and HPLC techniques in normal subjects and in elderly patients with vitamin D deficiency. *Bone Miner.*, 26 (1994) 197-208; C.A., 121 (1994) 296565r.
- 1750 Kempe, M. and Mosbach, K.: Separation of amino acids, peptides and proteins on molecularly imprinted stationary phases. *J. Chromatogr. A*, 691 (1995) 317-323.
- 1751 Khan, J.K., Kuo, Y.-H., Kebede, N. and Lambin, F.: Determination of non-protein amino acids and toxins in *Lathyrus* by high-performance liquid chromatography with precolumn phenyl isothiocyanate derivatization. *J. Chromatogr. A*, 687 (1994) 113-119.
- 1752 Kim, Y.T., Glerum, C., Noland, T.L. and Hickie, D.: Use of Sep-Pak C₁₈ cartridges to clean up free amino acids from coniferous needles. *J. Chromatogr. A*, 690 (1995) 226-229.
- 1753 Krishnamurthy, T.: Chirality in microcystins. *J. Am. Soc. Mass Spectrom.*, 5 (1994) 724-730; C.A., 122 (1995) 10561k.
- 1754 Lebet, V., Schneider, H., Arrigoni, E. and Amaro, R.: (Critical evaluation of protein determination in food by the Kjeldahl method, based on amino acid analysis). *Mitt. Geb. Lebensmittelunters. Hyg.*, 85 (1994) 46-58; C.A., 121 (1994) 253993m.
- 1755 Martinez, M., Casillas, J.L., Addo-Yobo, F., Kenney, C.N. and Aracil, J.: An HPLC technique for the study of adsorption of amino acids on functionalized resins. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 294-300; C.A., 121 (1994) 296302c.
- 1756 Moret, S., Cherubin, S., Rodriguez-Estrada, M.T. and Lercker, G.: Determination of lysinoalanine by high performance liquid chromatography. *J. High Resolut. Chromatogr.*, 17 (1994) 827-830.
- 1757 Orwar, O., Sandberg, M., Jacobson, I., Sundahl, M. and Folestad, S.: Photochemical characterization and optimization of argon ion laser-induced fluorescence detection of o-phthalaldehyde/ β -mercaptoethanol-labeled amino acids and γ -glutamyl peptides in liquid chromatography: ultratrace analysis with neurobiological samples. *Anal. Chem.*, 66 (1994) 4471-4482.
- 1758 Puig-Deu, M. and Buxaderas, S.: Analytical conditions for the determination of 23 phenylthiocarbamyl amino acids and ethanolamine in musts and wines by high-performance liquid chromatography. *J. Chromatogr. A*, 685 (1994) 21-30.
- 1759 Rothmund, S., Krause, E., Beyermann, M., Dathe, M., Engelhardt, H. and Bienert, M.: Recognition of α -helical peptide structures using high-performance liquid chromatographic retention data for D-amino acid analogues: influence of peptide amphiphaticity and of stationary phase hydrophobicity. *J. Chromatogr. A*, 689 (1995) 219-226.
- 1760 Schmeer, K., Khalifa, M., Császár, J., Farkas, G., Bayer, E. and Molnár-Perl, I.: Compositional analysis of the phenylthiocarbamyl amino acids by liquid chromatography-atmospheric pressure ionization mass spectrometry with particular attention to the cyst(e)ine derivatives. *J. Chromatogr. A*, 691 (1995) 285-299.
- 1761 Simon, G., Hanak, L., Grevillot, G., Szanya, T. and Marton, G.: Preparative-scale amino acid separation by thermal parametric pumping on an ion-exchange resin. *J. Chromatogr. B*, 664 (1995) 17-31.
- 1762 Sormiachi, K., Ikeda, M., Akimoto, K. and Niwa, A.: Rapid determination of dabsylated hydroxyproline from cultured cells by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 664 (1995) 435-439.
- 1763 Takechi, M., Kanda, M., Hori, K., Kurotsu, T. and Saito, Y.: Purification and properties of L-ornithine δ -aminotransferase from gramicidin S-producing *Bacillus brevis*. *J. Biochem. (Tokyo)*, 116 (1994) 955-959.
- 1764 Tani, S. and Tani, T.: Determination of methionine and its oxides in gelatin. *J. Photogr. Sci.*, 41 (1993) 172-175; C.A., 121 (1994) 303479w.
- 1765 Tordjman, C., Lhumeau, A., Pastoureau, P., Meunier, F., Serkiz, B., Volland, J.P. and Bonnet, J.: Evaluation and comparison of urinary pyridinium crosslinks in two rat models of bone loss - ovariectomy and adjuvant polyarthritis - using a new automated HPLC method. *Bone Miner.*, 26 (1994) 155-167; C.A., 121 (1994) 225378w.
- 1766 Toyo'oka, T. and Liu, Y.-M.: High-performance liquid chromatographic resolution of amino acid enantiomers derivatized with fluorescent chiral Edman reagents. *J. Chromatogr. A*, 689 (1995) 23-30.
- 1767 Walbroehl, Y. and Wagner, J.: Chiral separations of amino acids by capillary electrophoresis and high-performance liquid chromatography employing chiral crown ethers. *J. Chromatogr. A*, 685 (1994) 321-329.
- 1768 Warlow, R.S., Gooley, A., Rajasekariah, P., Oszarac, N. and Walls, R.S.: A preparative method for sequencing proteins and peptides: *In situ* gel staining with subsequent passive elution onto polyvinylidene difluoride membranes. *Electrophoresis (Weinheim)*, 16 (1995) 84-91.
- 1769 Yi, Y.-H., Liao, W.-P. and Lu, X.: Simultaneous determination of tryptophan, 5-hydroxytryptophan, 5-hydroxytryptamine, 5-hydroxyindoleacetic acid, 4-hydroxy-3-methoxyphenylacetic acid and 3-methoxy-4-hydroxyphenylglycol in human cerebrospinal fluid. *J. Chromatogr. B*, 661 (1994) 143-148.
- 1770 Yoshida, H., Arai, N., Sugoh, M., Iwabuchi, J., Shiomi, K., Shinose, M., Tanaka, Y. and Omura, S.: 4-Chlorothreonine, a herbicidal antimetabolite produced by *Streptomyces* sp. OH-5093. *J. Antibiot.*, 47 (1994) 1165-1166.

- 1771 Young, P.B., Molloy, A.M., Scott, J.M. and Kennedy, D.G.: A rapid high performance liquid chromatographic method for determination of homocysteine in porcine tissue. *J. Liq. Chromatogr.*, 17 (1994) 3553-3561.
- 1772 Zhang, J., Tsuboyama, N. and Kodama, H.: Simultaneous determination of cystathione and NAc-dystathione using liquid chromatography-atmospheric pressure chemical ionization mass spectrometry. *Anal. Biochem.*, 224 (1995) 17-20.
- 1773 Zhao, M. and Bada, J.L.: Determination of α -dialkylamino acids and their enantiomers in geological samples by high-performance liquid chromatography after derivatization with a chiral adduct of o-phthalodialdehyde. *J. Chromatogr. A*, 690 (1995) 55-63.
- For additional information see C.A.:
121 (1994) 286690p.
- See also 1786, 1807, 1837, 1843, 1860, 1941, 1943, 2268, 2417.
- 18b. Peptides, peptidic and proteinous hormones, growth factors*
- 1774 Acedo, M.I., Pueyo, E. and Polo, M.C.: Preliminary studies on peptides in wine by HPLC. *Am. J. Enol. Vitic.*, 45 (1994) 167-172; C.A., 121 (1994) 279168w.
- 1775 Affolter, M., Watts, J.D., Krebs, D.L. and Aebersold, R.: Evaluation of two-dimensional phosphopeptide maps by electrospray ionization mass spectrometry of recovered peptides. *Anal. Biochem.*, 223 (1994) 74-81.
- 1776 Aldrich-Wright, J.R., Newman, P.D., Rao, K.R.N., Vagg, R.S. and Williams, P.A.: Chiral metal complexes. XLII. Reversed-phase high-performance liquid chromatographic separation of racemic dipeptides as their ternary Co(III) complexes with a chiral triamine. *J. Chromatogr. A*, 693 (1995) 366-370.
- 1777 Andren, P.E. and Caprioli, R.M.: Microdialysis/mass spectrometry of neuropeptides. In: Matsuo, T. (Editor), *Biol. Mass Spectrom.: Present Future, [Proc. Kyoto '92 Int. Conf.]* 1992, Wiley, Chichester, 1994, pp. 355-367; C.A., 121 (1994) 225740h.
- 1778 Apparailly, F. and Combarouss, Y.: Role of sialic acid residues in the *in vitro* superactivity of human choriongonadotropin (hCG) in rat Leydig cells. *Biochim. Biophys. Acta*, 1224 (1994) 559-565.
- 1779 Ball, H.L., Bertolini, G., Levi, S. and Mascagni, P.: Purification of synthetic peptides with the aid of reversible chromatographic probes. *J. Chromatogr. A*, 686 (1994) 73-83.
- 1780 Battersby, J.E., Guzzetta, A.W. and Hancock, W.S.: Application of capillary high-performance liquid chromatography to biotechnology, with reference to the analysis of recombinant DNA-derived human growth hormone. *J. Chromatogr. B*, 662 (1994) 335-342.
- 1781 Battersby, J.E., Mukku, V.R., Clark, R.G. and Hancock, W.S.: Affinity purification and microcharacterization of recombinant DNA-derived human growth hormone isolated from an *in vivo* model. *Anal. Chem.*, 67 (1995) 447-455.
- 1782 Brakch, N., Cohen, P. and Boileau, G.: Processing of human prosomatostatin in AbT cells: S-28 and S-14 are generated in different secretory pathways. *Biochim. Biophys. Res. Commun.*, 205 (1994) 221-229.

- 1783 Cartier, P.G., Maikner, J.J., Deissler, K.C., Fisher, J.R., Barstow, L.E. and Fuentes, G.E.: Optimization of preparative RP purification of peptides by correctly matching media pore size and capacity to the needs of the purification. In: Hodges, R.S. and Smith, J.A. (Editors), *Pept.: Chem., Struct. Biol., Proc. Am. Pept. Symp., 13th 1993*, ESCOM, Leiden, 1994, pp. 232-234; C.A., 121 (1994) 250062w.
- 1784 Chen, J.-G., Waltman, S.J. and Weber, S.G.: Sensitivity and selectivity of the electrochemical detection of the copper(II) complexes of bioactive peptides, and comparison to model studies by rotating ring-disc electrode. *J. Chromatogr. A*, 691 (1995) 301-315.
- 1785 Davies, J.S., Enjalbal, C. and Llewellyn, G.: Progress towards a routine method for chiral analysis of synthetic peptides. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp., 22nd, 1992*, ESCOM, Leiden, 1993, pp. 453-454; C.A., 121 (1994) 296273u.
- 1786 De Antonis, K.M., Brown, P.R. and Cohen, S.A.: High-performance liquid chromatographic analysis of synthetic peptides using derivatization with 6-aminoquinolyl-N-hydroxysuccinimidyl carbamate. *Anal. Biochem.*, 223 (1994) 191-197.
- 1787 Furka, A., Sebestyen, F. and Dibo, G.: Computer program facilitating separation of peptides from mixtures prepared by the 'portioning-mixing' method. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp., 22nd, 1992*, ESCOM, Leiden, 1993, pp. 463-464; C.A., 121 (1994) 276033n.
- 1788 Griehl, C., Weigt, J. and Jeschkeit, H.: Use of tryptophan peptides for an HPLC racemization test with fluorescence detection. *J. High Resolut. Chromatogr.*, 17 (1994) 700-704.
- 1789 Hansen, P. and Lindeberg, G.: Importance of the α -amino group in the selective purification of synthetic histidine peptides by immobilised metal ion affinity chromatography. *J. Chromatogr. A*, 690 (1995) 155-159.
- 1790 Hoermann, R., Berger, P., Spoettl, G., Gillesberger, F., Kardana, A., Cole, L.A. and Mann, K.: Immunological recognition and clinical significance of nicked human chorionic gonadotropin in testicular cancer. *Clin. Chem. (Washington)*, 40 (1994) 2306-2312.
- 1791 Klyushnichenko, V.E., Yakimov, S.A., Arutyunyan, A.M., Ivanov, A.E., Maltsev, K.V. and Wulfson, A.N.: Recombinant human insulin V. Optimization of the reversed-phase high-performance liquid chromatographic separation. *J. Chromatogr. B*, 662 (1994) 363-369.
- 1792 Korakas, D. and Valkó, K.: Comparative study of the retention behavior of lipidic peptides on RP-18 and Supelcosil™ LC-ABZ stationary phases. *J. Liq. Chromatogr.*, 17 (1994) 3571-3584.
- 1793 Krause, E. and Bienert, M.: Separation of peptides by reversed-phase liquid chromatography on polyalkylene columns. *Chem. Pept. Proteins*, 5/6(Pt. A) (1993) 135-143; C.A., 121 (1994) 296303d.
- 1794 Krause, E., Beyermann, M., Dathe, M., Rothmund, S. and Bienert, M.: Location of an amphipathic α -helix in peptides using reversed-phase HPLC retention behavior of D-amino acids analogs. *Anal. Chem.*, 67 (1995) 252-258.

- 1795 Krause, E., Beyermann, M., Dathe, M., Wenschuh, H., Rothmund, S. and Bienert, M.: Correlation of α -helical secondary peptide structure and retention behavior in reversed-phase HPLC. In: Hodges, R.S. and Smith, J.A. (Editors), *Pept.: Chem., Struct. Biol., Proc. Am. Pept. Symp., 13th 1993*, ESCOM, Leiden, 1994, pp. 147-148; C.A., 121 (1994) 250063x.
- 1796 Lakhiari, H., Legendre, E., Muller, D. and Jozefowicz, J.: High-performance affinity chromatography of insulin on coated silica grafted with sialic acid. *J. Chromatogr. B*, 664 (1995) 163-173.
- 1797 Lee, K.C., Yoon, J.Y., Woo, B.H., Kim, C.K. and DeLuca, P.P.: Post-column fluorescence HPLC for salmon calcitonin formulations. *Int. J. Pharm.*, 114 (1995) 215-220; C.A., 122 (1995) 64521r.
- 1798 Melzig, M.F. and Heder, G.: Dexamethasone induced enhanced enkephalin degradation by angiotensin-converting enzyme (ACE) of endothelial cells. *Pharmazie*, 50 (1995) 1139-141.
- 1799 Murata, H., Shoji, H., Oshikata, M., Harada, K.-I., Suzuki, M., Kondo, F. and Goto, H.: High-performance liquid chromatography with chemiluminescence detection of derivatized microcystins. *J. Chromatogr. A*, 693 (1995) 263-270.
- 1800 Nicholls, I.A., Ramström, O. and Mosbach, K.: Insights into the role of the hydrogen bond and hydrophobic effect on recognition in molecularly imprinted polymer synthetic peptide receptor mimics. *J. Chromatogr. A*, 691 (1995) 349-353.
- 1801 Ono, M., Raab, G., Lau, K., Abraham, J.A. and Klagsbrun, M.: Purification and characterization of transmembrane forms of heparin-binding EGF-like growth factor. *J. Biol. Chem.*, 269 (1994) 31315-31321.
- 1802 Perrin, E., Miclo, L., Driou, A. and Linden, G.: Rapid determination of the ratios of three aromatic residues in peptides by reversed-phase high-performance liquid chromatography with a high-resolution photodiode-array detector. *J. Chromatogr. B*, 664 (1995) 267-276.
- 1803 Piemonte, F., Bernardini, S., Massoud, R. and Corasaniti, M.T.: Determination of serum concentrations of adamantlyl dipeptide by high performance liquid chromatography after intravenous injection in rats. *Clin. Chem. Enzymol. Commun.*, 6 (1994) 157-162; C.A., 121 (1994) 244901c.
- 1804 Reimeier, C., Schneider, I., Schneider, W., Schäfer, H.-L. and Elstner, E.F.: Effects of ethanolic extracts from *Eschscholtzia californica* and *Corydalis cava* on dimerization and oxidation of enkephalins. *Arzneim.-Forsch.*, 45 (1995) 132-136.
- 1805 Roboti, A., Livaniou, E., Evangelatos, G.P., Tsoupras, G., Tsolas, O. and Ithakissios, D.S.: Large-scale chromatofocusing-based method for isolating thymosin β_4 and thymosin β_9 from bovine tissues. *J. Chromatogr. B*, 662 (1994) 27-34.
- 1806 Roher, A.E., Kasunic, T.C., Woods, A.S., Cotter, R.J., Ball, M.J. and Fridman, R.: Proteolysis of $\text{A}\alpha$ peptide from Alzheimer disease brain by gelatinase A. *Biochem. Biophys. Res. Commun.*, 205 (1994) 1755-1761.
- 1807 Scheptyk, A.G., Schulz-Knappe, P. and Forssmann, W.-G.: High-performance liquid chromatographic determination of sulfated peptides in human hemofiltrate using a radioactivity monitor. *J. Chromatogr. A*, 691 (1995) 255-261.
- 1808 Shadle, P.J., Silverness, K.B.: Process for purification of basic fibroblast growth factor. U.S. US 5,331,095 (Cl. 530-399; C07K3/22), 19 Jul. 1994, Appl. 45,929, 12 Apr. 1993; 9 p.; C.A., 122 (1995) 17184y.
- 1809 She, Q.-B., Nagao, I., Hayakawa, T. and Tsuge, H.: A simple HPLC method for the determination of S-adenosylmethionine and S-adenosylhomocysteine in rat tissues: the effect of vitamin B6 deficiency on these concentrations in rat liver. *Biochem. Biophys. Res. Commun.*, 205 (1994) 1748-1754.
- 1810 Shon, K., Hasson, A., Spira, M.E., Cruz, L.J., Gray, W.R. and Olivera, B.M.: δ -Conotoxin GmVIa, a novel peptide from the venom of *Conus gloriamaris*. *Biochemistry*, 33 (1994) 11420-11425.
- 1811 Szokan, G., Majer, Z., Kollat, E., Hollosi, M., Kajtar, M. and Peredy-Kajtar, M.: Chromatographic and racemization studies on thio peptides. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp., 22nd 1992*, ESCOM, Leiden, 1993, pp. 455-456; C.A., 121 (1994) 275683n.
- 1812 Tarelli, E., Corran, P.H., Bingham, B.R., Mollison, H. and Wait, R.: Lysine vasopressin undergoes rapid glycation in the presence of reducing sugars. *J. Pharm. Biomed. Anal.*, 12 (1994) 1355-1361.
- 1813 Wicar, S., Mulkerrin, M.G., Bathory, G., Khundkar, L.H. and Karger, B.L.: Conformational changes in the reversed phase liquid chromatography of recombinant human growth hormone as a function of organic solvent: the molten globule state. *Anal. Chem.*, 66 (1994) 3908-3915.
- 1814 Yang, C.-S., Chou, S.-T., Lin, N.-N., Liu, L., Tsai, P.-J., Kuo, J.-S. and Lai, J.-S.: Determination of extracellular glutathione in rat brain by microdialysis and high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 661 (1994) 231-235.
- For additional information see C.A.:
121 (1994) 246510y.
- See also 1750, 1753, 1757, 1759, 1830, 1853, 1855, 1870, 2052, 2053, 2169, 2345, 2420.
- 18c. *Elucidation of structure of proteins and enzymes*
- 1815 Baldwin, J.S., Lee, L., Leung, T.K., Muruganandam, A. and Mutus, B.: Identification of the site of non-enzymatic glycation of glutathione peroxidase: rationalization of the glycation-related catalytic alterations on the basis of three-dimensional protein structure. *Biochim. Biophys. Acta*, 1247 (1995) 60-64.
- 1816 Ball, K. and Preiss, J.: Allosteric sites of the large subunit of the spinach leaf ADP-glucose pyrophosphorylase. *J. Biol. Chem.*, 269 (1994) 24706-24711.
- 1817 Bischoff, R. and Kolbe, H.V.J.: Deamidation of asparagine and glutamine residues in proteins and peptides: structural determinants and analytical methodology. *J. Chromatogr. B*, 662 (1994) 261-278 - a review with 58 refs.
- 1818 Bouchon, B., Jaquinod, M., Klarskov, K., Trottein, F., Klein, M., van Dorsselaer, A., Bischoff, R. and Roitsch, C.: Analysis of the primary structure and post-translational modifications of the *Schistosoma mansoni* antigen Smtp28 by electrospray mass spectrometry. *J. Chromatogr. B*, 662 (1994) 279-290.
- 1819 Clerc, F.F., Monégier, B., Faucher, D., Cuiné, F., Pourchet, C., Holt, J.C., Tang, S.-Y., van Dorsselaer, A., Becquart, J. and Vuilhorgne, M.: Primary structure control of recombinant proteins using high-performance liquid chromatography, mass spectrometry and microsequencing. *J. Chromatogr. B*, 662 (1994) 245-259.

- 1820 Dell'Angelica, E.C., Schleicher, C.H. and Santome, J.A.: Primary structure and binding properties of calgranulin C, a novel S100-like calcium-binding protein from pig granulocytes. *J. Biol. Chem.*, 269 (1994) 28929-28936.
- 1821 Fields, C.G. and Fields, G.B.: Edman degradation sequence analysis of resin-bound peptides: characterization of unusual and side chain protected PTH-amino acids. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp., 22nd 1992*, ESCOM, Leiden, 1993, pp. 447-448; C.A., 121 (1994) 275682m.
- 1822 Fisichella, S., Foti, S., Maccarrone, G. and Saletti, R.: Tryptic peptide mapping of sequence 299-585 of human serum albumin by high-performance liquid chromatography and fast atom bombardment mass spectrometry. *J. Chromatogr. A*, 693 (1995) 33-44.
- 1823 Garmroudi, F. and MacDonald, R.G.: Localization of the insulin-like growth factor II (IGF-II) binding/cross-linking site of the IGF-II/mannose 6-phosphate receptor to extracellular repeats 10-11. *J. Biol. Chem.*, 269 (1994) 26944-26952.
- 1824 Gaucheron, F., Mollé, D., Léonil, J. and Maubois, J.-L.: Selective determination of phosphopeptide β -CN(1-25) in a β -casein digest by adding iron: characterization by liquid chromatography with on-line electrospray-ionization mass spectrometric detection. *J. Chromatogr. B*, 664 (1995) 193-200.
- 1825 Hancock, W.S., Chloupek, R.C., Kirkland, J.J. and Snyder, L.R.: Temperature as a variable in reversed-phase high-performance liquid chromatographic separations of peptide and protein samples. I. Optimizing the separation of a growth hormone tryptic digest. *J. Chromatogr. A*, 686 (1994) 31-43.
- 1826 Honnra, Y., Niimi, M., Uchiumi, T., Takahashi, Y. and Odani, S.: Evidence for conformational change of fatty acid-binding protein accompanying binding of hydrophobic ligands. *J. Biochem. (Tokyo)*, 116 (1994) 1025-1029.
- 1827 Kataoka, K., Tanizawa, K., Fukui, T., Ueno, H., Yoshimura, T., Esaki, N. and Soda, K.: Identification of active site lysyl residues of phenylalanine dehydrogenase by chemical modification with methyl acetyl phosphate combined with site-directed mutagenesis. *J. Biochem. (Tokyo)*, 116 (1994) 1370-1376.
- 1828 Kumazaki, T., Ishii, S.-i. and Yokosawa, H.: Identification of the reactive site of ascidian trypsin inhibitor. *J. Biochem. (Tokyo)*, 116 (1994) 787-793.
- 1829 Lemaire, M., Schmitter, J.-M., Issakidis, E., Miginiac-Maslow, M., Gadal, P. and Decottignies, P.: Essential histidine at the active site of sorghum leaf NADP-dependent malate dehydrogenase. *J. Biol. Chem.*, 269 (1994) 27291-27296.
- 1830 Malmquist, G.: Multivariate evaluation of peptide mapping using the entire chromatographic profile. *J. Chromatogr. A*, 687 (1994) 89-100.
- 1831 McKay, G.A., Robinson, R.A., Lane, W.S. and Wright, G.D.: Active-site labeling of an aminoglycoside antibiotic phosphotransferase (APH(3')-IIIa). *Biochemistry*, 33 (1994) 14115-14120.
- 1832 Michel, L., Garin, J., Vincon, M., Gagnon, J. and Vignais, P.: Mapping of the pyrophosphate binding sites of beef heart mitochondrial F₁-ATPase by photolabelling with azidonitrophenyl [α -³²P]pyrophosphate. *Biochim. Biophys. Acta*, 1228 (1995) 67-72.
- 1833 Miyata, T., Inagi, R., Wada, Y., Yeda, Y., Iida, Y., Takahashi, M., Taniguchi, N. and Maeda, K.: Glycation of human β_2 -microglobulin in patients with hemodialysis-associated amyloidosis: identification of the glycated sites. *Biochemistry*, 33 (1994) 12215-12221.
- 1834 Morishima-Kawashima, M., Hasegawa, M., Takio, K., Suzuki, M., Yoshida, H., Titani, K. and Ihara, Y.: Proline-directed and non-proline-directed phosphorylation of PHF-tau. *J. Biol. Chem.*, 270 (1995) 823-829.
- 1835 Mott, J.D., Pramanik, B.C., Moormaw, C.R., Afendis, S.J., DeMartino, G.N. and Slaughter, C.A.: PA28, An activator of the 20 S proteasome, is composed of two nonidentical but homologous subunits. *J. Biol. Chem.*, 269 (1994) 31466-31471.
- 1836 Robertson, J.G., Adams, G.W., Medzihradzky, K.F., Burlingame, A.L. and Villafranca, J.J.: Complete assignment of disulfide bonds in bovine dopamine β -hydroxylase. *Biochemistry*, 33 (1994) 11563-11575.
- 1837 Ronca, F., Ranieri-Raggi, M., Brown, P.E., Moir, A.J.G. and Raggi, A.: Evidence of a species-differentiated regulatory domain within the N-terminal region of skeletal muscle AMP deaminase. *Biochim. Biophys. Acta*, 1209 (1994) 123-129.
- 1838 Shahrokh, Z., Eberlein, G., Buckley, D., Paranandi, M.V., Aswad, D.W., Stratton, P., Mischak, R. and Wang, Y.J.: Major degradation products of basic fibroblast growth factor: detection of succinimide and iso-aspartate in place of aspartate₁₅. *Pharm. Res.*, 11 (1994) 936-944; C.A., 121 (1994) 263389h.
- 1839 Shapiro, M.J., Panomitros, D. and Koshland, D.E., Jr.: Interactions between the methylation sites of the *Escherichia coli* aspartate receptor mediated by the methyltransferase. *J. Biol. Chem.*, 270 (1995) 751-755.
- 1840 Warburton, R.J. and Seybert, D.W.: Structural and functional characterization of bovine adrenodoxin reductase by limited proteolysis. *Biochim. Biophys. Acta*, 1246 (1995) 39-46.
- 1841 Watts, J.D., Affolter, M., Krebs, D.L., Wange, R.L., Samelson, L.E. and Aebersold, R.: Identification by electrospray ionization mass spectrometry of the sites of tyrosine phosphorylation induced in activated Jurkat T cells on the protein tyrosine kinase ZAP-70. *J. Biol. Chem.*, 269 (1994) 29520-29529.
- 1842 Xue, J., Kalafatis, M., Silveira, J.R., Kung, C. and Mann, K.G.: Determination of the disulfide bridges in factor Va heavy chain. *Biochemistry*, 33 (1994) 13109-13116.
- 1843 Yamada, H., Seno, M., Kobayashi, A., Moriyama, T., Kosaka, M., Ito, Y. and Imoto, T.: An S-alkylating reagent with positive charges as an efficient solubilizer of denatured disulfide-containing proteins. *J. Biochem. (Tokyo)*, 116 (1994) 852-857.
- 1844 Yamakawa, Y., Omori-Satoh, T. and Mebs, D.: Hemorrhagic principles in the venom of *Bitis arietans*, a viperous snake. II. Enzymatic properties with special reference to substrate specificity. *Biochim. Biophys. Acta*, 1247 (1995) 17-23.
- 1845 Zhang, Y., Beck, C.A., Poletti, A., Edwards, D.P. and Weigel, N.L.: Identification of phosphorylation sites unique to the B form of human progesterone receptor. *In vitro* phosphorylation by casein kinase II. *J. Biol. Chem.*, 269 (1994) 31034-31040.
- 1846 Zheng, Y., Bergold, A. and Duffel, M.W.: Affinity labeling of aryl sulfotransferase IV. Identification of a peptide sequence at the binding site for 3'-phosphoadenosine-5'-phosphosulfate. *J. Biol. Chem.*, 269 (1994) 30313-30319.

See also 1598, 1766, 1768, 1852, 1855, 1911, 1932, 1956, 1983, 2042.

19. PROTEINS

19a. General techniques

- 1847 Adrover, A. and Barba, D.: Analysis of size exclusion chromatographic properties of proteins. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 15-21; C.A., 121 (1994) 296295c.
- 1848 Assouline, Z., Coutinho, J.B., Gilkes, N.R., Greenwood, J.M., Kilburn, D.G., Le, K.D., Miller, R.C., Jr., Ong, E., Ramirez, C. and Warren, R.A.J.: Cellulose-binding domains as affinity tags for protein purification. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 43-47; C.A., 121 (1994) 296296d.
- 1849 Banks, J.F., Jr.: Separation and analysis of proteins by perfusion liquid chromatography and electrospray ionization mass spectrometry. *J. Chromatogr. A*, 691 (1995) 325-330.
- 1850 Banks, J.F., Jr., Quinn, J.P. and Whitehouse, C.M.: LC/ESI-MS determination of proteins using conventional liquid chromatography and ultrasonically assisted electrospray. *Anal. Chem.*, 66 (1994) 3688-3695.
- 1851 Bloomingburg, G.F. and Carta, G.: Separation of protein mixtures by continuous annular chromatography with step elution. *Chem. Eng. J. (Lausanne)*, 55 (1994) 198-278; C.A., 121 (1994) 225379x.
- 1852 Boschetti, E., Guerrier, L., Girot, P. and Horvath, J.: Preparative high-performance liquid chromatographic separation of proteins with HyperD ion-exchange supports. *J. Chromatogr. B*, 664 (1995) 225-231.
- 1853 Boyes, B.E. and Walker, D.G.: Selectivity optimization of reversed-phase high-performance liquid chromatographic peptide and protein separations by varying bonded-phase functionality. *J. Chromatogr. A*, 691 (1995) 337-347.
- 1854 Cai, C.-h., Romano, V.A. and Dubin, P.L.: Ionic strength dependence of protein retention on Superose 12 in SEC-IEC mixed mode chromatography. *J. Chromatogr. A*, 693 (1995) 251-261.
- 1855 Chloupek, R.C., Hancock, W.S., Marchylo, B.A., Kirkland, J.J., Boyes, B.E. and Snyder, L.R.: Temperature as a variable in reversed-phase high-performance liquid chromatographic separations of peptide and protein samples. II. Selectivity effects observed in the separation of several peptide and protein mixtures. *J. Chromatogr. A*, 686 (1994) 45-59.
- 1856 Compton, B.J. and Kreilgaard, L.: Chromatographic analysis of therapeutic proteins. *Anal. Chem.*, 66 (1994) 1175A-1180A - a review with 41 refs.
- 1857 Freitag, R. and Breier, J.: Development of an automated displacement chromatography purification process for biotechnologically produced proteins. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 166-172; C.A., 121 (1994) 296297e.
- 1858 Freitag, R. and Breier, J.: Displacement chromatography in biotechnological downstream procesing. *J. Chromatogr. A*, 691 (1995) 101-112.
- 1859 Guo, L.: (Study on the role of formic acid in formic acid-isopropanol system in protein separation). *Sepu*, 12 (1994) 278-280; C.A., 121 (1994) 225377v.
- 1860 Hellman, U., Wernstedt, C., Gonez, J. and Heldin, C.-H.: Improvement of an "in-gel" digestion procedure for the micro-preparation of internal protein fragments for amino acid sequencing. *Anal. Biochem.*, 224 (1995) 451-455.
- 1861 Hess, D., Nika, H., Chow, D.T., Bures, E.J., Morrison, H.D. and Aebersold, R.: Liquid chromatography-electrospray ionization mass spectrometry of 4-(3-pyridinylmethylamino)carboxypropyl phenylhydantoins. *Anal. Biochem.*, 224 (1995) 373-381.
- 1862 Hotz, N.J. and Bauer, W.F.: Determination of strongly protein-bound borocaptate species by high-performance liquid chromatography with online inductively coupled plasma atomic emission spectroscopy detection of boron. In: Soloway, A.H., Barth, R.F. and Carpenter, D.E. (Editors), *Adv. Neutron Capture Ther., [Proc. Int. Symp.]*, 5th 1992, Plenum, New York, 1993, pp. 439-443; C.A., 121 (1994) 250042q.
- 1863 Irvine, G.B.: Molecular-weight estimation for native proteins using size-exclusion high-performance liquid chromatography. *Methods Mol. Biol. (Totowa)*, 32(Basic Protein and Peptide Protocols) (1994) 267-274; C.A., 121 (1994) 250058z.
- 1864 Jacob, L.R., Rathgeber, G. and Mack, M.: Scale-up of purification of proteins from egg white by tentacle ion-exchange chromatography. *Chim. Oggi*, 12 (1994) 25-28; C.A., 121 (1994) 275710u.
- 1865 Jing, G., Zhou, B., Liu, L., Zhou, J. and Liu, Z.: Resolution of proteins on a phenyl-Superose HR5/5 column and its application to examining the conformation homogeneity of refolded recombinant staphylococcal nuclease. *J. Chromatogr. A*, 685 (1994) 31-37.
- 1866 Kaled, E. and Gitler, C.: Purification of vicinal dithiol-containing proteins by arsenical-based affinity chromatography. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 395-403; C.A., 121 (1994) 225364p.
- 1867 Khamlich, S., Loirat, M.J., Blanchard, D., le Maire, M., Bailly, P., Cartron, J.P. and Bertrand, O.: Influence of the size of the polar head of non-ionic detergents on membrane proteins immunoaffinity purification. *J. Biochem. Biophys. Methods*, 29 (1994) 123-134; C.A., 122 (1995) 4792v.
- 1868 Kim, Y.J. and Cramer, S.M.: Experimental studies in metal affinity displacement chromatography of proteins. *J. Chromatogr. A*, 686 (1994) 193-203.
- 1869 Kleinmann, I., Plicka, J., Smid, P. and Vins, I.: Hydrophobic interaction chromatography of proteins on HEMA-based sorbents. *Am. Lab. (Shelton)*, 26 (1994) 34J, 34L; C.A., 121 (1994) 225368i.
- 1870 Kopacicewicz, W., Kellard, E. and Cox, G.B.: High velocity reversed-phase chromatography of proteins and peptides: use of conventional C18, 300 Å, 15 µm particles. *J. Chromatogr. A*, 690 (1995) 9-19.
- 1871 Laubscher, J.C.: (Technique of fast protein liquid chromatography (FPLC)). *Schweiz. Lab.-Z.*, 51 (1994) 80-85; C.A., 121 (1994) 225231t.
- 1872 Leonard, M., Fournier, C. and Dellacherie, E.: Polyvinyl alcohol-coated macroporous polystyrene particles as stationary phases for the chromatography of proteins. *J. Chromatogr. B*, 664 (1995) 39-46.
- 1873 Li, Y.-M., Liao, J.-L., Nakazato, K.-i., Mohammad, J., Terenius, L. and Hjerten, S.: Continuous beds for microchromatography: cation-exchange chromatography. *Anal. Biochem.*, 223 (1994) 153-158.

- 1874 Mao, Q.-M., Prince, I.G. and Hearn, M.T.W.: High-performance liquid chromatography of amino acids, peptides and proteins. XXXIX. Impact of operating parameters in large-scale chromatography of proteins. *J. Chromatogr. A.*, 691 (1995) 273-283.
- 1875 Millot, M.-C., Hervé, F. and Sébille, B.: Retention behaviour of proteins on poly(vinylimidazole)-copper(II) complexes supported on silica: application to the fractionation of desialylated human α_1 -acid glycoprotein variants. *J. Chromatogr. B.*, 664 (1995) 55-67.
- 1876 Mueller, W.: Separation of proteins and nucleic acids. *Methods Enzymol.*, 228(Aqueous Two-Phase Systems) (1994) 193-206; C.A., 121 (1994) 249898s - a review with 20 refs.
- 1877 Nakayama, H., Kanai, M., Seta, K., Isobe, T. and Okuyama, T.: (Analysis of micro-quantities of proteins by combined two-dimensional electrophoresis-capillary column HPLC-ESI/TSQMS). *Kuromatogurafi*, 15 (1994) 72-73; C.A., 121 (1994) 275701s.
- 1878 Ngo, T.T.: Rapid purification of immunoglobulin G using azarenophilic chromatography: novel mode of protein-solid phase interactions. *J. Chromatogr. B.*, 662 (1994) 351-356.
- 1879 Noinville, V., Craescu, C.T., Vidal-Madjar, C. and Sébille, B.: Molecular approach to protein-polymer interactions in ion-exchange chromatography. *J. Chromatogr. B.*, 664 (1995) 33-38.
- 1880 Reif, O.-W., Nier, V. and Freitag, R.: High-performance membrane chromatography (HPCM), superior to conventional protein-HPLC? *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 6th European Congress on Biotechnology, 1993, Pt. 1) (1994) 521-524; C.A., 121 (1994) 250044s.
- 1881 Roe, S.D.: Protein A leakage from affinity adsorbents. *Spec. Publ.-R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 427-432; C.A., 121 (1994) 296294b.
- 1882 Shi, J.Y. and Goffe, R.A.: Comprehensive study on binding capacity of human immunoglobulin G to Avid Al affinity gel. *J. Chromatogr. A.*, 686 (1994) 61-71.
- 1883 Tongta, A., Liapis, A.I. and Siehr, D.J.: Equilibrium and kinetic parameters of the adsorption of α -chymotrypsinogen A onto hydrophobic porous adsorbent particles. *J. Chromatogr. A.*, 686 (1994) 21-29.
- 1884 Tsuneda, S., Saito, K., Furusaki, S. and Sugo, T.: High-throughput processing of proteins using a porous and tentacle anion-exchange membrane. *J. Chromatogr. A.*, 689 (1995) 211-218.
- 1885 Uchida, K. and Stadtman, E.R.: Quantitation of 4-hydroxyxynonenal protein adducts. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 371-380; C.A., 121 (1994) 225363n.
- 1886 Watanabe, E., Tsoka, S. and Asenjo, J.A.: Selection of chromatographic protein purification operations based on physicochemical properties. *Ann. N.Y. Acad. Sci.*, 721(Recombinant DNA Technology II) (1994) 348-364; C.A., 121 (1994) 275680j.
- For additional information see C.A.:
121 (1994) 253752g, 275707y.
- See also 1301, 1419, 1451, 1463, 1466, 1471, 1475, 1479, 1480, 1516, 1518, 1750, 1796, 1899, 2049, 2052, 2492.
- 189b. *Proteins of cells, viruses and subcellular particles*
- 1887 Avlyakulov, N.K., Sedel'nikova, S.E. and Shikaeva, O.S.: (Isolation of proteins from ribosomal 50S-subparticles of *Thermus thermophilus*). *Biokhimiya (Moscow)*, 59 (1994) 1003-1010.
- 1888 Claus, P., Schulze, E. and Wisniewski, J.R.: Insect proteins homologous to mammalian high mobility group proteins I/Y (HMG I/Y). Characterization and binding to linear and four-way junction DNA. *J. Biol. Chem.*, 269 (1994) 33042-33048.
- 1889 Fransen, M., Brees, C.A.E., de Béthune, B., van Veldhoven, P.P. and Mannaerts, G.P.: The 80 kDa cytosolic protein that binds the C-terminal part of rat acyl-CoA oxidase is not a peroxisomal import receptor but a prolyl-endopeptidase. *Biochim. Biophys. Acta*, 1201 (1994) 157-164.
- 1890 Ichimura, T., Ikuta, N., Uda, Y., Horigome, T. and Omata, S.: Separation of membrane proteins solubilized with a non-denaturing detergent and a high salt concentration by hydroxyapatite high-performance liquid chromatography. *Anal. Biochem.*, 224 (1995) 250-255.
- 1891 Ogawa, W. and Roth, R.A.: Characterization of a protein which binds phosphatidylinositol 3,4,5-trisphosphate and 4,5-bisphosphate. *Biochim. Biophys. Acta*, 1224 (1994) 533-540.
- For additional information see C.A.:
121 (1994) 247365s, 253911h.
- See also 1597, 1808.
- 19c. *Proteins synthesized by genetic manipulation, monoclonal antibodies*
- 1892 De Collongue-Poyet, B., Vidal-Madjar, C., Sébille, B. and Unger, K.K.: Study of conformational effects of recombinant interferon γ adsorbed on a non-porous reversed-phase silica support. *J. Chromatogr. B.*, 664 (1995) 155-161.
- 1893 Freitag, R. and Reif, O.-W.: Multi-dimensional affinity membrane chromatography in down-stream processing of antithrombin III. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology 3) (1994) 173-178; C.A., 121 (1994) 296298f.
- 1894 Joyce, J.G., Cook, J.C., Przy siecki, C.T. and Lehman, E.D.: Chromatographic separation of low-molecular-mass recombinant proteins and peptides on Superdex 30 prep grade. *J. Chromatogr. B.*, 662 (1994) 325-334.
- 1895 Jungbauer, A. and Boschetti, E.: Manufacture of recombinant proteins with safe and validated chromatographic sorbents. *J. Chromatogr. B.*, 662 (1994) 143-179 - a review with 111 refs.
- 1896 Nishihira, J., Kuriyama, T., Sakai, M., Nishi, S., Ohki, S.-y. and Hikichi, K.: The structure and physicochemical properties of rat liver macrophage migration inhibitory factor. *Biochim. Biophys. Acta*, 1247 (1995) 159-162.
- 1897 Phillips, T.M.: Immunoaffinity measurement of recombinant granulocyte colony stimulating factor in patients with chemotherapy-induced neutropenia. *J. Chromatogr. B.*, 662 (1994) 307-313.
- 1898 Rapoport, E.M., Zhigis, L.S., Vlasova, E.V., Piskarev, V.E., Khral'tsova, L.S., Vorozhaikina, M.M. and Zubov, V.P.: (Use of thiophilic adsorption chromatography for recovery of monoclonal antibodies to group-specific antigen H (type I)). *Zh. Fiz. Khim.*, 68 (1994) 1809-1815; C.A., 122 (1995) 7343k.

- 1899 Zerovnik, E., Jerala, R., Poklar, N., Kroon-Zitko, L. and Turk, V.: Compactness of the molten globule in comparison to unfolded states as observed by size-exclusion chromatography. *Biochim. Biophys. Acta*, 1209 (1994) 140-143.

For additional information see C.A.:
121 (1994) 253734c.

See also 1780, 1791, 1817, 1857, 1913, 1968, 1970, 1974, 2017, 2052, 2061.

19d. Microbial and plant proteins

- 1900 De Noni, I., de Bernardi, G. and Pellegrino, L.: Detection of common-wheat (*Triticum aestivum*) flour in durum-wheat (*Triticum durum*) semolina by reverse-phase high-performance liquid chromatography (RP-HPLC) of specific albumins. *Food Chem.*, 51 (1994) 325-329; C.A., 121 (1994) 229157w.
- 1901 Dunaevsky, Ya.E., Pavliukova, E.B., Beliakova, G.A. and Belozerky, M.A.: (Anionic trypsin inhibitors from dry buckwheat seeds: isolation, specificity of action and effect on micromycetes growth). *Biokhimiya (Moscow)*, 59 (1994) 990-996.
- 1902 Fris, S., Anthonsen, D., Noren, O. and Sjöström, H.: Gamma-type gliadins cause secretion of prostaglandin E₂ in patients with coeliac disease. *Clin. Chirn. Acta*, 231 (1994) 173-183.
- 1903 Günemann-Schäfer, K., Engeland, K., Linder, D. and Kindl, H.: Evidence for domain structures of the trifunctional protein and the tetrafunctional protein acting in glyoxysomal fatty acid β -oxidation. *Eur. J. Biochem.*, 226 (1994) 909-915.
- 1904 Kiser, K.B., Arnaud, P. and Schmidt, M.G.: Rapid purification of native SecA from *Escherichia coli*: development of a new affinity chromatography procedure. *Curr. Microbiol.*, 29 (1994) 323-329; C.A., 122 (1995) 4634v.
- 1905 Moutete, H.F., Olszewski, A., Gastin, I., Naimour, F., Moneret-Vautrin, D.A. and Guéant, J.L.: Purification of allergenic proteins from peanut for preparation of the reactive solid phase of a specific IgE radioimmunoassay. *J. Chromatogr. B*, 664 (1995) 211-217.
- 1906 Poulet, P., Crechet, J.-B., Bernardi, A. and Parmeggiani, A.: Properties of the catalytic domain of Sdc25p, a yeast GDP/GTP exchange factor of Ras proteins. Complexation with wild-type Ras2p, [S24N]Ras2p and [R80D, N81D]Ras2p. *Eur. J. Biochem.*, 227 (1995) 537-544.
- 1907 Rocher, A., Soriano, F., Molina, E., González-Limas, G. and Méndez, E.: Characterization of distinct α - and γ -type gliadins and low molecular weight components from wheat endosperm as coeliac immunoreactive proteins. *Biochim. Biophys. Acta*, 1247 (1995) 143-148.
- 1908 Santucci, D.M., Haas, B. and Smarrelli, J., Jr.: Regulation of the inducible soybean nitrate reductase isoform in mutants lacking constitutive isoform(s). *Biochim. Biophys. Acta*, 1247 (1995) 46-50.
- 1909 Senyuk, V.I., Yattara, H.B. and Vaintraub, I.A.: Purification of some soybean proteins by hydrophobic chromatography. *Nahrung*, 38 (1994) 369-372; C.A., 121 (1994) 275711v.
- 1910 Sharman, G.J., Williams, D.H., Ewing, D.F. and Ratledge, C.: Isolation, purification and structure of exochelin MS, the extracellular siderophore from *Mycobacterium smegmatis*. *Biochim. J.*, 305 (1995) 187-196.

- 1911 Terabe, M., Kojima, S., Taguchi, S., Momose, H. and Miura, K.-i.: Three novel subtilisin-trypsin inhibitors from *Streptomyces*: primary structures and inhibitory properties. *J. Biochem. (Tokyo)*, 116 (1994) 1156-1163.

See also 1951, 1972, 2055.

19e. Proteins of blood, serum and blood cells

- 1912 Borkow, G., Gutierrez, J.M. and Ovadia, M.: A potent antihemorrhagin in the serum of the non-poisonous water snake *Natrix tessellata*: isolation, characterization and mechanism of neutralization. *Biochim. Biophys. Acta*, 1201 (1994) 482-490.
- 1913 Büntemeyer, H., Tebbe, H., Lütke Meyer, D. and Lehmann, J.: Rapid high-performance liquid chromatographic quantification of recombinant human antithrombin III during production and purification. *J. Chromatogr. B*, 662 (1994) 209-216.
- 1914 Burnouf, T.: Chromatography in plasma fractionation: benefits and future trends. *J. Chromatogr. B*, 664 (1995) 3-15 - a review with 52 refs.
- 1915 Chang, J.Y.C. and Chang, H.M.: (Purification of plasminogen from swine plasma by affinity chromatography). *Shipin Kexue (Taipei)*, 21 (1994) 14-20; C.A., 121 (1994) 295717e.
- 1916 Cullen, P.J., Dawson, A.P. and Irvine, R.F.: Purification and characterization of an Ins(1,3,4,5)P₄ binding protein from pig platelets: possible identification of a novel non-neuronal Ins(1,3,4,5)P₄ receptor. *Biochem. J.*, 305 (1995) 139-143.
- 1917 Dahri, L., Boisson-Vidal, C., Regnault, V., Muller, D., Sultan, Y. and Stoltz, J.F.: Synthetic sorbents for removal of factor VIII inhibitors from haemophilic A plasma. *J. Chromatogr. B*, 664 (1995) 47-54.
- 1918 Era, S., Kuwata, K., Imai, H., Nakamura, K., Hayashi, T. and Sogami, M.: Age-related change in redox state of human serum albumin. *Biochim. Biophys. Acta*, 1247 (1995) 12-16.
- 1919 Finger, U.B., Thömmes, J., Kinzelt, D. and Kula, M.-R.: Application of thiophilic membranes for the purification of monoclonal antibodies from cell culture media. *J. Chromatogr. B*, 664 (1995) 69-78.
- 1920 Huang, Y.C. and Lee, T.Y.: Purification of immunoglobulin G in the presence of albumin and transferrin by zeolites. In: *Off. Proc. Comb. Conf., 6th Conf. Asia Pac. Confed. Chem. Eng., 21st Australas. Chem. Eng. Conf.*, Inst. Eng. Aust., Barton, 1, 1993, pp. 147/1-152/1; C.A., 122 (1995) 16938k.
- 1921 Josic, D., Schwinn, H., Stadler, M. and Strancar, A.: Purification of factor VIII and von Willebrand factor from human plasma by anion-exchange chromatography. *J. Chromatogr. B*, 662 (1994) 181-190.
- 1922 Katoh, S. and Terashima, M.: Purification of secreted proteins by immunoaffinity chromatography with cross-reactive and anti-peptide antibodies. *Prog. Biotechnol.*, 9(ECB6: Proceedings of the 5th European Congress on Biotechnology, 1993, Pt. 1) (1994) 539-542; C.A., 121 (1994) 225371p.
- 1923 Lutomski, D., Joubert-Caron, R., Bourin, P., Bladier, D. and Caron, M.: Use of thiophilic adsorption in the purification of biotinylated Fab fragments. *J. Chromatogr. B*, 664 (1995) 79-82.
- 1924 Matveevskaya, N.S., Alyoshkin, V.A. and Rozina, M.N.: Isolation of the C3 complement component and its C3d subunit from IY-1 fraction of Cohn's fractionation of human plasma. *J. Chromatogr. B*, 664 (1995) 261-266.

- 1925 Müller, A.M.F., Hallier, E., Westphal, G., Schröder, K.R. and Bolt, H.M.: Determination of methylated globin and albumin for bio-monitoring of exposure to methylating agents using HPLC with precolumn fluorescent derivatization. *Fresenius J. Anal. Chem.*, 350 (1994) 712-715.
- 1926 Nikolic, J.A. and Jankovic, M.: Purification of human alpha-fetoprotein. *J. Serb. Chem. Soc.*, 59 (1994) 525-530; C.A., 121 (1994) 250076d.
- 1927 Osvig, C., Sand, O., Kristensen, T., Kristensen, L. and Sottrup-Jensen, L.: Isolation and characterization of circulating complex between human pregnancy-associated plasma protein-A and proform of eosinophil major basic protein. *Biochim. Biophys. Acta*, 1201 (1994) 415-423.
- 1928 Palmieri, G., Cassani, G. and Fassina, G.: Peptide immobilization on calcium alginate beads: applications to antibody purification and assay. *J. Chromatogr. B*, 664 (1995) 127-135.
- 1929 Schwarz, A., Kohen, F. and Wilchek, M.: Novel heterocyclic ligands for the thiophilic purification of antibodies. *J. Chromatogr. B*, 664 (1995) 83-88.
- 1930 Soedjanaatmadja, U.M.S., Hofsteenge, J., Jeronimus-Stratingh, C.M., Bruins, A.P. and Beintema, J.J.: Demonstration by mass spectrometry that pseudo-hevein and hevein have ragged C-terminal sequences. *Biochim. Biophys. Acta*, 1209 (1994) 144-148.
- 1931 Teh, L.-C. and Froger, M.: Direct capture of plasma factor VIII: C by ion chromatography. *Vox Sang.*, 67 (1994) 8-13; C.A., 122 (1995) 64081x.
- 1932 Tokunaga, F., Goto, T., Wakabayashi, S. and Koide, T.: Amino acid sequence of porcine antithrombin III. *J. Biochem. (Tokyo)*, 116 (1994) 1164-1170.
- 1933 Vallar, L., Costa, P.M.P., Teixeira, A., Pfister, M., Barrois, R., Costa, P.P. and Rivat, C.: Immunoabsorption procedure as a potential method for the specific β 2-microglobulin removal from plasma of patients with chronic renal failure. *J. Chromatogr. B*, 664 (1995) 97-106.
- 1934 Van Noort, W.L., de Jong, G. and van Eijk, H.G.: Purification of isotransferrins by concanavalin A Sepharose chromatography and preparative isoelectric focusing. *Eur. J. Clin. Chem. Clin. Biochem.*, 32 (1994) 885-892.
- 1935 Verdoliva, A., Cassani, G. and Fassina, G.: Affinity purification of polyclonal antibodies using immobilized multimeric peptides. *J. Chromatogr. B*, 664 (1995) 175-183.
- For additional information see C.A.:
 121 (1994) 228808x, 286573c;
 122 (1995) 8167t.
- See also 1404, 1822, 1842, 1858, 1878, 1882, 1898, 1948, 1950, 2058.
- 19f. *Structural and muscle proteins*
- 1936 Guo, X.-F., Nakaya, M. and Watabe, S.: Myosin subfragment-1 isoforms having different heavy chain structures from fast skeletal muscle of thermally acclimated carp. *J. Biochem. (Tokyo)*, 116 (1994) 728-735.
- 1937 Hayashibara, T. and Miyanishi, T.: Binding of the amino-terminal region of myosin alkali 1 light chain to actin and its effect on actin-myosin interaction. *Biochemistry*, 33 (1994) 12821-12827.
- 1938 Hill, P.A., Reynolds, J.J. and Meikle, M.C.: The purification and partial characterization of bone resorptive polypeptides from bovine bone matrix. *Biochim. Biophys. Acta*, 1201 (1994) 193-202.
- 1939 Katoh, T., Tanahashi, K., Hasegawa, Y. and Morita, F.: Porcine aorta smooth-muscle myosin contains three species made of different combinations of two 17-kDa essential light-chain isoforms. *Eur. J. Biochem.*, 227 (1995) 459-465.
- 1940 Mizuno, K. and Hayashi, T.: Peculiar effect of urea on the interaction of type I collagen with heparin on chromatography. *J. Biochem. (Tokyo)*, 116 (1994) 1257-1263.
- 1941 Nakamura, F. and Suyama, K.: Analysis of aldosine, an amino acid derived from aldol crosslink of elastin and collagen by high-performance liquid chromatography. *Anal. Biochem.*, 223 (1994) 21-25.
- 1942 Ohashi, K., Nishimura, M., Terasaki, A.G. and Nakagawa, H.: A 36-kDa protein of the dense bodies of smooth muscle cells. *J. Biochem. (Tokyo)*, 116 (1994) 1354-1359.
- 1943 Sato, K., Taira, T., Takayama, R., Ohtsuki, K. and Kawabata, M.: Improved chromatographic purification of human and bovine type V collagen sub-molecular species and their subunit chains from conventional crude preparations. Application to cell-substratum adhesion assay for human umbilical vein endothelial cell. *J. Chromatogr. B*, 663 (1995) 25-33.
- 1944 Van Hoof, C., Cayla, X., Bosch, M., Merlevede, W. and Goris, J.: The phosphotyrosyl phosphatase activation of protein phosphatase 2A. A novel purification method, immunological and enzymic characterization. *Eur. J. Biochem.*, 226 (1994) 899-907.

See also 1313.

19g. *Protamines, histones and other nuclear proteins*

- 1945 Berger, R.G., Hoffmann, R., Waidelich, D., Bayer, E., Ingendoh, A., Hillenkamp, F. and Zeppezauer, M.: Separation and determination of molecular masses of histone H1 subtypes from calf thymus. In: Hodges, R.S. and Smith, J.A. (Editors), *Pept.: Chem., Struct. Biol., Proc. Am. Pept. Symp., 13th 1993*, ESCOM, Leiden, 1994, pp. 228-229; C.A., 121 (1994) 275684p.
- 1946 Wang, B. and Williamson, G.: Detection of a nuclear protein which binds specifically to the antioxidant responsive element (ARE) of the human NAD(P)H:quinone oxidoreductase gene. *Biochim. Biophys. Acta*, 1219 (1994) 645-652.

19h. *Chromoproteins and metalloproteins*

- 1947 Calvo, A. and Batistaviera, F.: Isolation of lactoferrin by immobilized metal ion affinity chromatography (IMAC). *Biochem. Edic.*, 22 (1994) 50-52; C.A., 121 (1994) 254778g.
- 1948 Chiancone, E., Gattoni, M., Fronticelli, C., Termine, A., Silvestri, L. and Sarti, P.: Preparative and analytical applications of immobilized haemoglobin. *J. Chromatogr. B*, 664 (1995) 89-95.
- 1949 Eckerborn, S., Bergqvist, Y. and Jeppsson, J.-O.: Improved method for analysis of glycated hemoglobin by ion exchange chromatography. *Ann. Clin. Biochem.*, 31 (1994) 355-360; C.A., 121 (1994) 250070x.

- 1950 Itälä, L., Seppä, K., Turpeinen, U. and Sillanaukee, P.: Separation of hemoglobin acetaldehyde adducts by high-performance liquid chromatography - cation-exchange chromatography. *Anal. Biochem.*, 224 (1995) 323-329.
- 1951 Moore, G.R., Kadir, F.H.A., Al-Massad, F.K., le Brun, N.E., Thomson, A.J., Greenwood, C., Keen, J.N. and Findlay, J.B.C.: Structural heterogeneity of *Pseudomonas aeruginosa* bacterioferritin. *Biochem. J.*, 304 (1994) 493-497.
- 1952 O'Donnell, J.K., Birch, P., Parsons, C.T., White, S.P., Okabe, J., Martin, M.J., Adams, C., Sundarapandian, K., Manjula, B.N., Acharya, A.S. et al.: Influence of the chemical nature of side chain at β 108 of hemoglobin A on the modulation of the oxygen affinity by chloride ions. Low oxygen affinity variants of human hemoglobin expressed in transgenic pigs: hemoglobins Presbyterian and Yoshizuka. *J. Biol. Chem.*, 269 (1994) 27692-27699.
- 1953 Williams, J.P., Jo, H., Sacks, D.B., Crimmins, D.L., Thoma, R.S., Hunnicutt, R.E., Radding, W., Sharma, R.K. and McDonald, J.M.: Tyrosine-phosphorylated calmodulin has reduced biological activity. *Arch. Biochem. Biophys.*, 315 (1994) 119-126.
- 1954 Xie, J., Aguilar, M.-I. and Hearn, M.T.W.: High-performance liquid chromatography of amino acids, peptides and proteins. CXVIII. Adsorption of horse heart cytochrome c onto a tannic-type cation exchanger. *J. Chromatogr. A*, 691 (1995) 263-271.
- See also 1934, 2049.
- 19i. *Proteins of glands, gland products, various zymogens (incl. milk proteins)*
- 1955 Bergmann, J.E. and Guelzow, H.J.: (Separation of salivary proteins by high-pressure liquid chromatography). *Dtsch. Zahnaerztl. Z.*, 48 (1993) 636-638; C.A., 121 (1994) 296269x.
- 1956 Kuo, K.-W., Chang, L.-S., Lin, P.-M., Leaber, R.J. and Chang, C.-C.: Immunological neutralization of cobrotoxin by its homologous precipitin and non-precipitin antibodies. *J. Biochem. (Tokyo)*, 116 (1994) 1227-1232.
- 1957 Madjisavas, M., Armstrong, D.T. and Seemark, R.F.: Purification of a cell-cell adhesion regulator from porcine seminal vesicle fluid. *Biochem. Biophys. Res. Commun.*, 205 (1994) 1206-1216.
- 1958 Omori-Satoh, T., Yamakawa, Y., Nagaoka, Y. and Mebs, D.: Hemorrhagic principles in the venom of *Bitis arietans*, a viperous snake. I. Purification and characterization. *Biochim. Biophys. Acta*, 1246 (1995) 61-66.
- 1959 Rhee, S.K.: Purification and characterization of a major gap junction channel-forming protein in rat liver. *Korean Biochem. J.*, 27 (1994) 335-341; C.A., 121 (1994) 225391v.
- 1960 Sun, Y., Zhu, J., Gu, Y., Zhong, E., Liu, Y., Zhang, X., Gao, Y. and Cheng, L.: (Purification and biological activity assay of hepatic chalone extracted from rat liver) *Jiepou Xueba*, 25 (1994) 308-312; C.A., 121 (1994) 275715z.
- 1961 Syvaaja, E.-L. and Korhonen, H.: Determination of colostral immunoglobulins by gel filtration chromatography. *Int. Dairy Fed. Spec. Issue*, 9404(Indigenous Antimicrobial Agents of Milk: Recent Developments) (1994) 216-219; C.A., 122 (1995) 4626u.
- 1962 Valdivia, H.H., Martin, B.M., Ramirez, A.N., Fletcher, P.L. and Possani, L.D.: Isolation and pharmacological characterization of four novel Na^+ channel-blocking toxins from the scorpion *Centruroides noxioides* Hoffmann. *J. Biochem. (Tokyo)*, 116 (1994) 1383-1391.
- 1963 Wilde, C.J., Addey, C.V.P., Boddy, L.M. and Peaker, M.: Autocrine regulation of milk secretion by a protein in milk. *Biochem. J.*, 305 (1995) 51-58.
- See also 1824, 1896, 1984.
- 19j. *Proteins of brain, cerebrospinal fluid and eye*
- 1964 Kieselbach, T., Irrgang, K.-D. and Rüppel, H.: A segment corresponding to amino acids Val170-Arg182 of bovine arrestin is capable of binding to phosphorylated rhodopsin. *Eur. J. Biochem.*, 226 (1994) 87-97.
- See also 1834.
- 19k. *Proteins of neoplastic tissue and transformed cells*
- 1965 Ponder, R.D., Stafford, C.T., Kiefer, C.R., Ford, J.L., Thompson, W.O. and Hoffman, D.R.: Development of an enzyme-linked immunosorbent assay for measurement of fire ant venom-specific IgE. *Ann. Allergy*, 72 (1994) 329-332; C.A., 121 (1994) 278341k.
- 19l. *Specific binding and receptor proteins*
- 1966 Antonijczuk, K., Kroftova, O.S., Varghese, A.H., Antonijczuk, A., Henjum, D.C., Korza, G., Ozols, J. and Sunderman, F.W., Jr.: The 40 kDa $^{63}\text{Ni}^{2+}$ -binding protein (pNiXc) on Western blots of *Xenopus laevis* oocytes and embryos is the monomer of fructose-1,6-bisphosphate aldolase A. *Biochim. Biophys. Acta*, 1247 (1995) 81-89.
- 1967 Higazi, A.A.-R. and Barghouti, I.I.: Regulation of neutrophil activation by oleic acid. *Biochim. Biophys. Acta*, 1201 (1994) 442-446.
- 1968 Josic, D., Lim, Y.-P., Strancar, A. and Reutter, W.: Application of high-performance membrane chromatography for separation of annexins from the plasma membranes of liver and isolation of monospecific polyclonal antibodies. *J. Chromatogr. B*, 662 (1994) 217-226.
- 1969 Kodentsova, V.M., Vrzhesinskaya, O.A., Risnik, V.V., Soko'lnikov, A.A. and Spirichev, V.B.: (Isolation of a riboflavin-binding apoprotein from egg white and its use for riboflavin detection in biological objects). *Prikl. Biokhim. Mikrobiol.*, 30 (1994) 603-609; C.A., 122 (1995) 4635w.
- 1970 Koppel, R., Litvak, M. and Solomon, B.: Affinity purification of a mannose-binding protein, a sensitive tool in the diagnostics of IgM, via site-directed phosphorylated mannan bound to alumina. *J. Chromatogr. B*, 662 (1994) 191-196.
- 1971 Kozma, M.M., Chowrimootoo, G., Debnam, E.S., Epstein, O. and Srai, S.K.S.: Developmental changes in mucosal iron binding proteins in the guinea pig. Expression of transferrin, H and L ferritin and binding of iron to a low molecular weight protein. *Biochim. Biophys. Acta*, 1201 (1994) 229-234.

- 1972 Neumann, G.M., Condron, R., Thomas, I. and Polya, G.M.: Purification and sequencing of a family of wheat lipid transfer protein homologues phosphorylated by plant calcium-dependent protein kinase. *Biochim. Biophys. Acta*, 1209 (1994) 183-190.
- 1973 Peracchia, F., Tamburro, A., Zanni, M. and Rotilio, D.: Effects of thrombin and thrombin peptide activating receptor (SFLLRN) on proteoglycan synthesis and distribution in human endothelial cells. *Biochem. Biophys. Res. Commun.*, 205 (1994) 1625-1631.
- 1974 Sautes, C., Galinha, A., Bouchard, C., Mazieres, N., Spagnoli, R. and Fridman, W.H.: Recombinant soluble Fc_y receptors: production, purification and biological activities. *J. Chromatogr. B*, 662 (1994) 197-207.
- 1975 White, T.K. and Schnaar, R.L.: Solubilization of a membrane-associated protein from rat nervous system tissues which binds anionic glycolipids and phospholipids. *Biochim. Biophys. Acta*, 1196 (1994) 218-226.
- 1976 Yohn, J.J., Smith, C., Stevens, T., Morelli, J.G., Shurnas, L.R., Walchak, S.J., Hoffman, T.A., Kelley, K.K., Escobedo-Morse, A., Yanagisawa, M. et al.: Autoregulation of endothelin-1 secretion by cultured human keratinocytes via the endothelin B receptor. *Biochim. Biophys. Acta*, 1224 (1994) 454-458.

For additional information see C.A.:
121 (1994) 250087h.

See also 1476, 1592, 1820, 1823, 1826, 1839, 1845, 1891, 1916, 1964.

19m. Urinary proteins

- 1977 Baer, J.C. and Hjelm, M.: Analysis of urinary proteins by liquid chromatography. *Ann. Clin. Biochem.*, 31 (1994) 315-326; C.A., 121 (1994) 249945e.
- 1978 Büeler, M.R., Wiederkehr, F. and Vonderschmitt, D.J.: Electrophoretic, chromatographic and immunological studies of human urinary proteins. *Electrophoresis (Weinheim)*, 16 (1995) 124-134.
- 1979 Keely, E.J. and Fairman, C.: Measurement of human urinary prolactin as a noninvasive study tool. *Clin. Chem. (Washington)*, 40 (1994) 2017-2021.
- 1980 Ruhn, P.F., Taylor, J.D. and Hage, D.S.: Determination of urinary albumin using high-performance immunoaffinity chromatography and flow injection analysis. *Anal. Chem.*, 66 (1994) 4265-4271.

See also 1833.

19n. Other proteins (incl. proteinous inhibitors of enzymic activity)

- 1981 Corradi da Silva, M.L., Tamura, T. and Rice, K.G.: Derivatization and purification of bisecting tyrosinamide oligosaccharides from ovotransferrin. *Arch. Biochem. Biophys.*, 315 (1994) 460-466.
- 1982 Libera, L.D., Massimino, M.L., Arslan, P., Beltrame, M. and Cantini, M.: Analysis of muscle cell culture medium by size-exclusion chromatography. *J. Chromatogr. B*, 664 (1995) 185-191.

- 1983 Morioka, M., Muraoka, H., Yamamoto, K. and Ishikawa, H.: An endosymbiont chaperonin is a novel type of histidine protein kinase. *J. Biochem. (Tokyo)*, 116 (1994) 1075-1081.
- 1984 Perales, J., Villela, C., Domont, G.B., Choumet, V., Saliou, B., Moussatche, H., Bon, C. and Faule, G.: Molecular structure and mechanism of action of the crototoxin inhibitor from *Crotalus durissus terrificus* serum. *Eur. J. Biochem.*, 227 (1995) 19-26.

See also 1596, 1828, 1835, 2049, 2135.

20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

20a. Oxidoreductases

- 1985 Cendrin, F., Jouve, H.M., Gaillard, J., Thibault, P. and Zaccai, G.: Purification and properties of a halophilic catalase-peroxidase from *Haloarcula marismortui*. *Biochim. Biophys. Acta*, 1209 (1994) 1-9.
- 1986 Chae, H.Z., Chung, S.J. and Rhee, S.G.: Thioredoxin-dependent peroxide reductase from yeast. *J. Biol. Chem.*, 269 (1994) 27670-27678.
- 1987 Crémillon, C., Habib, A., Maclouf, J., Pradelles, P., Grassi, J. and Frobert, Y.: Differential measurement of constitutive (COX-1) and inducible (COX-2) cyclooxygenase expression in human umbilical vein endothelial cells using specific immunometric enzyme immunoassays. *Biochim. Biophys. Acta*, 1254 (1995) 341-348.
- 1988 Del Bello, B., Maellaro, E., Sugherini, L., Santucci, A., Comporti, M. and Casini, A.F.: Purification of NADPH-dependent dehydroascorbate reductase from rat liver and its identification with 3 α -hydroxysteroid dehydrogenase. *Biochem. J.*, 304 (1994) 385-390.
- 1989 Dowd, V. and Yon, R.J.: Further examination of a "concerted cluster" model of multivalent affinity. Heterogeneous adsorption of lactate dehydrogenase to Cibacron Blue immobilised on cellulose. *J. Chromatogr. A*, 693 (1995) 15-21.
- 1990 Johnson, K.A., Morrow, C.J., Knight, G.D. and Scallen, T.J.: In vivo formation of 25-hydroxycholesterol from endogenous cholesterol after a single meal, dietary cholesterol challenge. *J. Lipid Res.*, 35 (1994) 2241-2253.
- 1991 Maltseva, O.V., Solyanikova, I.P. and Golovleva, L.A.: Chlorocatechol 1,2-dioxygenase from *Rhodococcus erythropolis* 1CP. Kinetic and immunochemical comparison with analogous enzymes from Gram-negative strains. *Eur. J. Biochem.*, 226 (1994) 1053-1061.
- 1992 Niemetz, R., Altenschmidt, U., Brucker, S. and Fuchs, G.: Benzoyl-coenzyme-A 3-monoxygenase, a flavin-dependent hydroxylase. Purification, some properties and its role in aerobic benzoate oxidation via gentisate in a denitrifying bacterium. *Eur. J. Biochem.*, 227 (1995) 161-168.
- 1993 Noguchi, M., Miyano, M., Matsumoto, T. and Noma, M.: Human 5-lipoxygenase associates with phosphatidylcholine liposomes and modulates LTA₄ synthetase activity. *Biochim. Biophys. Acta*, 1215 (1994) 300-306.

- 1994 Novikov, D.K., Vanhove, G.F., Carchon, H., Asselberghs, S., Eyissen, H.J., van Veldhoven, P.P. and Mannaerts, G.P.: Peroxisomal β -oxidation. Purification of four novel 3-hydroxyacyl-CoA dehydrogenases from rat liver peroxisomes. *J. Biol. Chem.*, 269 (1994) 27125-27135.
- 1995 Padilla, C.A., Martinez-Galisteo, E., Barcena, J.A., Spyrou, G. and Holmgren, A.: Purification from placenta, amino acid sequence, structure comparisons and cDNA cloning of human glutaredoxin. *Eur. J. Biochem.*, 227 (1995) 27-34.
- 1996 Percival, M.D., Ouellet, M., Vincent, C.J., Yergey, J.A., Kennedy, B.P. and O'Neill, G.P.: Purification and characterization of recombinant human cyclooxygenase-2. *Arch. Biochem. Biophys.*, 315 (1994) 111-118.
- 1997 Regdel, D., Schewe, T. and Kuehn, H.: (Tomato fruit lipoxygenase: isolation, partial purification, characterization and interaction with biological membranes). *Biokhimiya (Moscow)*, 59 (1994) 788-796.
- 1998 Sailesh, S., Kumar, Y.V.K., Prasad, M. and Reddanna, P.: Sheep uterus dual lipoxygenase in the synthesis of 14,15-leukotrienes. *Arch. Biochem. Biophys.*, 315 (1994) 362-368.
- 1999 Sarkar, M.A. and Jackson, B.J.: Theophylline-N-demethylations as probes for P4501A1 and P4501A2. *Drug Metab. Disp.*, 22 (1994) 827-834.
- 2000 Soulimane, T. and Buse, G.: Integral cytochrome-c oxidase. Preparation and progress towards a three-dimensional crystallization. *Eur. J. Biochem.*, 227 (1995) 588-595.
- 2001 Tao, Y. and Chen, K.Y.: Purification of deoxyhypusine synthase from *Neurospora crassa* to homogeneity by substrate elution affinity chromatography. *J. Biol. Chem.*, 270 (1995) 383-386.
- 2002 Van Dijk, J., Boomsma, F., Alberts, G., Man in't Veld, A.J. and Schalekamp, M.A.D.H.: Determination of semicarbazide-sensitive amine oxidase activity in human plasma by high-performance liquid chromatography with fluorimetric detection. *J. Chromatogr. B*, 663 (1995) 43-50.
- 2003 Van Veldhoven, P.P., van Rompuy, P., Vanhooren, J.C.T. and Mannaerts, G.P.: Purification and further characterization of peroxisomal trihydroxycoprostanoyl-CoA oxidase from rat liver. *Biochem. J.*, 304 (1994) 195-200.
- 2004 Wang, X.T., Dumoulin, M.J., Befani, O., Mondovi, B. and Mateescu, M.A.: Joint chromatographic purification of bovine serum ceruloplasmin and amine oxidase. *Prep. Biochem.*, 24 (1994) 237-250; C.A., 122 (1995) 4120z.
- See also 1815, 1827, 1829, 1836, 1840, 2219.
- 20b. Transferases (excl. E.C. 2.7.-.)
- 2005 Aigner, A., Jäger, M., Weber, P. and Wolf, S.: A nonradioactive assay for microsomal cysteine-S-conjugate N-acetyltransferase activity by high-pressure liquid chromatography. *Anal. Biochem.*, 223 (1994) 227-231.
- 2006 Ishiguro, H., Kawata, S., Yamasaki, E., Matsuda, Y., Fujii, S. and Matsuzawa, Y.: High-performance liquid chromatographic assay for farnesyl-protein transferase activity with dabsylated peptide. *J. Chromatogr. B*, 663 (1995) 35-42.
- 2007 Langkamp-Henken, B., Geller, A.M., LeGros, H.L., Jr., Price, J.O., de la Rosa, J. and Kotb, M.: Characterization of distinct forms of methionine adenosyltransferase in nucleated, and mature human erythrocytes and erythroleukemic cells. *Biochim. Biophys. Acta*, 1201 (1994) 397-404.
- 2008 Liebergesell, M., Sonomoto, K., Madkour, M., Mayer, F. and Steinbüchel, A.: Purification and characterization of the poly(hydroxyalkanoic acid) synthase from *Chromatium vinosum* and localization of the enzyme at the surface of poly(hydroxyalkanoic acid) granules. *Eur. J. Biochem.*, 226 (1994) 71-80.
- 2009 Mack, M., Bendrat, K., Zelder, O., Eckel, E., Linder, D. and Buckel, W.: Location of the two genes encoding glutamate coenzyme A-transferase at the beginning of the hydroxyglutarate operon in *Acidaminococcus fermentans*. *Eur. J. Biochem.*, 226 (1994) 41-51.
- 2010 Mohsen, A.-W.A., Aull, J.L., Payne, D.M. and Daron, H.H.: Ligand-induced conformational changes of thymidylate synthase detected by limited proteolysis. *Biochemistry*, 34 (1995) 1669-1677.
- 2011 Pace, M., Agnelli, D., Gardana, C., Mauri, P.L. and Pietta, P.G.: High-performance liquid chromatographic assay of glycosyltransferases using flavonoids as substrate. *J. Chromatogr. A*, 691 (1995) 331-336.
- 2012 Reenilä, I., Tuomainen, P. and Männistö, P.T.: Improved assay of reaction products to quantitate catechol-O-methyltransferase activity by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 663 (1995) 137-142.
- 2013 Vancura, A. and Haldar, D.: Purification and characterization of glycerophosphate acyltransferase from rat liver mitochondria. *J. Biol. Chem.*, 269 (1994) 272009-27215.
- See also 1846.
- 20c. Transferases transferring phosphorus containing groups (E.C. 2.7.-.)
- 2014 Allen, B.G., Andrea, J.E. and Walsh, M.P.: Identification and characterization of protein kinase C ζ -immunoreactive proteins. *J. Biol. Chem.*, 269 (1994) 29288-29298.
- 2015 Clasper, S., Chelvarajan, R.E.L., Easterby, J.S. and Powls, R.: Isolation of multiple dimeric forms of phosphoribulokinase from an alga and a higher plant. *Biochim. Biophys. Acta*, 1209 (1994) 101-106.
- 2016 Huot, J., Lambert, H., Lavoie, J.N., Guimond, A., Houle, F. and Landry, J.: Characterization of 45-kDa/54-kDa HSP27 kinase, a stress-sensitive kinase which may activate the phosphorylation-dependent protective function of mammalian 27-kDa heat-shock protein HSP27. *Eur. J. Biochem.*, 227 (1995) 416-427.
- 2017 Koller, G., Graumann, K., Kramer, W., Sara, M. and Jungbauer, A.: Laboratory-scale production and purification of recombinant HIV-1 reverse transcriptase. *J. Chromatogr. B*, 664 (1995) 107-118.
- 2018 Martinez-Costa, O.H., Estevez, A.M., Sanchez, V. and Aragon, J.J.: Purification and properties of phosphofructokinase from *Dictyostelium discoideum*. *Eur. J. Biochem.*, 226 (1994) 1007-1017.
- 2019 Rempel, A., Bannasch, P. and Mayer, D.: Differences in expression and intracellular distribution of hexokinase isoenzymes in rat liver cells of different transformation stages. *Biochim. Biophys. Acta*, 1219 (1994) 660-668.
- 2020 Sharova, N.P., Eliseeva, E.D. and Mikhailov, V.S.: (The presence of DNA polymerase ζ -type in the eggs of the teleost fish *Misgurnus fossilis* L.). *Biokhimiya (Moscow)*, 59 (1994) 1067-1075.

- 2021 Shi, G.-Y., Chang, B.-I., Chen, S.-M., Wu, D.-H. and Wu, H.-L.: Function of streptokinase fragments in plasminogen activation. *Biochem. J.*, 304 (1994) 235-241.
- 2022 Shiokawa, D., Ohyama, H., Yamada, T., Takahashi, K. and Tanuma, S.-i.: Identification of an endonuclease responsible for apoptosis in rat thymocytes. *Eur. J. Biochem.*, 226 (1994) 23-30.
- 2023 Simanov, A.L.: High-performance liquid chromatographic analysis of low-molecular-mass products synthesized by polynucleotide phosphorylase in polymerization reaction. *J. Chromatogr. A*, 685 (1994) 39-44.
- 2024 Song, W. and Jackowski, S.: Kinetics and regulation of pantothenate kinase from *Escherichia coli*. *J. Biol. Chem.*, 269 (1994) 27051-27058.
- 2025 Uchida, T.: Immunologically and enzymatically distinct rat choline kinase isozymes. *J. Biochem. (Tokyo)*, 116 (1994) 1241-1250.
- 2026 Vermeij, P., Detmers, F.J.M., Broers, F.J.M., Keltjens, J.T. and van der Drift, C.: Purification and characterization of coenzyme F₃₉₀ synthetase from *Methanobacterium thermoautotrophicum* (strain ΔH). *Eur. J. Biochem.*, 226 (1994) 185-191.
- 2027 Zang, R., Müller, H.-J., Kielbassa, K., Marks, F. and Gschwendt, M.: Partial purification of a type η protein kinase C from murine brain: separation from other protein kinase C isoenzymes and characterization. *Biochem. J.*, 304 (1994) 641-647.
- 2028 Zhang, J., Sanchez, R.J., Wang, S., Guarnaccia, C., Tossi, A., Zahariev, S. and Ponoor, S.: Substrate specificity of CDC2 kinase from human HeLa cells as determined with synthetic peptides and molecular modeling. *Arch. Biochem. Biophys.*, 315 (1994) 415-424.
- See also 1816, 1831, 1841, 1983.
- 20d. *Hydrolases, acting on ester bonds (E.C. 3.1.-.)*
- 2029 Amici, A., Emanuelli, M., Ferretti, E., Raffaelli, N., Ruggieri, S. and Magni, G.: Homogenous pyrimidine nucleotidase from human erythrocytes: enzymic and molecular properties. *Biochem. J.*, 304 (1994) 987-992.
- 2030 Caruccio, N. and Ross, J.: Purification of a human polyribosome-associated 3' to 5' exoribonuclease. *J. Biol. Chem.*, 269 (1994) 31814-31821.
- 2031 Guo, W., Shang, Z., Yu, Y. and Zhou, L.: Membrane affinity chromatography of alkaline phosphatase. *J. Chromatogr. A*, 685 (1994) 344-348.
- 2032 Marcinkeviciene, L.Yu., Bachmatova, I.V., Brazenas, G.R., Baratova, L.A. and Revina, L.P.: (Purification and properties of cholesterol esterase from *Pseudomonas mendocina* 3121). *Biokhimiya (Moscow)*, 59 (1994) 648-655.
- 2033 Masuno, H., Nakabayashi, H., Kobayashi, J., Saito, Y. and Okuda, H.: Reduced dimerization of lipoprotein lipase in post-heparin plasma of a patient with hyperchylomicronemia. *Biochim. Biophys. Acta*, 1254 (1995) 30-36.
- 2034 Matts, P.J., White, G.F. and Payne, W.J.: Purification and characterization of the short-chain alkylsulphatase of coryneform B1a. *Biochem. J.*, 304 (1994) 937-943.
- 2035 Morgan, E.W., Yan, B., Greenway, D., Petersen, D.R. and Parkinson, A.: Purification and characterization of two rat liver microsomal carboxylesterases (hydrolase A and B). *Arch. Biochem. Biophys.*, 315 (1994) 495-512.
- 2036 Okamura, S. and Yamashita, S.: Purification and characterization of phosphatidylcholine phospholipase D from pig lung. *J. Biol. Chem.*, 269 (1994) 31207-31213.
- 2037 Sahah, Y., Thi, A.T.P., Roy-MacAuley, H., d'Arcy-Lameta, A., Reppelin, A. and Zuly-Fodil, Y.: Purification and characterization of a soluble lipolytic acylhydrolase from Cowpea (*Vigna unguiculata* L.) leaves. *Biochim. Biophys. Acta*, 1215 (1994) 66-73.
- 2038 Shirazi, A., Izuka, K., Fadden, P., Mosse, C., Somlyo, A.P., Somlyo, A.V. and Haystead, T.A.J.: Purification and characterization of the mammalian myosin light chain phosphatase holoenzyme. The differential effects of the holoenzyme and its subunits on smooth muscle. *J. Biol. Chem.*, 269 (1994) 31598-31606.
- 2039 Takasaki, Y.: Two forms of restriction enzyme HindIII. *J. Biochem. (Tokyo)*, 116 (1994) 1281-1286.
- 2040 Wang, R., Dodia, C.R., Jain, M.K. and Fisher, A.B.: Purification and characterization of a calcium-independent acidic phospholipase A₂ from rat lung. *Biochem. J.*, 304 (1994) 131-137.
- For additional information see C.A.:
121 (1994) 250631f.
- See also 1944, 2022.
- 20e. *Hydrolases, acting on glycosyl compounds (E.C. 3.2.-.)*
- 2041 Heng, M.H. and Glatz, C.E.: Charged fusions for β-galactosidase retention in anion-exchange chromatography. *J. Chromatogr. A*, 689 (1995) 227-234.
- 2042 Itoh, Y., Hirashima, M., Yamada, H. and Imoto, T.: Colonic lysozymes of rabbit (Japanese White): recent divergence and functional conversion. *J. Biochem. (Tokyo)*, 116 (1994) 1346-1353.
- 2043 Katoh, S. and Terashima, M.: Effective purification of α-amylases from fermentation broth by immunoaffinity chromatography. *Spec. Publ. - R. Soc. Chem.*, 158(Separations for Biotechnology C) (1994) 228-234; C.A., 121 (1994) 29572c.
- 2044 Mislovicova, D., Chudinova, M., Gemeiner, P. and Docolomansky, P.: Affinity chromatography of invertase on Concanavalin A-bead cellulose matrix: the case of an extraordinary strong binding glycoenzyme. *J. Chromatogr. B*, 664 (1995) 145-153.
- 2045 Munoz, M.D., Hernández, L.M., Basco, R., Andaluz, E. and Larriba, G.: Glycosylation of yeast exoglucanase sequons in alg mutants deficient in the glucosylation steps of the lipid-linked oligosaccharide. Presence of glucotriose unit in Dol-PP-GlcNAc₂MngGlc₃ influences both glycosylation efficiency and selection of N-linked sites. *Biochim. Biophys. Acta*, 1201 (1994) 361-366.
- 2046 Pritchard, D.G., Lin, B., Willingham, T.R. and Baker, J.R.: Characterization of the group B streptococcal hyaluronate lyase. *Arch. Biochem. Biophys.*, 315 (1984) 431-437.
- 2047 Sakamoto, M., Shirane, Y., Narabayashi, I., Kimura, K., Morishita, N., Sakamoto, T. and Sakai, T.: Purification and characterization of a rhamnogalacturonase with protopectinase activity from *Trametes sanguinea*. *Eur. J. Biochem.*, 226 (1994) 285-291.

- 2048 Tulsiani, D.R.P., Skudlarek, M.D., Araki, Y. and Orgebin-Crist, M.-C.: Purification and characterization of two forms of β -D-galactosidase from rat epididymal luminal fluid: evidence for their role in the modification of sperm plasma membrane glycoprotein(s). *Biochem. J.*, 305 (1995) 41-50.
- 2049 Vachier, M.C., Piot, M. and Awadé, A.C.: Isolation of hen egg white lysozyme, ovotransferrin and ovalbumin, using a quaternary ammonium bound to a highly crosslinked agarose matrix. *J. Chromatogr. B*, 664 (1995) 201-210.
- For additional information see C.A.:
121 (1994) 275502e.
- See also 1843.
- 20f. Other hydrolases*
- 2050 Bogomolov, A.A., Danilenko, A.N. and Antonov, Yu.A.: (Precipitation of alfalfa (*Medicago sativa* L.) leaf juice enzyme and the mechanism of its effect on RuBISCO hydrolysis). *Biokhimiya (Moscow)*, 59 (1994) 689-693.
- 2051 Canales, J., Pinto, R.M., Costas, J., Hernández, M.T., Miri, A., Bernet, D., Fernández, A. and Cameselle, J.C.: Rat liver nucleoside diphosphosugar or diphosphoalcohol pyrophosphatasases different from nucleotide pyrophosphatase or phosphodiesterase I: substrate specificities of Mg^{2+} - and/or Mn^{2+} -dependent hydrolases acting on ADP-ribose. *Biochim. Biophys. Acta*, 1246 (1995) 167-177.
- 2052 Christianson, T. and Paech, C.: Peptide mapping of subtilisins as a practical tool for locating protein sequence errors during extensive protein engineering projects. *Anal. Biochem.*, 223 (1994) 119-129.
- 2053 Davis, M.T., Lee, T.D., Ronk, M. and Hefta, S.A.: Microscale immobilized protease reactor columns for peptide mapping by liquid chromatography/mass spectral analyses. *Anal. Biochem.*, 224 (1995) 235-244.
- 2054 Graham-Siegenthaler, K., Gauthier, S., Davies, P.L. and Elce, J.S.: Active recombinant rat calpain II. Bacterially produced large and small subunits associate both *in vivo* and *in vitro*. *J. Biol. Chem.*, 269 (1994) 30457-30460.
- 2055 Huang, C.-C., Huang, K.-F. and Chiou, S.-H.: Characterization of one novel venom protease with β -fibrinogenase activity from the Taiwan habu (*Trimeresurus mucrosquamatus*): purification and cDNA sequence analysis. *Biochem. Biophys. Res. Commun.*, 205 (1994) 1707-1715.
- 2056 Ivashchuk-Kienbaum, Yu.A., and Apell, H.-J.: Separation and characterization of Na^+,K^+ -ATPase containing vesicles. *Biochim. Biophys. Acta*, 1196 (1994) 29-37.
- 2057 Jane, D.T. and Dufresne, M.J.: Expression and regulation of three lysosomal cysteine protease activities during growth of a differentiating LG rat myoblast cell line and its nonfusing variant. *Biochem. Cell Biol.*, 72 (1994) 267-274.
- 2058 Khan, M.T., Wang, K., Auland, M.E., Kable, E.P.W. and Roufogalis, B.D.: Membrane-bound high molecular mass proteinases from human erythrocytes. *Biochim. Biophys. Acta*, 1209 (1994) 215-221.
- 2059 Klabunde, T., Stahl, B., Suerbaum, H., Hahner, S., Karas, M., Hillenkamp, F., Krebs, B. and Witzel, H.: The amino acid sequence of the red kidney bean Fe(III)-Zn(II) purple acid phosphatase. Determination of the amino acid sequence by a combination of matrix-assisted laser desorption/ionization mass spectrometry and automated Edman sequencing. *Eur. J. Biochem.*, 226 (1994) 369-375.
- 2060 Li, Y.-M., Brostedt, P., Hjertén, S., Nyberg, F. and Silberring, J.: Capillary liquid chromatography-fast atom bombardment mass spectrometry using a high-resolving cation exchanger, based on a continuous chromatographic matrix. Application to studies on neuropeptide peptidases. *J. Chromatogr. B*, 664 (1995) 426-430.
- 2061 Loayza, S.L., Trikha, M., Markland, F.S., Riquelme, P. and Kuo, J.: Resolution of isoforms of natural and recombinant fibrolase, the fibrinolytic enzyme from *Agkistrodon contortrix contortrix* snake venom, and comparison of their EDTA sensitivities. *J. Chromatogr. B*, 662 (1994) 227-243.
- 2062 Muta, T., Seki, N., Takaki, Y., Hashimoto, R., Oda, T., Iwanaga, A., Tokunaga, F. and Iwanaga, S.: Purified horseshoe crab factor G. Reconstitution and characterization of the (1 \rightarrow 3)- β -D-glucan-sensitive serine protease cascade. *J. Biol. Chem.*, 270 (1995) 892-897.
- 2063 Ohkubo, I., Huang, K., Ochiai, Y., Takagaki, M. and Kani, K.: Dipeptidyl peptidase IV from porcine seminal plasma: purification, characterization, and N-terminal amino acid sequence. *J. Biochem. (Tokyo)*, 116 (1994) 1182-1186.
- 2064 Rossmann, R., Maier, T., Lottspeich, F. and Böck, A.: Characterisation of a protease from *Escherichia coli* involved in hydrogenase maturation. *Eur. J. Biochem.*, 227 (1995) 545-550.
- 2065 Shi, X.-J. and Knowles, A.F.: Prevalence of the marcurial-sensitive ectoATPase in human small cell lung carcinoma: characterization and partial purification. *Arch. Biochem. Biophys.*, 315 (1994) 177-184.
- 2066 Suen, S.-Y. and Etzel, M.R.: Sorption kinetics and breakthrough curves for pepsin and chymosin using pepstatin A affinity membranes. *J. Chromatogr. A*, 686 (1994) 179-192.
- 2067 Tsuchiya, Y., Takahashi, T., Sakurai, Y., Iwamatsu, A. and Takahashi, K.: Purification and characterization of a novel membrane-bound arginine-specific serine proteinase from porcine intestinal mucosa. *J. Biol. Chem.*, 269 (1994) 32985-32991.
- 2068 Ward, R.V., Atkinson, S.J., Reynolds, J.J. and Murphy, G.: Cell-surface-mediated activation of progelatinase A: demonstration of the involvement of the C-terminal domain of progelatinase A in cell surface binding and activation of progelatinase A by primary fibroblasts. *Biochem. J.*, 304 (1994) 263-269.
- For additional information see C.A.:
121 (1994) 274928.
- See also 1832, 1837, 1889.
- 20g. Lyases*
- 2069 Choi, Y.S. and Cho, Y.D.: A new S-adenosylmethionine decarboxylase from soybean axes. *Biochim. Biophys. Acta*, 1201 (1994) 466-472.

2070 Harteneck, C., Klatt, P., Schmidt, K. and Mayer, B.: Expression of rat brain nitric oxide synthase in baculovirus-infected insect cells and characterization of the purified enzyme. *Biochem. J.*, 304 (1994) 683-686.

2071 Mankowitz, L., Staffas, L., Bakke, M. and Lund, J.: Adrenocorticotrophic-hormone-dependent regulation of a μ -class glutathione transferase in mouse adrenocortical cells. *Biochem. J.*, 305 (1995) 111-118.

20h. Isomerases

2072 Ding, L., Seto, B.L., Ahmed, S.A. and Coleman, W.G., Jr.: Purification and properties of the *Escherichia coli* K-12 NAD-dependent nucleotide diphosphosugar epimerase, ADP-L-glycero-D-mannoheptose 6-epimerase. *J. Biol. Chem.*, 269 (1994) 24384-24390.

20i. Ligases

For additional information see C.A.:
122 (1995) 4164r.

21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

See 1876.

21a. Purines, pyrimidines, nucleosides, nucleotides

2073 Almudaris, A., Ashton, D.S., Ray, A. and Valko, K.: Trace analysis of impurities in 3'-azido-3'-deoxythymidine by reversed-phase high-performance liquid chromatography and thermospray mass spectrometry. *J. Chromatogr. A*, 689 (1995) 31-38.

2074 Betto, P., Popoli, P., Ricciarello, G., Caporali, M.G. and Antonini, R.: Simultaneous high-performance liquid chromatographic determination of adenosine and dopamine in rat striatal tissue with combined ultraviolet absorbance and electrochemical detection. *J. Chromatogr. B*, 662 (1994) 21-25.

2075 Bourque, A.J. and Cohen, A.S.: Quantitative analysis of phosphorothioate oligonucleotides in biological fluids using direct injection fast anion-exchange chromatography and capillary gel electrophoresis. *J. Chromatogr. B*, 662 (1994) 343-349.

2076 Brüggermann, B., Schlüter, H., Verspohl, E.J. and Zidek, W.: Rapid separation of dinucleotides with ion-pair high-performance liquid chromatography. *Fresenius J. Anal. Chem.*, 350 (1994) 719-721.

2077 Cong, H.N., Bertiaux, O., Valencia, R., Becue, T., Fournier, T., Biou, D. and Porquet, D.: Separation and characterization of the main methylated nucleobases from nuclear, cytoplasmic and poly (A)⁺ RNA by high-performance liquid chromatography and mass spectrometry. *J. Chromatogr. B*, 661 (1994) 193-204.

2078 Dolan, M.E., Chae, M., Pegg, A.E., Mullen, J.H., Friedman, H.S. and Moschel, R.C.: Metabolism of O⁶-benzylguanine, an inactivator of O⁶-alkylguanine-DNA alkyltransferase. *Cancer Res.*, 54 (1994) 5123-5130.

2079 Douki, T. and Cadet, J.: Formation of cyclobutane dimers and (6-4) photoproducts upon far-UV photolysis of 5-methylcytosine-containing dinucleoside monophosphates. *Biochemistry*, 33 (1994) 11942-11950.

2080 Faraone-Mennella, M.R., de Lucia, F., de Maio, A., Gambacorta, A., Quesada, P., de Rosa, M., Nicolaus, B. and Farina, B.: ADP-ribosylation reactions in *Sulfolobus solfataricus*, a thermoacidophilic archaeon. *Biochim. Biophys. Acta*, 1246 (1995) 151-159.

2081 Fennell, T.R.: Development of methods for measuring biological markers of formaldehyde exposure. *Res. Rep.-Health Eff. Inst.*, 67 (1994) 1-26; C.A., 121 (1994) 223733.

2082 Johnson, S.W., Swiggard, P.A., Handel, L.M., Brennan, J.M., Godwin, A.K., Ozols, R.F. and Hamilton, T.C.: Relationship between platinum-DNA adduct formation and removal and cisplatin cytotoxicity in cisplatin-sensitive and -resistant human ovarian cancer cells. *Cancer Res.*, 54 (1994) 5911-5916.

2083 Kock, R., Delvoux, B., Sigmund, M. and Greiling, H.: A comparative study of the concentrations of hypoxanthine, xanthine, uric acid and allantoin in the peripheral blood of normals and patients with acute myocardial infarction and other ischaemic diseases. *Eur. J. Clin. Chem. Clin. Biochem.*, 32 (1994) 837-842.

2084 Lennard, L. and Singleton, H.J.: High-performance liquid chromatographic assay of human red blood cell thiopurine methyltransferase activity. *J. Chromatogr. B*, 661 (1994) 25-33.

2085 Lu, T. and Gray, H.B., Jr.: Combined pH gradient and anion-exchange high-performance liquid chromatographic separation of oligodeoxyribonucleotides. *J. Chromatogr. A*, 686 (1994) 339-343.

2086 Murakami, A., Tamura, Y., Wada, H. and Makino, K.: Separation and characterization of diastereoisomers of antisense oligodeoxyribonucleoside phosphorothioates. *Anal. Biochem.*, 223 (1994) 285-290.

2087 Nithipatikorn, K., Mizumura, T. and Gross, G.J.: Determination of plasma adenosine by high-performance liquid chromatography with column switching and fluorometric detection. *Anal. Biochem.*, 223 (1994) 280-284.

2088 Oefner, P.J., Huber, C.G., Umlauf, F., Berti, G.-H., Stimpfl, E. and Bonn, G.K.: High-resolution liquid chromatography of fluorescent dye-labeled nucleic acids. *Anal. Biochem.*, 223 (1994) 39-46.

2089 Pecina-Slaus, N., Pavelic, J. and Pavelic, K.: Comparison of reverse-phase HPLC and gel electrophoretic purification of synthetic oligonucleotides. *Period. Biol.*, 96 (1994) 161-164; C.A., 121 (1994) 296539k.

2090 Potaman, V.N. and Soyfer, V.N.: Oligonucleotide model with non-identical complementary strands for chromatographic studies of structure-dependent photosusceptibility. *J. Chromatogr. A*, 690 (1995) 65-70.

2091 Ruther, J. and Baltes, W.: Analysis of purine compounds and creatinine by ion-pair high-performance liquid chromatography (HPLC) as a method for the detection of yeast extracts in commercial meat flavorings. *Z. Lebensm.-Unters. Forsch.*, 199 (1994) 307-310; C.A., 121 (1994) 299425f.

2092 Schuette, J.M., Cole, D.L. and Srivatsa, G.S.: Development and validation of a method for routine base composition analysis of phosphorothioate oligonucleotides. *J. Pharm. Biomed. Anal.*, 12 (1994) 1345-1353.

- 2093 Simanov, A.L., Gusakov, A.V., Simanova, N.S. and Sinitsyn, A.P.: (Analysis of the product composition in the polymerization reaction catalyzed by polynucleotide phosphorylase from *Thermus thermophilus*). *Biokhimiya (Moscow)*, 59 (1994) 726-731.
- 2094 Stout, M.L. and Ravindranath, Y.: Alkylsulphonic acid ion pairing with radial compression columns for determining plasma or cerebrospinal fluid 1- β -D-arabinofuranosylcytosine in pediatric pharmacokinetic analysis. *J. Chromatogr. A*, 692 (1995) 59-66.
- 2095 Stratford, M.R.L. and Dennis, M.F.: Determination of adenine nucleotides by fluorescence detection using high-performance liquid chromatography and post-column derivatisation with chloroacetaldehyde. *J. Chromatogr. B*, 662 (1994) 15-20.
- 2096 Strobel, S.A., Cech, T.R., Usman, N. and Beigelman, L.: The 2,6-diaminopurine ribose•5-methylisocytidine wobble base pair: an isoenergetic substitution for the study of G•U pairs in RNA. *Biochemistry*, 33 (1994) 13824-13835.
- 2097 Terzuoli, L., Pandolfi, M., Arezzini, L., Pizzichini, M., Marinello, E. and Pagani, R.: Separation and determination of liver uric acid and allantoin. *J. Chromatogr. B*, 663 (1995) 143-147.
- 2098 Terzuoli, L., Pizzichini, M., Arezzini, L., Pandolfi, M.L., Marinello, E. and Pagani, R.: Separation and determination of allantoin, uric acid, hydantoin and urea. *J. Chromatogr. A*, 684 (1994) 350-353.
- 2099 Thoithi, G., van Schepdael, A., Herdewijn, P., Roets, E. and Hoogmartens, J.: Liquid chromatographic separation of diamino analogues of 2'- or 3'-deoxyadenosine from adenine on a poly(styrene-divinylbenzene) polymer column. *J. Chromatogr. A*, 689 (1995) 247-254.
- 2100 Vaca, C.E., Conradi, M., Sievertzon, M. and Bergman, J.: Synthesis of fluorescent derivatives of 7-methylguanine through reaction with 2-aryl-substituted malondialdehydes: analysis by HPLC with fluorescence detection. *Chem.-Biol. Interact.*, 93 (1994) 235-249; *C.A.*, 122 (1995) 4819j.
- For additional information see *C.A.*:
121 (1994) 225390u, 250077e, 308507p.
- See also 1420, 2023, 2106, 2391, 2435.
- 21b. Nucleic acids, RNA**
- See 1908, 2088.
- 21c. Nucleic acids, DNA**
- 2101 Fadlallah, S., Cooper, S.K. and Fournier, M.: Assessment of N-nitrosodimethylamine DNA adducts in rat hepatocytes by high performance liquid chromatography and immunoassay. *Int. J. Environ. Anal. Chem.*, 56 (1994) 165-174; *C.A.*, 121 (1994) 223747s.
- 2102 Hirabayashi, J. and Kasai, K.: Slalom chromatography: a size-dependent separation method for DNA molecules based on a hydrodynamic principle. *Mol. Interact. Biosep.*, (1993) 69-87; *C.A.*, 121 (1994) 249851w - a review with many refs.
- 2103 Hofman, Y.L., Petrillo, K.L., Greenblatt, H.C., Lehrer, R. and Payne, M.S.: Rapid scalable chromatographic purification of nucleic acids from proteinaceous mixtures. *J. Chromatogr. A*, 692 (1995) 233-238.
- 2104 Huber, C.G., Oefner, P.J. and Bonn, G.K.: Rapid and accurate sizing of DNA fragments by ion-pair chromatography on alkylated nonporous poly(styrene-divinylbenzene) particles. *Anal. Chem.*, 67 (1995) 578-585.
- 2105 Mischiati, C., Ferriotti, G., Fiorentino, D. and Gambari, R.: Chromatography in DNA radiolabeling: hands-off automation using a robotic workstation. *J. Chromatogr. B*, 664 (1995) 303-310.
- 2106 Shigenaga, M.K., Aboujaoude, E.N., Chen, Q. and Ames, B.N.: Assays of oxidative DNA damage biomarkers 8-oxo-2'-deoxyguanosine and 8-oxoguanine in nuclear DNA and biological fluids by high-performance liquid chromatography with electrochemical detection. *Methods Enzymol.*, 234(Oxygen Radicals in Biological Systems, Pt. D) (1994) 16-33; *C.A.*, 121 (1994) 294506y.
- 2107 Wainwright, N. and Boyd, S.H.: Aligned fiber diagnostic chromatography tip having a capture element in a micropipet tip assembly. *PCT Int. Appl.* WO 94 20,831 (Cl. G01N1/18), 15 Sep. 1994, US Appl. 27, 813, 08 Mar. 1993; 24 pp.; *C.A.*, 121 (1994) 296601z.

See also 2088, 2108.

21e. Structural studies on DNA and DNA mapping

- 2108 Shealy, D.B., Lipowska, M., Lipowski, J., Narayanan, N., Sutter, S., Strekowski, L. and Patonay, G.: Synthesis, chromatographic separation, and characterization of near-infrared-labeled DNA oligomers for use in DNA sequencing. *Anal. Chem.*, 67 (1995) 247-251.

See also 2106.

22. ALKALOIDS

- 2109 Alvarez-Fuentes, J., Fernandez-Arevalo, M., Holgado, M.A., Caraballo, I., Llera, J.M. and Rabasco, A.M.: Characterization of morphine polymeric coprecipitates. A biopharmaceutical study. *Pharmazie*, 49 (1994) 834-839.
- 2110 Carey, R.J. and DePalma, G.: A simplified method for the measurement of caffeine in plasma and brain: evidence for a cortical-subcortical caffeine concentration differential in brain. *J. Neurosci. Methods*, 53 (1994) 19-22; *C.A.*, 121 (1994) 244925p.
- 2111 Golkiewicz, W., Kuczynski, J., Markowski, W. and Jusiak, L.: High-performance liquid chromatography of some alkaloids on unmodified silica gel with aqueous-organic solvent mixtures. *J. Chromatogr. A*, 686 (1994) 85-91.
- 2112 Hirobe, C., Kunugi, A. and Tabei, K.: (Chemistry exercises for daily life. 2. Determination of caffeine in commercial health drinks by HPLC). *Kagaku to Kyoiku*, 42 (1994) 632-635; *C.A.*, 122 (1995) 9034j.
- 2113 Keller, A. and Schulz, H.-U.: Pharmakokinetik von zwei Theophyllin-Präparaten in unterschiedlichen galenischen Retardzubereitungen bei gesunden Probanden. *Arzneim.-Forsch.*, 44 (1994) 1233-1236.
- 2114 Krause, W., Reissmann, F. and Schöbel, C.: Circadian plasma level profile of lisuride in rats and mice after continuous administration via the diet. *Arzneim.-Forsch.*, 45 (1995) 6-10.

- 2115 Liu, L., Riese, J., Resch, K. and Kaever, V.: Impairment of macrophage eicosanoid and nitric oxide production by an alkaloid from *Sinomenium acutum*. *Arzneim.-Forsch.*, 44 (1994) 1223-1226.
- 2116 Ma, Y., Ito, Y., Sokolosky, E. and Fales, H.M.: Separation of alkaloids by pH-zone-refining counter-current chromatography. *J. Chromatogr. A*, 685 (1994) 259-262.
- 2117 Pacifici, R., Pichini, S., Altieri, I., Caronna, A., Passa, A.R. and Zuccaro, P.: High-performance liquid chromatographic-electrospray mass spectrometric determination of morphine and its 3- and 6-glucuronides: application to pharmacokinetic studies. *J. Chromatogr. B*, 664 (1995) 329-334.
- 2118 Papadoyannis, I.N.: Instrumental analytical techniques used for datura alkaloid analyses. *Instrum. Sci. Technol.*, 22 (1994) 241-258; C.A., 122 (1995) 17282d - a review with 18 refs.
- 2119 Pohjola, J. and Harpf, M.: Determination of atropine and obidoxime in automatic injection devices used as antidotes against nerve agent intoxication. *J. Chromatogr. A*, 686 (1994) 350-354.
- 2120 Rivory, L.P. and Robert, J.: Reversed-phase high-performance liquid chromatographic method for the simultaneous quantitation of the carboxylate and lactone forms of the camptothecin derivative irinotecan, CPT-11, and its metabolite SN-38 in plasma. *J. Chromatogr. B*, 661 (1994) 133-141.
- 2121 Rop, P.P., Grimaldi, F., Burle, J., de Saint Leger, M.N. and Viala, A.: Determination of 6-monoacetylmorphine and morphine in plasma, whole blood and urine using high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 661 (1994) 245-253.
- 2122 Seregina, E.V., Laipanov, A.Kh., Slanskii, V.E. and Voronin, I.A.: (Chromatographic separation of tropane-group alkaloids). *Zh. Fiz. Khim.*, 68 (1994) 1823-1825; C.A., 122 (1995) 17309t.
- 2123 Sochor, J., Klimes, J. and Srumova, M.: High-performance liquid chromatographic determination of terguride in solid dosage forms and plasma. *J. Chromatogr. B*, 663 (1995) 309-313.
- 2124 Suvegh, G., Zsadon, B. and Szeflfi, J.: Separation of dia stereomer vincamine derivatives by chromatography on β -cyclodextrin polymer stationary phase. In: Hedges, A.R. (Editor), *Minutes Int. Symp. Cyclodextrins*, 6th, Ed. Sante, Paris, 1992, pp. 584-587; C.A., 122 (1995) 71061u.
- 2125 Taborska, E., Bochorakova, H., Paulova, H. and Dostal, J.: Separation of alkaloids in *Chelidonium majus* by reversed phase HPLC. *Planta Med.*, 60 (1994) 380-381; C.A., 121 (1994) 238500e.
- 2126 Tsuchiya, H., Ohtani, S., Yamada, K., Takagi, N. and Hayashi, T.: Determination of tetrahydro- β -carbolines in urine by high-performance liquid chromatography with suppression of artefact formation. *J. Pharm. Biomed. Anal.*, 12 (1994) 1547-1553.
- 2127 Van der Merwe, P.J., Brown, L.W. and Hendrikz, S.E.: Simultaneous quantification of ephedrines in urine by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 357-361.

For additional information see C.A.:

- 121 (1994) 213105s, 220898f, 244910e;
122 (1995) 39001p.

See also 2292, 2359, 2459.

23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN

23a. *Porphyrins and other pyrroles*

- 2128 Ebdon, L., Evans, E.H., Pretorius, W.G. and Rowland, S.J.: Analysis of geoporphyrins by high-temperature gas chromatography inductively coupled plasma mass spectrometry and high-performance liquid chromatography inductively coupled plasma mass spectrometry. *J. Anal. At. Spectrom.*, 9 (1994) 939-943; C.A., 121 (1994) 234254c.
- 2129 Habdas, J.: Chromatographic characterization of isomers of (4-methoxyphenyl)tolylporphyrin. *Acta Chromatogr.*, 2 (1993) 78-83; C.A., 122 (1995) 71068b.
- 2130 Ho, J.W. and Candy, L.Y.F.: Analysis of metalloporphyrins using cyclodextrin stationary phases with photodiode array UV detection. *J. Liq. Chromatogr.*, 17 (1994) 4111-4119.

See also 1494, 2240.

23c. *Indole derivatives and plant hormones (gibberellins)*

- 2131 Jinchang, L., Shi, J., Xiaoliang, Z., Wang, G., Huifen, Y. and Yanjun, R.: (Separation and determination of three kinds of plant hormones by high-performance liquid chromatography). *Fenxi Huaxue*, 22 (1994) 801-804; C.A., 121 (1995) 250091e.

See also 1678, 1715.

23d. *Pyridine derivatives*

- 2132 Defilippi, A., Piancone, G., Tibaldi, G.P., Tartaglino, L. and Viretto, A.: (Determination of isonicotinic acid hydrazide in dairy products). *Ind. Aliment. (Pinerolo)*, 33 (1994) 737-740; C.A., 122 (1995) 8299n.
- 2133 Iwaki, M., Ogiso, T., Hayashi, H., Lin, E.T. and Benet, L.Z.: Simultaneous measurement of nicotinic acid and its major metabolite, nicotinuric acid in urine using high-performance liquid chromatography: application of solid-liquid extraction. *J. Chromatogr. B*, 661 (1994) 154-158.
- 2134 Saz, J.M. and Marina, M.L.: Retention mechanism and implications for selectivity for a group of dihydropyridines in ionic micellar liquid chromatography. *J. Chromatogr. A*, 687 (1994) 1-12.

23e. *Other N-heterocyclic compounds*

- 2135 Denissen, J.F., Grabowski, B.A., Johnson, M.K., Boyd, S.A., Uchic, J.T., Stein, H., Cepa, S. and Hill, P.: The orally active renin inhibitor A-74273. *In vivo* and *in vitro* morpholine ring metabolism in rats, dogs, and humans. *Drug Metab. Disp.*, 22 (1994) 880-888.
- 2136 Gennaro, M.C., Abrigo, C., Marengo, E., Baldin, C. and Martelletti, M.T.: Determination of creatinin in human serum. Statistical intercalibration of methods. *Analyst (Cambridge)*, 120 (1995) 47-51.
- 2137 Imai, J., Murayama, K., Kawai, M., Yamaguchi, S. and Matsuura, K.: Determination of 8-methyl ether of xanthurenic acid in human urine by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 149-153.

- 2138 Körner, A. and Peter, A.: Alternative methods for the determination of trace amounts of 4-aminomorpholine in molsidomine and linsidomine. *J. Chromatogr. A.*, 689 (1995) 235-245.

For additional information see C.A.:
121 (1994) 244909m.

See also 1373, 1627, 1718, 2431.

24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)

- 2139 Andersson, J.T. and Schmid, B.: Polycyclic aromatic sulfur heterocycles. IV. Determination of polycyclic aromatic compounds in a shale oil with the atomic emission detector. *J. Chromatogr. A.*, 693 (1995) 325-338.

- 2140 Dangi, R.S., Jeevaratnam, K., Sugendran, K., Malhotra, R.C. and Raghuveeran, C.D.: Solid-phase extraction and reversed-phase high-performance liquid chromatographic determination of sulphur mustard in blood. *J. Chromatogr. B.*, 661 (1994) 341-345.

- 2141 Zhou, J. and Wang, W.: Electrocatalytic oxidation and amperometric determination of sulphhydryl compounds at a copper hexacyanoferrate film glassy carbon electrode in liquid chromatography. *Electroanalysis (N.Y.)*, 6 (1994) 29-35; C.A., 121 (1994) 244531g.

For additional information see C.A.:
121 (1994) 238504j.

See also 1764, 2084, 2092, 2467.

25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)

- 2142 Franz, H. and Maier, H.G.: (Inositol phosphates in coffee and coffee products. Part I. Identification and method of determination). *Dtsch. Lebensm.-Rundsch.*, 89 (1993) 276-282; C.A., 121 (1994) 279141g.

- 2143 Kim, H.-Y., Wang, T.-C.L. and Ma, Y.-C.: Liquid chromatography/mass spectrometry of phospholipids using electrospray ionization. *Anal. Chem.*, 66 (1994) 3977-3982.

See also 1642, 1741, 1775, 2075, 2092.

26. ORGANOMETALLIC AND RELATED COMPOUNDS

26a. Organometallic compounds

- 2144 Feistner, G.J., Gabrik, A.H. and Beer, S.V.: Application of capillary liquid chromatography-electrospray mass spectrometry to identify major siderophores of *Erwinia amylovora* as proferrioxamines and their potential role in virulence. *Dev. Plant Pathol.*, 3(Molecular Mechanisms of Bacterial Virulence) (1994) 429-444; C.A., 121 (1994) 225788e.

- 2145 Nigge, W., Marggraf, U. and Linscheid, M.: The quantitative determination of tinalkylates in sediments. *Fresenius J. Anal. Chem.*, 350 (1994) 533-537.

See also 2518.

26b. Boranes, silanes and related non-metallic compounds

- 2146 Born, S.B. and Skelly Frame, E.M.: Development of high-performance liquid-chromatographic-inductively coupled plasma method for speciation and quantification of silicones: from silanols to polysiloxanes. *Analyst (Cambridge)*, 119 (1994) 1687-1694.

26c. Coordination compounds

- 2147 Liao, J.P. and Saleh, F.Y.: Retention and spectral characteristics of copper-natural ligand complexes in reverse phase C18-HPLC with UV-PDA and fluorescence detection. *Int. J. Environ. Anal. Chem.*, 56 (1994) 239-259; C.A., 121 (1994) 209696t.

- 2148 Ohtsuka, C., Matsuzawa, K., Wada, H. and Nakagawa, G.: Retention behaviour of metal chelates in ion-pair reversed-phase liquid chromatography as a function of mobile phase composition with methanol-water and acetonitrile-water mobile phases. *Anal. Chim. Acta*, 294 (1994) 69-74.

- 2149 Villani, C. and Pirkle, W.H.: Direct high-performance liquid chromatographic resolution of planar chiral tricarbonyl (η^6 -arene)-chromium(0) complexes. *J. Chromatogr. A*, 693 (1995) 63-68.

- 2150 Wang, S.F. and Wai, C.M.: Separation of metal dithiocarbamate complexes by high-performance liquid chromatography. *J. Chromatogr. Sci.*, 32 (1994) 506-510.

See also 1729, 2520.

27. VITAMINS AND VARIOUS ANIMAL GROWTH FACTORS (NON-PEPTIDIC)

- 2151 Anderson, P., Davidson, C.M., Littlejohn, D. and Ure, A.M.: Extraction of ergosterol from peaty soils and determination by high performance liquid chromatography. *Talanta*, 41 (1994) 711-720; C.A., 121 (1994) 220681e.

- 2152 Brinkmann, E., Dehne, L., Oei, H.B., Tiebach, R. and Baltes, W.: Separation of geometrical retinol isomers in food samples by using narrow-bore high-performance liquid chromatography. *J. Chromatogr. A*, 693 (1995) 271-279.

- 2153 Chuang, C.-Z., Trosciar, G. and Lopez-S, A.: Adaptation of a carotenoid procedure to analyze carotenoids, retinol, and alpha-tocopherol simultaneously. *J. Liq. Chromatogr.*, 17 (1994) 3613-3622.

- 2154 Diack, M. and Saska, M.: Separation of vitamin E and γ -oryzanol from rice bran by normalphase chromatography. *J. Am. Oil Chem. Soc.*, 71 (1994) 1211-1217.

- 2155 Dueker, S.R., Jones, A.D., Smith, G.M. and Clifford, A.J.: Stable isotope methods for the study of β -carotene-d₄ metabolism in humans utilizing tandem mass spectrometry and high-performance liquid chromatography. *Anal. Chem.*, 66 (1994) 4177-4185.

- 2156 El-Agaimy, M.A., Neff, W.E., El-Sayed, M. and Awatif, I.I.: Effect of saline irrigation water on olive composition. *J. Am. Oil Chem. Soc.*, 71 (1994) 1287-1289.

- 2157 Filimonov, V.N., Kolosova, I.F. and Balyatinskaya, L.N.: (Separation of synthetic fat-soluble vitamins by multicolumn normal-phase high-performance liquid chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1835-1838; C.A., 122 (1995) 64524u.
- 2158 Finkel'shtein, E.I., Morev, S.N., Efremova, M.N. and Krasnokutskaya, I.S.: (Determination of retinyl acetate isomers with a multiwave-length detection regime). *Zh. Fiz. Khim.*, 68 (1994) 1829-1831; C.A., 122 (1995) 64522s.
- 2159 Ghareghbagh, R.K. and Ebel, S.: Stabilitätsanalytik von Dexpanthenol, 1: HPLC-Bestimmung von Dexpanthenol, Pantolacton und Pantosäure. *Pharmazie*, 50 (1995) 39-40.
- 2160 Giuliano, A.R., Neilson, E.M., Yap, H.-H., Baier, M. and Canfield, L.M.: Quantitation of and inter/intra-individual variability in major carotenoids of mature human milk. *J. Nutr. Biochem.*, 5 (1994) 551-556; C.A., 121 (1994) 299440g.
- 2161 Haroon, Y.: Reaction detection methods for K vitamins and their 2',3'-epoxy metabolite in liquid chromatography. In: Shearer, M.J. and Seghatchian, M.J. (Editors), *Vitam. K Vitam. K-Depend. Proteins*, CRC, Boca Raton, 1993, 55-90; C.A., 121 (1994) 254413j.
- 2162 Horst, R.L., Reinhardt, T.A., Goff, J.P., Nonnecke, B.J., Gambhir, V.K., Fiorella, P.D. and Napoli, J.L.: Identification of 9-cis,13-cis-retinoic acid as a major circulating retinoid in plasma. *Biochemistry*, 34 (1995) 1203-1209.
- 2163 Irby, R.B. and Adair, W.L., Jr.: Intermediates in the folic acid biosynthetic pathway are incorporated into molybdopterin the yeast, *Pichia canadensis*. *J. Biol. Chem.*, 269 (1994) 23981-23987.
- 2164 Jezequel-Cuer, M., Moel, G.L., Covi, G., Lepage, S., Peynet, J., Gousson-Evtigneoff, T., Laureaux, C. and Troupel, S.: (Effects of preanalytical conditions on α -tocopherol stability in blood samples). *Ann. Biol. Clin.*, 52 (1994) 271-276; C.A., 121 (1994) 225405c.
- 2165 Kojima, R., Fujimori, T., Kiyota, N., Toriya, Y., Fukuda, T., Ohashi, T., Sato, T., Yoshizawa, Y., Takeyama, K., Mano, H., Masushige, S. and Kato, S.: *In vivo* isomerization of retinoic acids. Rapid isomer exchange and gene expression. *J. Biol. Chem.*, 269 (1994) 32700-32707.
- 2166 Kolosova, I.F., Filimonov, V.N. and Balyatinskaya, L.N.: (Separation of synthetic B group vitamins by ion-pair high-performance chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1832-1834; C.A., 122 (1995) 64523t.
- 2167 Konings, E.J.M.: Estimation of vitamin D in baby foods with liquid chromatography. *Neth. Milk Dairy J.*, 48 (1994) 31-38; C.A., 121 (1994) 229137q.
- 2168 Kurlandsky, S.B., Xiao, J., Duell, E.A., Voorhees, J.J. and Fisher, G.J.: Biological activity of *all-trans* retinol requires metabolic conversion to *all-trans* retinoic acid and is mediated through activation of nuclear retinoid receptors in human keratinocytes. *J. Biol. Chem.*, 269 (1994) 32821-32827.
- 2169 Mitton, K.P. and Trevithick, J.R.: High-performance liquid chromatograph-electrochemical detection of antioxidants in vertebrate lens: glutathione, tocopherol, and ascorbate. *Methods Enzymol.*, 233(Oxygen Radicals in Biological Systems, Pt. C) (1994) 523-539; C.A., 121 (1994) 225366r.
- 2170 Motoe, K.: (Improved determination method of thiamin and 2-(1-hydroxyethyl)thiamin in foods by high performance liquid chromatography). *Bitamin*, 68 (1994) 379-384; C.A., 121 (1994) 279156r.
- 2171 Perlman, K.L., Prahl, J.M., Smith, C., Kutner, A. and DeLuca, H.F.: 26,27-Dihomo- α -hydroxy- and 26,27-dihomo-24-epi- α ,25-dihydroxyvitamin D₂ analogs that differ markedly in biological activity *in vivo*. *J. Biol. Chem.*, 269 (1994) 24014-24010.
- 2172 Saikatsu, S., Akeno, N. and Horiuchi, N.: Comparison of single cartridge (C18/OH) and high performance liquid chromatography sample purification for the thymus radioreceptor assay of 1,25(OH)₂D. *Klin. Labor.*, 39 (1993) 737-744; C.A., 121 (1994) 296505w.
- 2173 Seki, T., Isono, K., Ito, M. and Katsuta, Y.: Flies in the group Cyclorrhapha use (3S)-3-hydroxyretinal as a unique visual pigment chromophore. *Eur. J. Biochem.*, 262 (1994) 691-696.
- 2174 Shimoda, M., Shin, H.-C. and Kokue, E.-i.: Simultaneous determination of tetrahydrofolate, 10-formyltetrahydrofolate and S-methyltetrahydrofolate in rat bile by high-performance liquid chromatography with electrochemical detection. *J. Vet. Med. Sci.*, 56 (1994) 701-705; C.A., 121 (1994) 250080a.
- 2175 Shin, H.-C., Shimoda, M. and Kokue, E.: Identification of 5,10-methylenetetrahydrofolate in rat bile. *J. Chromatogr. B*, 661 (1994) 237-244.
- 2176 Tzimas, G., Sass, J.O., Wittfoht, W., Elmazar, M.M.A., Ehlers, K. and Nau, H.: Identification of 9,13-dicis-retinoic acid as a major plasma metabolite of 9-cis-retinoic acid and limited transfer of 9-cis-retinoic acid and 9,13-dicis-retinoic acid to the mouse and rat embryos. *Drug Metab. Disp.*, 22 (1994) 928-936.
- 2177 Ueno, H., Yokota, Y. and Tono, T.: (Analysis of cyanocobalamin in pharmaceuticals by high performance liquid chromatography). *Toyama-ken Jakuji Kenkyusho Nenpo* 1993, 21 (1994) 85-89; C.A., 122 (1995) 17308s.
- 2178 Werner, E.R., Schmid, M., Werner-Felmayer, G., Mayer, B. and Wachter, H.: Synthesis and characterization of ³H-labelled tetrahydrobiopterin. *Biochem. J.*, 304 (1994) 189-193.
- 2179 Yakushina, L.M., Beketova, N.A., Bender, Ye.D. and Kharitonchik, L.A.: (Utilization of high-performance liquid chromatography for vitamin determination in biological fluids and food products). *Vopr. Pitani.*, (1993) 43-48; C.A., 121 (1994) 249876h - a review with 57 refs.
- For additional information see C.A.:
- 121 (1994) 308459z;
 - 122 (1995) 4612m, 8276c.
- See also 1608, 2241.
- ## 28. ANTIBIOTICS
- 2180 Andersen, A., Warren, D.J. and Slordal, L.: Quantitation of cell-associated doxorubicin by high-performance liquid chromatography after enzymic desequstration. *Cancer Chemother. Pharmacol.*, 34 (1994) 197-202; C.A., 121 (1994) 220900a.
- 2181 Barrow, C.J., Sedlock, D.M., Sun, H.H., Cooper, R. and Gillum, A.M.: Win 66306, a new neurokinin antagonist produced by an *Aspergillus* species: fermentation, isolation and physico-chemical properties. *J. Antibiot.*, 47 (1994) 1182-1187.

- 2182 Bencsath, F.A., Plakas, S.M. and Long, A.R.: Optimization of the analytical performance of the magnetic sector mass spectrometer for the identification of residual chloramphenicol in shrimp. *Biol. Mass Spectrom.*, 23 (1994) 665-674; C.A., 121 (1994) 299439p.
- 2183 Blanchflower, W.J., Hewitt, S.A. and Kennedy, D.G.: Confirmatory assay for the simultaneous detection of five penicillins in muscle, kidney and milk using liquid chromatography-electrospray mass spectrometry. *Analyst (Cambridge)*, 119 (1994) 2595-2601.
- 2184 Bland, J.M., Lax, A.R. and Klich, M.A.: HPLC separation and antifungal activity of the naturally occurring iturin-A homologs. In: Schneider, C.H. and Eberle, A.N. (Editors), *Pept. 1992, Proc. Eur. Pept. Symp., 22nd 1992, ESCOM*, Leiden, 1993, pp. 332-333; C.A., 121 (1994) 276517y.
- 2185 Delepine, B., Hurtaud, D. and Sanders, P.: Identification of tylosin in bovine muscle at the maximum residue limits level by liquid chromatography-mass spectrometry using a particle beam interface. *Analyst (Cambridge)*, 119 (1994) 2717-2721.
- 2186 Fabre, D., Bressolle, F., Kinowski, J.M., Bouvet, O., Paganin, F. and Galtier, M.: A reproducible, simple and sensitive HPLC assay for determination of ofloxacin in plasma and lung tissue. Application in pharmacokinetic studies. *J. Pharm. Biomed. Anal.*, 12 (1994) 1463-1469.
- 2187 Funabashi, Y., Horiguchi, T., Iinuma, S., Tanida, S. and Harada, S.: TAN-1496 A, C and E, diketopiperazine antibiotics with inhibitory activity against mammalian DNA topoisomerase I. *J. Antibiot.*, 47 (1994) 1202-1218.
- 2188 Hayashi, K.-i., Nakagawa, M. and Nakayama, M.: Nisamycin, a new manumycin group antibiotic from *Streptomyces* sp. K106. Taxonomy, fermentation, physico-chemical and biological properties. *J. Antibiot.*, 47 (1994) 1104-1109.
- 2189 Hedenmo, M. and Eriksson, B.-M.: Liquid chromatographic determination of the macrolide antibiotics roxithromycin and clarithromycin in plasma by automated solid-phase extraction and electrochemical detection. *J. Chromatogr. A*, 692 (1995) 161-166.
- 2190 Hsu, M.-C., Lin, Y.-S. and Chung, H.-C.: High-performance liquid chromatographic method for potency determination of cephalixin in commercial preparations and for stability studies. *J. Chromatogr. A*, 692 (1995) 67-72.
- 2191 Hurtaud, D., Delepine, B. and Sanders, P.: Particle beam liquid chromatography-mass spectrometry method with negative ion chemical ionization for the confirmation of oxacillin, cloxacillin and dicloxacillin residues in bovin muscle. *Analyst (Cambridge)*, 119 (1994) 2731-2736.
- 2192 Hussain, M.S., Chukwumaeze-Obajunwa, V. and Micetich, R.G.: Sensitive high-performance liquid chromatographic assay for norfloxacin utilizing fluorescence detection. *J. Chromatogr. B*, 663 (1995) 379-384.
- 2193 Iwamoto, T., Fujie, A., Sakamoto, K., Tsurumi, Y., Shigematsu, N., Yamashita, S., Hashimoto, S., Okuhara, M. and Kohsaka, M.: WF 11899A, B and C, novel antifungal lipopeptides I. Taxonomy, fermentation, isolation and physico-chemical properties. *J. Antibiot.*, 47 (1994) 1084-1091.
- 2194 Khan, K., Paesen, J., Roets, E. and Hoogmartens, J.: Analysis of erythromycin A and its metabolites in biological samples by liquid chromatography with post-column ion-pair extraction. *J. Liq. Chromatogr.*, 17 (1994) 4195-4213.
- 2195 Lee, H., Jang, W.C. and Lee, H.S.: Hydrolysis kinetics of metampicillin by high performance liquid chromatography. *Arch. Pharmacol. Res.*, 17 (1994) 378-380; C.A., 121 (1994) 308461u.
- 2196 Lee, H., Lee, J.S. and Lee, H.S.: Simultaneous determination of ampicillin and metampicillin in biological fluids using high-performance liquid chromatography with column switching. *J. Chromatogr. B*, 664 (1995) 335-340.
- 2197 Leroy, P., Decolin, D., Nicolas, A. and Archimbaud, P.: Determination of josamycin residues in porcine tissues using high-performance liquid chromatography with pre-column derivatization and spectrofluorometric detection. *Analyst (Cambridge)*, 119 (1994) 2743-2747.
- 2198 Lyon, D.J., Cheung, S.W., Chan, C.Y. and Cheng, A.F.B.: Rapid HPLC assay of clinafloxacin, fleroxacin levofloxacin, sparfloxacin and tosufloxacin. *J. Antimicrob. Chemother.*, 34 (1994) 446-448; C.A., 121 (1994) 244956z.
- 2199 Mangold, J.B., Schran, H.F. and Tse, F.L.S.: Pharmacokinetics and metabolism of cyclosporin G in humans. *Drug Metab. Disp.*, 22 (1994) 973-879.
- 2200 Moretti, V.M., Maggi, G.L., Albertini, A., Bellagamba, F., Luzzana, U., Serrini, G. and Valfre, F.: High-performance liquid chromatographic determination of oxytetracycline in channel catfish (*Ictalurus punctatus*) muscle tissue. *Analyst (Cambridge)*, 119 (1994) 2749-2751.
- 2201 Morino, T., Masuda, A., Yamada, M., Nishimoto, M., Nishikiori, T., Saito, S. and Shimada, N.: Stevastelins, novel immunosuppressants produced by *Penicillium*. *J. Antibiot.*, 47 (1994) 1341-1343.
- 2202 Muritu, J.W., Kibwage, I.O., Maitai, C.K. and Hoogmartens, J.: Evaluation of tetracycline raw materials and finished products found on the Kenyan market. *J. Pharm. Biomed. Anal.*, 12 (1994) 1483-1488.
- 2203 Paesen, J., Khan, K., Roets, E. and Hoogmartens, J.: Study of the stability of erythromycin in neutral and alkaline solutions by liquid chromatography on poly(styrene-divinylbenzene). *Int. J. Pharm.*, 113 (1995) 215-222; C.A., 122 (1995) 64115m.
- 2204 Parker, R.M. and Patel, R.K.P.: Determination of tilimicosin in ovine milk using high-performance liquid chromatography. *Analyst (Cambridge)*, 119 (1994) 2577-2579.
- 2205 Pinto, C.G., Pavon, J.L.P. and Cordero, B.M.: Micellar liquid chromatography of zwitterions: retention mechanism of cephalosporins. *Analyst (Cambridge)*, 120 (1995) 53-62.
- 2206 Potthast, H., Schug, B., Elze, M., Schwerdtle, R. and Blume, H.: Vergleich der Bioverfügbarkeiten von Erythromycinstolat bzw. Erythromycinethylsuccinat enthaltenden Trockensaft-Zubereitungen im steady state. *Pharmazie*, 50 (1995) 56-60.
- 2207 Saraya, S., Kraisintu, K. and Boonpooh, Y.: High-performance liquid chromatographic determination of tetracycline antibiotics in animal feeds. *Warasan Phesatchasat*, 20 (1993) 25-32; C.A., 121 (1994) 229140k.
- 2208 Seki-Asano, M., Okazaki, T., Yamagishi, M., Sakai, N., Hanada, K. and Mizoue, K.: Isolation and characterization of new 18-membered macrolides FD-891 and FD-892. *J. Antibiot.*, 47 (1994) 1226-1233.
- 2209 Seneviratne, A.K., Jayewardene, A.L. and Gambertoglio, J.G.: Determination of ceftizoxime in human abscess fluid by paired ion reversed-phase HPLC. *J. Liq. Chromatogr.*, 17 (1994) 4157-4167.

- 2210 Snippe, N., van de Merbel, N.C., Ruiter, F.P.M., Steijger, O.M., Lingeman, H. and Brinkman, U.A.T.: Automated column liquid chromatographic determination of amoxicillin and cefadroxil in bovine serum and muscle tissue using on-line dialysis for sample preparation. *J. Chromatogr. B*, 662 (1994) 61-70.
- 2211 Straub, R., Linder, M. and Voyksner, R.D.: Determination of β -lactam residues in milk using perfusive-particle liquid chromatography combined with ultrasonic nebulization electrospray mass spectrometry. *Anal. Chem.*, 66 (1994) 3651-3658.
- 2212 Tamaki, M., Akabori, S. and Muramatsu, I.: Studies of gramicidin S analogues having various ring sizes by reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 685 (1994) 237-241.
- 2213 Touraki, M., Rigas, P., Pergandas, P. and Kastritis, C.: Determination of oxytetracycline in the live fish feed *Artemia* using high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 663 (1995) 167-171.
- 2214 Wetterich, U. and Mutschler, E.: Quality of cefotaxime sodium preparations. *Arzneim.-Forsch.*, 45 (1995) 74-80.

For additional information see C.A.:

121 (1994) 213091j, 220904e, 244908k.

See also 2400, 2422, 2432, 2437.

29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

- 2215 Parrilla, P., Vidal, J.L.M., Galera, M.M. and Frenich, A.G.: Simple and rapid screening procedure for pesticides in water using SPE and HPLC/DAD detection. *Fresenius J. Anal. Chem.*, 350 (1994) 633-637.
- 29a. General techniques
- 2216 Parilla, P., Galera, M.M., Vidal, J.L.M. and Frenich, A.G.: Determination of fenamiphos and folpet in water by time-domain differentiation of high-performance liquid chromatographic peaks. *Analyst (Cambridge)*, 119 (1994) 2231-2236.
- 2217 Sundaram, K.M.S., Nott, R. and Lewin, E.E.: Comparative study of the determination of tebufenozone in formulated products by gas chromatographic and liquid chromatographic methods. *J. Chromatogr. A*, 687 (1994) 323-332.

See also 2470.

29b. Chlorinated insecticides

- 2218 Barnabas, I.J., Dean, J.R., Hitchen, S.M. and Owen, S.P.: Selective supercritical fluid extraction of organochlorine pesticides and herbicides from aqueous samples. *J. Chromatogr. Sci.*, 32 (1994) 547-551.
- 2219 Dehal, S.S. and Kupfer, D.: Metabolism of the proestrogenic pesticide methoxychlor by hepatic P450 monooxygenases in rats and humans. Dual pathway involving novel *ortho* ring-hydroxylation by CYP2B. *Drug Metab. Disp.*, 22 (1994) 937-946.

- 2220 Grimvall, E. and Östman, C.: Fractionation of non-*ortho*-substituted toxic polychlorinated biphenyls on two nitro-containing liquid chromatographic stationary phases. *J. Chromatogr. A*, 685 (1994) 338-343.

See also 1532, 1540, 1548.

29c. Phosphorus insecticides

- 2221 Molina, C., Honig, M. and Barcelo, D.: Determination of organophosphorus pesticides in water by solid-phase extraction followed by liquid chromatography/high-flow pneumatically assisted electrospray mass spectrometry. *Anal. Chem.*, 66 (1994) 4444-4449.

For additional information see C.A.:

121 (1994) 254020d.

29e. Herbicides

- 2222 Dankwardt, A., Pullen, S., Rauchalles, S., Kramer, K., Just, F., Hock, B., Hofmann, R., Schewes, R. and Maidl, F.X.: Atrazine residues in soil two years after the atrazine ban - a comparison of enzyme immunoassay with HPLC. *Anal. Lett.*, 28 (1994) 621-634.
- 2223 Frebortova, J. and Tatarkovicova, V.: Determination of phenoxyacid herbicides in water. *Acta Univ. Palacki, Olomuc., Fac. Rerum Nat.*, 112 (1993) 63-68; C.A., 121 (1994) 294950p.
- 2224 Galletti, G.C., Bonetti, A. and Dinelli, G.: High-performance liquid chromatographic determination of sulfonylureas in soil and water. *J. Chromatogr. A*, 692 (1995) 27-37.
- 2225 Hatrik, S., Lehotay, J. and Tekel, J.: Simultaneous HPLC determination of phenylurea herbicides and their corresponding anilines in water after on-line preconcentration. *J. High Resolut. Chromatogr.*, 17 (1994) 756-758.
- 2226 Marx, A., Giersch, T. and Hock, B.: Immunoaffinity chromatography of s-triazines. *Anal. Lett.*, 28 (1995) 267-278.
- 2227 Thomas, D.H., Beck-Westermeyer, M. and Hage, D.S.: Determination of atrazine in water using tandem high-performance immunoaffinity chromatography and reversed-phase liquid chromatography. *Anal. Chem.*, 66 (1994) 3823-3829.

For additional information see C.A.:

121 (1994) 274366z.

See also 1770, 2218.

29f. Fungicides

- 2228 Alawi, M.A.: Development of a new approach for the determination of folpet in grapes. *Anal. Lett.*, 28 (1995) 349-356.
- 2229 Jiménez, J.J., Atienza, J. and Bernal, J.L.: HPLC with fluorescence detection for the study of benomyl dissipation on treated lettuces. *J. Liq. Chromatogr.*, 17 (1994) 3999-4017.

29g. Other types of pesticides and various agrochemicals

- 2230 Brouwer, E.R., Struys, E.A., Vreuls, J.J. and Brinkman, U.A.T.: Automated determination of pyrethroid insecticides in surface water by column liquid chromatography with diode array UV detection, using on-line micelle - mediated sample preparation. *Fresenius J. Anal. Chem.*, 350 (1994) 487-495.
- 2231 Darwish, A.: Determination of deltamethrin levels in wool by reversed-phase high performance liquid chromatography. *J. Liq. Chromatogr.*, 17 (1994) 4215-4228.
- 2232 Guenther, K., Drauz, K., Klenk, H., Kriechbaum, D., Merget, S. and Schaefer, M.: (Semipreparative chromatographic enantioselective resolution of a cyanazine homolog, using cellulose triacetate and benzoate). *GIT Spez. Chromatogr.*, 13 (1993) 96-101; C.A., 121 (1994) 224188x.
- 2233 Ho, J.S. and Budde, W.L.: Investigation of the natural pesticide rotenone in water using liquid-solid disk extraction, supercritical fluid elution, and liquid chromatography/particle beam mass spectrometry. *Anal. Chem.*, 66 (1994) 3716-3722.

See also 1490, 2217.

30. SYNTHETIC AND NATURAL DYES

30a. Synthetic dyes

- 2234 Akins, D.L. and Kumar, V.T.: High-performance liquid chromatography of cyanine dyes. Multiphase separation, purification, and substitution of the counter ion. *J. Chromatogr. A*, 689 (1995) 269-273.
- 2235 Fink, W. and Auch, J.: (Malachite green, crystal violet, and brilliant green residues determination in edible fish by HPLC). *Dtsch. Lebensm.-Rundsch.*, 89 (1993) 246-251; C.A., 121 (1994) 253976h.

See also 2482.

30b. Chloroplast and other natural pigments

- 2236 Bekasova, O.D., Sineshchekov, V.A., Brykina, G.D., Sineshchekova, E.V. and Grishina, L.E.: (Minor components in the pigment system of *Nostoc muscorum* and *Mastigocladus laminosus*). *Biokhimiya (Moscow)*, 59 (1994) 1042-1053.
- 2237 Fiorini, M.: Preparative high-performance liquid chromatography for the purification of natural anthocyanins. *J. Chromatogr. A*, 692 (1995) 213-219.
- 2238 Minguez-Mosquera, M.I. and Gandul-Rojas, B.: High-performance liquid chromatographic study of alkaline treatment of chlorophyll. *J. Chromatogr. A*, 690 (1995) 161-176.
- 2239 Misawa, N., Truesdale, M.R., Sandmann, G., Fraser, P.D., Bird, C., Schuch, W. and Bramley, P.M.: Expression of a tomato cDNA coding for phytoene synthase in *Escherichia coli*, phytoene formation *in vivo* and *in vitro*, and functional analysis of the various truncated gene products. *J. Biochem. (Tokyo)*, 116 (1994) 980-985.
- 2240 Saitoh, K., Awaka, I. and Suzuki, N.: Determination of chlorophylls by reversed-phase high-performance liquid chromatography with isocratic elution and the column-switching technique. *J. Chromatogr. A*, 693 (1995) 176-180.

- 2241 Sass, J.O. and Nau, H.: Single-run analysis of isomers of retinoyl- β -D-glucuronide and retinoic acid by reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 685 (1994) 182-188.

- 2242 Schoefs, B., Bertrand, M. and Lemoine, Y.: Separation of photosynthetic pigments and their precursors by reversed-phase high-performance liquid chromatography using a photodiode-array detector. *J. Chromatogr. A*, 692 (1995) 239-245.

- 2243 Steinberg, G. and Sheves, M.: Factors affecting the formation of an M-like intermediate in the photocycle of 13-cis-bacteriorhodopsin. *Biochemistry*, 33 (1994) 12439-12450.

For additional information see C.A.:
122 (1995) 5047t.

See also 2152, 2468.

31. PLASTICS AND THEIR INTERMEDIATES

- 2244 Aignasse, M.F., Prognon, P., Stachowicz, M., Gheyouche, R. and Pradeau, D.: A new simple and rapid HPLC method for determination of DEHP in PVC packing and releasing studies. *Int. J. Pharm.*, 113 (1995) 241-246; C.A., 122 (1995) 17326w.
- 2245 Dayal, U. and Mehta, S.K.: Determination of long chain branching in polyethylene by high temperature SEC coupled with a MALLS photometric detector. In: Bhardwaj, I.S. (Editor), *Polym. Sci.*, 2, Allied Publ., New Delhi, 1994, pp. 737-742; C.A., 122 (1995) 32517c.
- 2246 Estrin, Ya.I. and Kasumova, L.T.: (Chromatography of functional oligobutadienes under critical conditions on silica gel). *Zh. Fiz. Khim.*, 68 (1994) 1784-1788; C.A., 122 (1995) 11088y.
- 2247 Fung, V.S. and Tang, A.S.K.: Liquid chromatographic determination of plasticizer di(2-ethylhexyl)phthalate (DEHP) in PVC plastics. *Fresenius J. Anal. Chem.*, 350 (1994) 721-723.
- 2248 Gur'yanova, V.V. and Prudskova, T.N.: (Features of the chromatographic behavior of macromolecules in a binary eluent). *Vysokomol. Soedin., Ser. A, Ser. B*, 36 (1994) 1731-1736; C.A., 122 (1995) 32520y.
- 2249 Huguenard, C., Elaissari, A. and Pefferkorn, E.: Surface area exclusion chromatography of diblock copolymers. *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)*, 35 (1994) 643-644; C.A., 121 (1994) 301814c.
- 2250 Lederer, K., Beytollahi-Amtrmann, I. and Billiani, J.: Determination and correction of peak broadening in size exclusion chromatography of controlled rheology polypropylene. *J. Appl. Polym. Sci.*, 54 (1994) 47-55; C.A., 121 (1994) 231821b.
- 2251 Menon, S.K., Dhole, D.A. and Kulkarni, R.A.: Characterization of polymers using GPC coupled with online multi-angle laser light scattering photometry. In: Bhardwaj, I.S. (Editor), *Polym. Sci.*, 2, Allied Publ., New Delhi, 1994, pp. 749-754; C.A., 122 (1995) 57013y.
- 2252 Mukesh, D.: Molecular graphics of polymers. In: Bhardwaj, I.S. (Editor), *Polym. Sci.*, 2, Allied Publ., New Delhi, 1994, pp. 719-724; C.A., 121 (1994) 301734b.

- 2253 Netopilik, M.: Model analysis of the determination of the Mark-Houwink-Kuhn-Sakurada parameters and molecular weight distribution by means of size exclusion chromatography with dual detection. *Polymer*, 35 (1994) 4799-4803; C.A., 121 (1994) 301797z.
- 2254 Parlesak, A., Bode, J.C. and Bode, C.: Parallel determination of gut permeability in man with M_r 400, M_r 1500, M_r 4000 and M_r 10000 polyethylene glycol. *Eur. J. Clin. Chem. Clin. Biochem.*, 32 (1994) 813-820.
- 2255 Podzimek, S.: The use of GPC coupled with a multiangle laser light scattering photometer for the characterization of polymers. On the determination of molecular weight, size, and branching. *J. Appl. Polym. Sci.*, 54 (1994) 91-103; C.A., 121 (1994) 231822c.
- 2256 Puskas, J.E. and Hutchinson, R.: GPC calibration for the molecular weight measurement of butyl rubbers. *Rubber Chem. Technol.*, 66 (1993) 742-748; C.A., 122 (1995) 11888j.
- 2257 Schunk, T.C. and Long, T.E.: Compositional distribution characterization of poly(methyl methacrylate)-graft-polydimethylsiloxane copolymers. *J. Chromatogr. A*, 692 (1995) 221-232.
- 2258 Spahl, W. and Budzikiewicz, H.: Qualitative analysis of dental resin composites by gas and liquid chromatography/mass spectrometry. *Fresenius J. Anal. Chem.*, 350 (1994) 684-691.
- 2259 Wang, Q.C., Svec, F. and Frechet, J.M.J.: Fine control of the porous structure and chromatographic properties of monodisperse macroporous poly(styrene-co-divinylbenzene) beads prepared using polymer porogens. *J. Polym. Sci., Part A: Polym. Chem.*, 32 (1994) 2577-2588; C.A., 121 (1994) 232182f.
- 2260 Zigon, M., Leben, S., Sedlacek, J. and Grubisic-Gallot, Z.: Characterization of poly(phenylacetylenes) by SEC coupled with continuous viscometry and LALLS. *Acta Chim. Slov.*, 40 (1993) 255-266; C.A., 121 (1994) 256762w.
- For additional information see C.A.:
121 (1994) 257618r, 302036n.
- See also 1344, 1348, 1349, 1375.
32. DRUG ANALYSIS
- 32a. Drug analysis, general techniques

- 2261 Bonet-Domingo, E., Medina-Hernandez, M.J. and Garcia-Alvarez-Coque, M.C.: On the direct injection of urine samples in micellar liquid chromatography. *Quim. Anal. (Barcelona)*, 12 (1993) 167-172; C.A., 121 (1994) 220901b.
- 2262 Bourquin, T., Bordi, D., Bounine, J.P., Compagnon, P.A., Drouin, J.E., Fatras, A., Lecointre, L., Lepabic, C., Molti, P. et al.: (Conformity tests for liquid-phase chromatography: report of an SFSTP commission). *A.T.P. Pharma Prat.*, 4 (1994) 170-176; C.A., 121 (1994) 238491d.
- 2263 Castensson, S.: Standardized chromatographic media products by operative change control. *Prog. Biotechnol.*, 9 (1994) 973-975; C.A., 121 (1994) 238491c.

- 2264 Croes, K., McCarthy, P.T. and Flanagan, R.J.: HPLC of basic drugs and quaternary ammonium compounds on microparticulate strong cation-exchange materials using methanolic or aqueous methanol eluents containing an ionic modifier. *J. Chromatogr. A*, 693 (1995) 289-306.
- 2265 Franssen, E.J.F., Luurtsema, G., Medema, J., Visser, G.M., Jeronimus-Shaling, C.M., Bruins, A.P. and Vaalburg, W.: Application of liquid chromatography combined with mass-spectrometry (LC-MS) to establish identity and purity of PET-radiopharmaceuticals. *Appl. Radiat. Isot.*, 45 (1994) 937-940; C.A., 121 (1994) 286707z.
- 2266 Hagan, R.L.: High-performance liquid chromatography for small-scale studies of drugs stability. *Am. J. Hosp. Pharm.*, 51 (1994) 2162-2175; C.A., 121 (1994) 286684q.
- 2267 Hagiwara, J., Seyama, C. and Murashima, T.: (Direct injection analysis of drug enantiomers in serum on protein-bonded silica materials by liquid chromatography). *Kuromatogurafu*, 15 (1994) 54-55; C.A., 121 (1994) 291876h.
- 2268 Hashimoto, A., Yamasaki, K., Kokusenya, Y., Miyamoto, T. and Sato, T.: Investigation of "Signal" constituents for the evaluation of animal crude drugs. I. Free aminoacids and total amino acids. *Chem. Pharm. Bull.*, 42 (1994) 1636-1641; C.A., 122 (1995) 64560c.
- 2269 Hermansson, J. and Grahn, A.: Resolution of racemic drugs on a new chiral column based on silica-immobilized cellobiohydrolase. Characterization of the basic properties of the column. *J. Chromatogr. A*, 687 (1994) 45-59.
- 2270 Hsu, H.-C. and Chien, C.-S.: (Validation of analytical methods: A simple model for HPLC assay methods). *Yaowu Shipin Fenxi*, 2 (1994) 161-176; C.A., 121 (1994) 308435p - a review with 39 refs.
- 2271 Iwabuchi, H., Kitazawa, E., Kobayashi, N., Watanabe, H., Kanai, M. and Nakamura, K.-i.: Studies on drug metabolism using liquid chromatography/mass spectrometry: comparison of three liquid chromatographic/mass spectrometric interfaces. *Biol. Mass Spectrom.*, 23 (1994) 540-546; C.A., 122 (1995) 167x.
- 2272 Li, Z. and Guo, P.: (Application of high performance liquid chromatography column switching technique in the study of pharmacokinetics and bioavailability). *Sepu*, 12 (1994) 378-379; C.A., 122 (1995) 132g - a review with 9 refs.
- 2273 Messer, D.C., Taylor, L.T., Weiser, W.E., McRae, J.W. and Cook, C.C.: A novel strictly anaerobic recovery and enrichment system incorporating lithium for detection of heat-injured *Listeria monocytogenes* in pasteurized milk containing background microflora. *Pharm. Res.*, 11 (1994) 1545-1548; C.A., 121 (1994) 299436k.
- 2274 Nasal, A., Sznitowska, M., Bucinski, A. and Kalisz, R.: Hydrophobicity parameter from high-performance liquid chromatography on an immobilized artificial membrane column and its relationship to bioactivity. *J. Chromatogr. A*, 692 (1995) 83-89.
- 2275 Ong, C.P., Chow, K.K., Ng, C.L., Ong, F.M., Lee, H.K. and Li, S.F.Y.: Use of overlapping resolution mapping scheme for optimization of the high-performance liquid chromatographic separation of pharmaceuticals. *J. Chromatogr. A*, 692 (1995) 207-212.

- 2276 Ponder, G.W., Butram, S.L., Adams, A.G., Ramanathan, C.S. and Stewart, J.T.: Resolution of promethazine, ethopropazine, trimeprazine and trimipramine enantiomers on selected chiral stationary phases using high-performance liquid chromatography. *J. Chromatogr. A.*, 692 (1995) 173-182.
- 2277 Shah, K.P., Chang, M. and Riley, C.M.: Automated analytical systems for drug development studies. II - A system for dissolution testing. *J. Pharm. Biomed. Anal.*, 12 (1994) 1519-1527.
- 2278 Van Molle, S., Vanbel, P. and Tilquin, B.: Mixture desing statistical technique optimization procedure applied to HPLC and its limitations. *J. Pharm. Belg.*, 49 (1994) 293-300; *C.A.*, 121 (1994) 263789p.

For additional information see *C.A.*:
121 (1994) 213104r, 213180n.

See also 1398, 1399, 1501, 1606, 1726, 2315, 2341, 2469.

32b. Antirheumatics and antiinflammatory drugs

- 2279 Faouzi, M.A., Dine, T., Luyckx, M., Brunet, C., Gressier, B., Cazin, M., Wallaert, B. and Cazin, J.C.: High-performance liquid chromatographic method for the determination of budesonide in bronchoalveolar lavage of asthmatic patients. *J. Chromatogr. B*, 664 (1995) 463-467.
- 2280 Fischer, C. and Klotz, U.: Radical-derived oxidation products of 5-aminosalicylic acid and N-acetyl-5-aminosalicylic acid. *J. Chromatogr. B*, 661 (1994) 57-68.
- 2281 Hayball, P.J., Holman, J.W. and Nation, R.L.: Influence of octanoic acid on the reversible protein binding of ketorolac enantiomers to human serum albumin (HSA): comparative liquid chromatographic studies using a HSA chiral stationary phase. *J. Chromatogr. B*, 662 (1994) 128-133.
- 2282 Jones, D.J. and Bjorksten, A.R.: Detection of ketorolac enantiomers in human plasma using enantioselective liquid chromatography. *J. Chromatogr. B*, 661 (1994) 165-167.
- 2283 King, J.N., Mauron, C., Voirol, M.J., le Goff, C. and Hauffe, S.A.: High performance liquid chromatography and pharmacokinetics of the non-steroidal anti-inflammatory drug oxindanac in calves. *J. Vet. Pharmacol. Ther.*, 17 (1994) 186-192; *C.A.*, 121 (1994) 220956y.
- 2284 Peng, W., Li, T., Li, H. and Wang, E.: Direct injection of urine and determination of acetaminophen by micellar liquid chromatography with a wall-jet cell/carbon fibre microelectrode. *Anal. Chim. Acta*, 298 (1994) 415-421.
- 2285 Vajda, M., Otta-Horvath, K. and Toth-Forgacs, E.: Development of analytical methods for the determination of indosol as a pure substance or in eye drops. *Acta Pharm. Hung.*, 64 (1994) 131-134; *C.A.*, 121 (1994) 308483c.

For additional information see *C.A.*:
121 (1994) 244911f, 308487g, 308506n.

See also 1465, 2429.

32c. Autonomic and cardiovascular drugs

- 2286 Agbaba, D., Janjic, V., Zivanov-Stakic, D. and Vladimirov, S.: High performance liquid chromatographic assay for isosorbide 5-mononitrate and impurities of inorganic nitrates in pharmaceuticals. *J. Liq. Chromatogr.*, 17 (1994) 3983-3988.
- 2287 Alton, K.B., Chan, T.-M. and Pramanik, B.N.: Urinary metabolites of (R),(R)-labetalol. *Drug Metab. Disp.*, 22 (1994) 866-872.
- 2288 Bansal, R., Louridas, A.T., Gottesman, R.D. and Aranda, J.V.: Determination of amrinone in human plasma by high-performance liquid chromatography with ultraviolet detection. *J. Liq. Chromatogr.*, 17 (1994) 3531-3539.
- 2289 Calucci, G., di Giuseppe, E. and Mazzeo, P.: Determination of alfuzosin in human plasma by high-performance liquid chromatography with column-switching. *J. Liq. Chromatogr.*, 17 (1994) 3989-3997.
- 2290 De Beer, J.O., Vandenbroucke, C.V. and Massart, D.L.: Experimental design for the rapid selection of separation conditions for methyl and propyl parahydroxybenzoate, phenylephrine hydrochloride and chlorphenamine maleate by ion-pair liquid chromatography. *J. Pharm. Biomed. Anal.*, 12 (1994) 1379-1396.
- 2291 Eggeringer, G., Lindner, W., Brunner, G. and Stoschitzky, K.: Direct enantioselective determination of (R)- and (S)-propranolol in human plasma. Application to pharmacokinetic studies. *J. Pharm. Biomed. Anal.*, 12 (1994) 1537-1545.
- 2292 El-Dawa, M.A., Habeeb, A.A., Mabrouk, M.M. and El-Bastawissiy, I.A.: HPLC assay of proterol hydrochloride. *Egypt. J. Pharm. Sci.* 1993, 34 (1994) 691-698; *C.A.*, 122 (1995) 64548e.
- 2293 Grundy, J.S., Kherani, R. and Foster, R.T.: Photostability determination of commercially available nifedipine oral dosage formulations. *J. Pharm. Biomed. Anal.*, 12 (1994) 1529-1535.
- 2294 Hasegawa, T., Hara, K., Kenmochi, T. and Hata, S.: In vitro metabolism of dorzolamide, a novel potent carbonic anhydrase inhibitor, in rat liver microsomes. *Drug Metab. Disp.*, 22 (1994) 916-921.
- 2295 He, H., Edeki, T.I. and Wood, A.J.J.: Determination of low plasma timolol concentrations following topical application of timolol eye drops in humans by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 661 (1994) 351-356.
- 2296 Höld, K.M., de Boer, D., Zuidema, J. and Maes, R.A.A.: Evaluation of the Salivette as sampling device for monitoring β-adrenoceptor blocking drugs in saliva. *J. Chromatogr. B*, 663 (1995) 103-110.
- 2297 Hoshino, M., Yajima, K., Suzuki, Y. and Okahira, A.: Determination of nadolol diastereomers in dog plasma using chiral derivatization and reversed-phase high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 661 (1994) 281-289.
- 2298 Hsieh, J.Y.-K., Lin, C., Matuszewski, B.K. and Dobrinska, M.R.: Fully automated methods for the determination of hydrochlorothiazide in human plasma and urine. *J. Pharm. Biomed. Anal.*, 12 (1994) 1555-1562.
- 2299 Ishii, K., Minato, K., Nishimura, N., Miyamoto, T. and Sato, T.: Direct chromatographic resolution of four optical isomers of diltiazem hydrochloride on a Chiralcel OF column. *J. Chromatogr. A*, 686 (1994) 93-100.

- 2300 Iyer, E.K. and Tipnis, H.P.: Quantitative determination of oxprenolol in plasma using high performance liquid chromatography. *Indian Drugs*, 31 (1994) 440-441; C.A., 122 (1995) 173w.
- 2301 Kaniwa, N., Shameem, M., Katori, N., Aoyagi, N. and Kojima, S.: The suitable temperature specification for the evaluation of controlled release products *in vitro*. *Pharmazie*, 50 (1995) 53-55.
- 2302 Kwok, D.K.W., Igwemezie, L., Kerr, C.R. and McErlane, K.M.: High-performance liquid chromatographic analysis using a highly sensitive fluorogenic reagent, 2-anthroyl chloride, and stereoselective determination of the enantiomers of mexiletine in human serum. *J. Chromatogr. B*, 661 (1994) 271-280.
- 2303 Lankford, S.M. and Bai, S.A.: Determination of the stereochemical composition of the major metabolites of verapamil in dog urine with enantioselective liquid chromatographic techniques. *J. Chromatogr. B*, 663 (1995) 91-101.
- 2304 Laugel, C., Chaminade, P., Baillet, A. and Ferrier, D.: Ion-pair reversed-phase liquid chromatographic determination of dihydralazine. *J. Chromatogr. A*, 686 (1994) 344-349.
- 2305 McCarthy, J.P.: Direct enantiomeric separation of the four stereoisomers of nadolol using normal-phase and reversed-phase high-performance liquid chromatography with Chiralpak AD. *J. Chromatogr. A*, 685 (1994) 349-355.
- 2306 McNulty, M.J., Page, T.L. and Deal, D.L.: Development and validation of a chiral LC method for analysis of the four stereoisomers of 104SU85 in plasma. *J. Pharm. Biomed. Anal.*, 12 (1994) 1453-1461.
- 2307 Miller-Stein, C., Boppana, V.K. and Rhodes, G.R.: High-performance liquid chromatographic determination of the N-ethyl tricarbamate ester pro-drug of fenoldopam utilizing simultaneous post-column hydrolysis and fluorescence derivatization. *J. Chromatogr. B*, 661 (1994) 291-297.
- 2308 Modamio, P., Montejo, O., Lastra, C.F. and Marino, E.L.: A valid high-performance liquid chromatography method for oxprenolol stability studies. *Int. J. Pharm.*, 112 (1994) 93-96; C.A., 121 (1994) 263462b.
- 2309 Neau, B., Roux, J., Lambrey, B., Courtiol, C., Marty, J.-P. and Grislain, L.: Metabolism of ¹⁴C-moxisylate in hairless rat. Comparison between intravenous and oral route. *Arzneim.-Forsch.*, 45 (1995) 10-14.
- 2310 Saarinen, M.T., Sirén, H., Riekola, M.-L.: Screening and determination of β -blockers, narcotic analgesics and stimulants in urine by high-performance liquid chromatography with column switching. *J. Chromatogr. B*, 664 (1995) 341-346.
- 2311 Santoro, M.I.R.M., Cho, H.S. and Kedor-Hackmann, E.R.M.: Determination of β -blockers in ophthalmic solutions by high performance liquid chromatography. *Anal. Lett.*, 28 (1995) 71-81.
- 2312 Trausch, B., Oertel, R., Richter, K. and Gramatte, T.: Die Proteinbindung von Talinolol. *Pharmazie*, 50 (1995) 72.
- 2313 Ulvi, V. and Keski-Hynnila, H.: Analysis of chlorothiazide in the presence of its photodecomposition products. *Am. Lab. (Shelton)*, 26 (1994) 56-59; C.A., 122 (1995) 17322s.
- 2314 Vlcek, J., Macek, K., Hulek, P., Bratova, M. and Fendrich, Z.: Pharmacokinetic parameters of verapamil and its active metabolite norverapamil in patients with hepatopathy. *Arzneim.-Forsch.*, 45 (1995) 146-149.
- 2315 Wallerstein, S. and Cserhati, T.: Interaction of some anti-hypoxia drugs with hydroxypropyl- β -cyclodextrin studied by means of charge transfer chromatography. *J. Biochem. Biophys. Methods*, 29 (1994) 49-60; C.A., 121 (1994) 238256e.
- 2316 Wu, C., Akiyama, A. and Straub, J.A.: High-performance liquid chromatographic reversed-phase and normal-phase separation of diastereomeric α -ketoamide calpain inhibitors. *J. Chromatogr. A*, 684 (1994) 243-249.
- 2317 Yang, J.M. and Chan, K.: Simultaneous determination of moricizine and its sulphoxidation metabolites in biological fluids by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 172-176.
- 2318 Yazar, Y. and Bozan, B.: Rapid analysis of verapamil in plasma by reversed phase HPLC. *Pharmazie*, 50 (1995) 117-119.
- For additional information see C.A.:
 121 (1994) 213149j, 244923m;
 122 (1995) 38999h.
- See also 1506, 1680, 1723, 2113, 2114, 2124, 2358, 2447.
- 32d. Central nervous system drugs*
- 2319 Abdel-Hay, M.H.: High-performance liquid chromatographic determination of floctafenine in presence of floctafenic acid. *Alexandria J. Pharm. Sci.*, 7 (1993) 25-28; C.A., 121 (1994) 308482b.
- 2320 Agostini, O. and Toja, E.: Determination of a new anticonvulsant agent, MX2/120, in guinea pig plasma by high-performance liquid chromatography in a pharmacokinetic study. *J. Chromatogr. B*, 661 (1994) 313-318.
- 2321 Arjjad, F., Ansari, A.F. and Bhanger, M.I.: A simple method for the determination of chlorpromazine in pharmaceutical preparations and blood serum. *Pak. J. Pharm. Sci.*, 6 (1993) 79-82; C.A., 121 (1994) 308468b.
- 2322 Annesley, T.M. and Clayton, L.T.: Determination of felbamate in human serum by high-performance liquid chromatography. *Ther. Drug Monit.*, 16 (1994) 419-424; C.A., 121 (1994) 244914j.
- 2323 Atta-Politou, J., Tsarpalis, K. and Koutselinis, A.: A modified simple and rapid reversed phase high performance liquid chromatographic method for quantification of amitriptyline and nortriptyline in plasma. *J. Liq. Chromatogr.*, 17 (1994) 3969-3982.
- 2324 Balizs, G., Börner, S. and Wennemar, A.: Determination of amperozide residues in swine liver using liquid chromatography-mass spectrometry. *Analyst (Cambridge)*, 119 (1994) 2687-2690.
- 2325 Blume, H., Ali, S.L., Elze, M., Krämer, J., Wendt, G. and Scholz, M.E.: Relative Bioverfügbarkeit von Paracetamol in Suppositorien-Zubereitungen im Vergleich zu Tabletten. *Arzneim.-Forsch.*, 44 (1994) 1333-1338.
- 2326 Boppana, V.K.: Simultaneous determination of granisetron and its 7-hydroxy metabolite in human plasma by reversed-phase high-performance liquid chromatography utilizing fluorescence and electrochemical detection. *J. Chromatogr. A*, 692 (1995) 195-202.
- 2327 Dash, A.K.: Determination of pseudoephedrine hydrochloride in dosage forms by liquid chromatography. *J. Pharm. Biomed. Anal.*, 12 (1994) 1601-1606.

- 2328 Deeks, N.J., Abbott, R.W., Allen, G.D., Hollis, F.J. and Rhodes, G.: Determination of BRL 46470 in human plasma by high-performance liquid chromatography with ultraviolet absorbance detection followed by post-column photochemical reaction and fluorescence detection. *Analyst (Cambridge)*, 119 (1994) 2043-2050.
- 2329 Ebling, W.F., Russell Wada, D. and Stanski, D.R.: From piecewise to full physiologic pharmacokinetic modeling: applied to thipental disposition in the rat. *J. Pharmacokin. Biopharm.*, 22 (1994) 259-292.
- 2330 El-Yazigi, A., Wahab, F.A. and Afrane, B.: Stability study and content uniformity of prochlorperazine in pharmaceutical preparations by liquid chromatography. *J. Chromatogr. A*, 690 (1995) 71-76.
- 2331 Falcó, P.C., Legua, C.M., Hernandez, R.H. and Cabeza, A.S.: Improved amphetamine and methamphetamine determination in urine by normal-phase high-performance liquid chromatography with sodium 1,2-naphthoquinone 4-sulphonate as derivatizing agent and solid-phase extraction for sample clean-up. *J. Chromatogr. B*, 663 (1995) 235-245.
- 2332 Ficarra, R., Ficarra, P., Tommasini, S., Carulli, M., Costantino, D. and Calbro, M.L.: Chromatographic investigations on brotizolam. *Farmaco*, 49 (1994) 437-440; *C.A.*, 121 (1994) 308503j.
- 2333 Franssen, R.M.E., Stolk, L.M.L., Brand, W.V.D. and Smit, B.J.: Determination of morphine and amphetamine. *Ziekenhuisfarmacie*, 10 (1994) 111-112; *C.A.*, 122 (1995) 17321p.
- 2334 Gupta, R.N.: Column liquid chromatographic determination of paroxetine in human serum using solid-phase extraction. *J. Chromatogr. B*, 661 (1994) 362-365.
- 2335 Gurley, B.J., Zermatten, S. and Skelton, D.: Determination of antipyrine in human serum by direct injection restricted access media liquid chromatography. *J. Pharm. Biomed. Anal.*, 12 (1994) 1591-1595.
- 2336 Hempenius, J., Hendriks, G., Hingstman, J., Mensink, C.K., Jonkman, J.H.G. and Lin, C.C.: An automated analytical method for the determination of felbamate in human plasma by robotic sample preparation and reversed-phase high performance liquid chromatography. *J. Pharm. Biomed. Anal.*, 12 (1994) 1443-1451.
- 2337 Husain, S., Sekar, R. and Rao, R.N.: Enantiomeric separation and determination of antiparkinsonian drugs by reversed-phase ligand-exchange high-performance liquid chromatography. *J. Chromatogr. A*, 687 (1994) 351-355.
- 2338 Jurima-Romet, M., Crawford, K., Cyr, T. and Inaba, T.: Terfenadine metabolism in human liver. *In vitro* inhibition by macrolide antibiotics and azole antifungals. *Drug Metab. Disp.*, 22 (1994) 849-857.
- 2339 Kountourellis, J.E. and Ebete, K.O.: Reversed-phase high performance liquid chromatographic determination of cyproheptadine from urine by solid-phase extraction. *J. Chromatogr. B*, 664 (1995) 468-471.
- 2340 Lacroix, M., Tu, T.M., Donati, F. and Varin, F.: High-performance liquid chromatographic assays with fluorometric detection for mivacurium isomers and their metabolites in human plasma. *J. Chromatogr. B*, 663 (1995) 297-307.
- 2341 Larew, L.A., Olsen, B.A., Stafford, J.D. and Wilhelm, M.V.: Comparison of theory-based and empirical modeling for the prediction of chromatographic behavior in the ion-pairing separation of benzodiazepine-derived pharmaceutical compounds. *J. Chromatogr. A*, 692 (1995) 183-193.
- 2342 Lau, G.S.N. and Critchley, J.A.J.H.: The estimation of paracetamol and its major metabolites in both plasma and urine by a single high-performance liquid chromatography assay. *J. Pharm. Biomed. Anal.*, 12 (1994) 1563-1572.
- 2343 Lindegård, B., Björk, H., Jönsson, J.Å., Matthiasson, L. and Olsson, A.-M.: Column liquid chromatographic determination of a basic drug in blood plasma using the supported liquid membrane technique for sample pretreatment. *Anal. Chem.*, 66 (1994) 4490-4497.
- 2344 Mangoni, P., Sioufi, P. and Godbillon, J.: Stereospecific high-performance liquid chromatographic determination of an S(-)-benzopyran methyl ester derivative (CGP 50 068), its (-)-carboxylic acid metabolite (CGP 55 461) and the related (+)-enantiomer (CGP 54 228) in human and dog plasma. *J. Chromatogr. B*, 664 (1995) 393-400.
- 2345 Marastoni, M., Salvadori, S., Balboni, G., Scaranari, V., Borea, P.A. and Tornatis, A.: Synthesis and opioid activity of tyrosine sulfate containing dermorphin and deltorphin peptides. *Arzneim.-Forsch.*, 45 (1995) 116-119.
- 2346 Morris, R.G., Jones, T.E. and Saccoia, N.C.: Liquid chromatographic assay for dextromoramide in human plasma. *J. Liq. Chromatogr.*, 17 (1994) 4185-4193.
- 2347 Nicolle, E., Michaut, S., Serre-Debeauvais, F. and Bessard, G.: Rapid and sensitive high-performance liquid chromatographic assay for nalbuphine in plasma. *J. Chromatogr. B*, 663 (1995) 111-117.
- 2348 Nieto, C., Ramis, J., Conte, L., Fernández, J.M. and Forn, J.: On-line fully automated solid-phase extraction-liquid chromatography analysis of 1,2-dihydro-4-(1,2-dihydro-2-oxo-1-pyridyl)-2,2-dimethyl-1-oxonaphthalene-6-carbonitrile (UR-8225), a new potassium channel opener, in plasma samples. *J. Chromatogr. B*, 661 (1994) 319-325.
- 2349 Norris, R.L.G., Ravenscroft, P.J. and Pond, S.M.: Sensitive high-performance liquid chromatographic assay with ultraviolet detection of methadone enantiomers in plasma. *J. Chromatogr. B*, 661 (1994) 346-350.
- 2350 Rudolphi, C. and Blaschke, G.: Determination of the stereoselective aspects in *in vitro* and *in vivo* metabolism of the analgesic meptazinol by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 315-326.
- 2351 Russel, F.G.M., Creemers, M.C.W., Tan, Y., van Riel, P.L.C.M. and Gribnau, F.W.J.: Ion-pair solid-phase extraction of cimetidine from plasma and subsequent analysis by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 173-177.
- 2352 Sadiak, A. and Wintersteiger, R.: Compatibility of morphine, baclofen, floxuridine and fluorouracil in an implantable medication pump. *Arzneim.-Forsch.*, 45 (1995) 93-98.
- 2353 Shimada, K., Mino, T., Nakajima, M., Wakabayashi, H. and Yamato, S.: Application of the desulfurization of phenothiazines for a sensitive detection method by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 85-91.
- 2354 Thuaud, N. and Sebille, B.: Structural factors affecting the enantiomeric separation of barbiturates and thiobarbiturates with a chiral side-chain by various β -cyclodextrin supports. Effects of the presence of hydroxypropyl substituents on the chiral selector. *J. Chromatogr. A*, 685 (1994) 15-20.
- 2355 Tzeng, T.-B., Stamm, G. and Chu, S.-y.: Sensitive method for the assay of sertindole in plasma by high-performance liquid chromatography and fluorimetric detection. *J. Chromatogr. B*, 661 (1994) 299-306.

- 2356 Vermeij, T.A.C. and Edelbroek, P.M.: High-performance liquid chromatographic and megabore gas-liquid chromatographic determination of levetiracetam (ucb L059) in human serum after solid-phase extraction. *J. Chromatogr. B*, 662 (1994) 134-139.
- 2357 Verweij, A.M.A., Hordijk, M.L. and Lipman, P.J.L.: Quantitative liquid chromatography, thermospray/tandem mass spectrometric (LC/TSP/MS/MS) analysis of some tranquilizers of the thioxanthene group in whole-blood. *J. Liq. Chromatogr.*, 17 (1994) 4099-4110.
- 2358 Wahbi, A.-A.M., El-Walily, A., Bedair, M. and El-Gendy, A.: Determination of cinnarizine in the presence of its degradation products. *Egypt. J. Pharm. Sci.*, 34 (1993) 35-46; C.A., 121 (1994) 308477d.
- 2359 Wilson, J.M., Cohen, R.I., Kezer, E.A. and Smith, E.R.: Analysis of desozine in serum and urine by high performance liquid chromatography and pre-column derivatization. *J. Liq. Chromatogr.*, 17 (1994) 4245-4257.
- 2360 Yamaguchi, M., Monji, H., Yamashita, K., Aoki, I. and Yashiki, T.: Sensitive high-performance liquid chromatographic determination of chlorpheniramine in human serum using column switching. *J. Chromatogr. B*, 661 (1994) 168-172.
- For additional information see C.A.:
 121 (1994) 220905f, 263817w, 272147c, 308488h;
 122 (1995) 64555e.
- See also 1393, 1430, 1677, 2123, 2277, 2285, 2290, 2310, 2316, 2398.
- 32e. *Chemotherapeutics (exc. cytostatics and antibiotics)*
- 2361 Al-Angary, A.A., Bayomi, M.A., Khidr, S.H., Al-Meshal, M.A. and Lutfi, K.M.: Determination of arteether in plasma using a simple and rapid high-performance liquid chromatographic assay. *Anal. Lett.*, 27 (1994) 2689-2702.
- 2362 Balizs, G., Benesch-Girke, L., Börner, S. and Hewitt, S.A.: Comparison of the determination of four sulphonamides and their N⁴-acetyl metabolites in swine muscle tissue using liquid chromatography with ultraviolet and mass spectral detection. *J. Chromatogr. B*, 661 (1994) 75-84.
- 2363 Barbato, F., Morrica, P., Seccia, S. and Ventriglia, M.: High performance liquid chromatographic analysis of quinolone antibacterial agents. *Farmaco*, 49 (1994) 407-410; C.A., 121 (1994) 308500f.
- 2364 Berger, B.J. and Fairlamb, A.H.: High-performance liquid chromatographic method for the separation and quantitative estimation of anti-parasitic melaminophenyl arsenical compounds. *Trans. R. Soc. Trop. Med. Hyg.*, 88 (1994) 357-359; C.A., 121 (1994) 213160f.
- 2365 Botsoglou, N.A., Fletouris, D.J., Psomas, I.E. and Vassilopoulos, V.N.: Chromatographic behavior of the anthelmintic fenbendazole and its major metabolite oxfendazole in various ion-pair liquid chromatographic systems. *J. Liq. Chromatogr.*, 17 (1994) 4229-4243.
- 2366 Csiba, A. and Lombai, G.: (Liquid chromatographic determination of quinine in soft drinks). *Elelmiszervizsgalati Kozl.*, 40 (1994) 112-119; C.A., 121 (1994) 299402w.
- 2367 Denouel, J., Keller, H.P., Schaub, P., Delaborde, C. and Humbert, H.: Determination of terbinafine and its desmethyl metabolite in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 353-359.
- 2368 Eckers, C., Hutton, K.A., de Biasi, V., East, P.B., Haskins, N.J. and Jacewicz, V.W.: Determination of clavam-2-carboxylate in clavulanate potassium and tablet material by liquid chromatography-tandem mass spectrometry. *J. Chromatogr. A*, 686 (1994) 213-218.
- 2369 El-Gizawy, S.M.: HPLC analysis of metronidazole and dioxanide furoate in its dosage forms. *Anal. Lett.*, 28 (1995) 83-92.
- 2370 El-Sayed, Y.M.: A simple high-performance liquid chromatographic assay for sparfloxacin in human plasma. *Anal. Lett.*, 28 (1995) 279-293.
- 2371 Ferioli, V., Gamberini, G., Rustichelli, C. and Vezzalini, F.: Direct determination of non-UV-absorbing compounds by high-performance liquid chromatography. *Farmaco*, 49 (1994) 411-413; C.A., 122 (1995) 17331u.
- 2372 Fletouris, D., Botsoglou, N.A., Posomas, I.E. and Mantis, A.I.: Rapid ion-pair liquid chromatographic method for the determination of bendazole in cows' milk. *Analyst (Cambridge)*, 119 (1994) 2801-2804.
- 2373 Koks, C.H.W., Rosing, H., Meenhorst, P.L., Bult, A. and Beijnen, J.H.: High-performance liquid chromatographic determination of the antifungal drug fluconazole in plasma and saliva of human immunodeficiency virus-infected patients. *J. Chromatogr. B*, 663 (1995) 345-351.
- 2374 Nagaraja, N.V., Singh, S.K. and Gupta, R.C.: Sensitive high-performance liquid chromatographic method for the determination of methyl N-[5-[(4-(2-pyridinyl)-1-piperazinyl]carbonyl]-1H-benzimidazol-2-yl] carbamate in rat blood. *J. Chromatogr. B*, 664 (1995) 472-477.
- 2375 Nakamura, K. and Nobuso, M.: (Rapid determination of hydrophilic synthetic antibacterial drugs in meat and fish by high-performance liquid chromatography). *Hirosshima-ken Hoken Kankyo Senta Kenkyu Hokoku*, 1 (1993) 67-70; C.A., 121 (1994) 279149r.
- 2376 Nakos, D.S., Botsoglou, N.A. and Psomas, I.E.: Ion-pair isolation and liquid chromatographic determination of albendazole, oxfendazole, oxicardazole, and thiabendazole residues in milk. *J. Liq. Chromatogr.*, 17 (1994) 4145-4155.
- 2377 Porter, S.: Confirmation of sulfonamide residues in kidney tissue by liquid chromatography-mass spectrometry. *Analyst (Cambridge)*, 119 (1994) 2753-2756.
- 2378 Tanaka, M., Oshima, Y., Aoki, H. and Hakusui, H.: Determination of a new fluoroquinolone antimicrobial agent, (S)-10-[(S)-(8-amino-6-azaspiro[3.4]octan-6-yl)]-9-fluoro-2,3-dihydro-3-methyl-7-oxo-7H-pyrido[1,2,3-de][1,4]benzoxazine-6-carboxylic acid hemihydrate, DV-7751a, in human serum and urine using solid-phase extraction and high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 664 (1995) 401-407.
- 2379 Thomas, K.M., Dabholkar, D.A. and Jain, C.L.: Simultaneous determination of pyrimethamine and sulphalene in pharmaceutical dosage forms by HPLC. *Indian Drugs*, 31 (1994) 343-345; C.A., 122 (1995) 38990y.
- 2380 Uno, K. and Maeda, I.: Simultaneous determination of sulphonomethoxine and its N⁴-acetyl metabolite in blood serum by high-performance liquid chromatography with direct injection. *J. Chromatogr. B*, 663 (1995) 177-180.

- 2381 Whitehouse, L.W., Menzies, A., Dawson, B., Cyr, T.D., By, A.W., Black, D.B. and Zamecnik, J.: Mouse hepatic metabolites of ketoconazole: isolation and structure elucidation. *J. Pharm. Biomed. Anal.*, 12 (1994) 1425-1441.
- For additional information see C.A.:
121 (1994) 308491d.
- See also 1703, 2277, 2426, 2438.
- 32f. *Cytostatics*
- 2382 Albertioni, F., Pettersson, B., Reichelova, V., Juliusson, G. and Lilemark, J.: Analysis of 2-chloro-2'-deoxyadenosine in human blood plasma and urine by high-performance liquid chromatography using solid-phase extraction. *Ther. Drug. Monit.*, 16 (1994) 413-418; C.A., 121 (1994) 244913h.
- 2383 Belfayol, L., Guillevin, L., Louchahi, K., Lortholary, O., Bosio, A.M. and Fauville, F.: Measurement of 4-hydroxycyclophosphamide in serum by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 395-399.
- 2384 Belz, S., Frickel, C., Wolfrom, C., Nau, H. and Henze, G.: High-performance liquid chromatographic determination of methotrexate, 7-hydroxymethotrexate, 5-methyltetrahydrofolic acid and folic acid in serum and cerebrospinal fluid. *J. Chromatogr. B*, 661 (1994) 109-118.
- 2385 Carins, W.R.L., Ebdon, L. and Hill, S.J.: Development of an HPLC-ICP-MS method for the determination of platinum species from new anti-tumor drugs. *Anal. Proc.*, 31 (1994) 295-297; C.A., 121 (1994) 308510j.
- 2386 De Fusco, M., D'Incàlci, M., Gentili, D., Reichert, S. and Zucchetti, M.: High-performance liquid chromatographic assay for the determination of the novel etoposide derivative dimethylaminoetoposide (NK611) and its metabolites in urine of cancer patients. *J. Chromatogr. B*, 664 (1995) 409-414.
- 2387 Forgács, E. and Cserháti, T.: Determination of hydrophobicity of non-homologous series of anticancer drugs by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 664 (1995) 277-285.
- 2388 Hanada, K., Nagai, N. and Ogata, H.: Quantitative determination of unchanged cisplatin in rat kidney and liver by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 181-186.
- 2389 Huizing, M.T., Rosing, H., Koopman, F., Keung, A.C.F., Pinedo, H.M. and Beijnen, J.H.: High-performance liquid chromatographic procedures for the quantitative determination of paclitaxel (Taxol) in human urine. *J. Chromatogr. B*, 664 (1995) 373-382.
- 2390 Mouchard-Delmas, C., Gourdier, B. and Vistelle, R.: Determination of vinorelbine in rabbit plasma by high-performance liquid chromatography with coulometric detection. *J. Chromatogr. B*, 663 (1995) 390-394.
- 2391 Nattouf, H., Davrinche, C., Sinet, M. and Farinotti, R.: High-performance liquid chromatographic assay for 3'-amino-3'-deoxythymidine in plasma, with 9-fluorenyl methyl chloroformate as the derivatization agent. *J. Chromatogr. B*, 664 (1995) 365-371.
- 2392 Okuda, T., Motohashi, M., Aoki, I. and Yashiki, T.: Sensitive determination of methotrexate in monkey plasma by high-performance liquid chromatography using on-line solid-phase extraction. *J. Chromatogr. B*, 662 (1994) 79-84.
- 2393 Song, D. and Au, J.L.-S.: Isocratic high-performance liquid chromatographic assay of taxol in biological fluids and tissues using automated column switching. *J. Chromatogr. B*, 663 (1995) 337-344.
- 2394 Sparreboom, A., van Tellingen, O., Nooijen, W.J. and Beijnen, J.H.: Determination of paclitaxel and metabolites in mouse plasma, tissues, urine and faeces by semi-automated reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 664 (1995) 383-391.
- 2395 Stafford, C.G. and St. Claire, R.L., III.: High-performance liquid chromatographic analysis of the lactone and carboxylate forms of a topoisomerase I inhibitor (the antitumor drug Gl147211) in plasma. *J. Chromatogr. B*, 663 (1995) 119-126.
- 2396 Wedge, S.R., Laohavinij, S., Taylor, G.A. and Newell, D.R.: Measurement of 5,10-dideaza-5,6,7,8-tetrahydrofolate (lometrexol) in human plasma and urine by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 327-335.
- 2397 Wright, J.E., Tretyakov, O., Ayashi, L.J., Elias, A., Rosowsky, A. and Frei, E. III.: Analysis of 4-hydroxycyclophosphamide in human blood. *Anal. Biochem.*, 224 (1995) 151-158.
- For additional information see C.A.:
121 (1994) 308492e;
122 (1995) 38978a.
- See also 1772, 2084, 2120, 2180, 2352, 2409, 2428, 2459.
- 32g. *Other drug categories*
- 2398 Akkers, M.R.J., Holtmaat, I. and Niel, J.C.C.V.: (Analysis stability and a (ring) survey of physostigmine salicylate injection 1 ml=1mg FNA). *Ziekenhuisfarmacie*, 10 (1994) 44-49; C.A., 121 (1994) 213088p.
- 2399 Anonymous: (Activity of the Oils and Fats Experimental Station in the cosmetics field). *Riv. Ital. Sostanze Grasse*, 71 (1994) 437-450; C.A., 121 (1994) 307960u.
- 2400 Bandak, S., Czejka, M., Schillter, J. and Schernhammer, E.: Pharmacokinetic drug interaction between epirubicin and interferon- α -2b in serum and red blood cells. *Arzneim.-Forsch.*, 45 (1995) 212-215.
- 2401 Barra, J., Taburet, A.M., Jardel, A., Fessi, H. and Puisieux, F.: High-performance liquid chromatographic assay for the simultaneous determination of ethyl clofibrate and clofibrilic acid in plasma. Evaluation of plasma stability of ethyl clofibrate poly-lactic nanocapsules in human and rat plasmas. *J. Chromatogr. B*, 661 (1994) 178-182.
- 2402 Benson, L.M., Veerka, K.A., Mays, D.C., Nelson, A.N., Shriver, Z.H., Lipsky, J.J. and Naylor, S.: Simultaneous structure-activity determination of disulfiram photolysis products by on-line continuous-flow liquid secondary ion mass spectrometry and enzyme inhibition assay. *J. Chromatogr. A*, 693 (1995) 162-166.

- 2403 Cai, W.M., Hatton, J., Pettigrew, L.C., Dempsey, R.J. and Chandler, M.H.H.: A simplified high-performance liquid chromatographic method for direct determination of warfarin enantiomers and their protein binding in stroke patients. *Ther. Drug Monit.*, 16 (1994) 509-512; C.A., 121 (1994) 291887n.
- 2404 Coppi, G. and Silingardi, S.: Pharmacokinetics of pidotimod in rats and dogs. *Arzneim.-Forsch.*, 44 (1994) 1460-1464.
- 2405 Crimella, T., Orlandi, R., Bocchiola, G., Anders, U. and Stradi, R.: Analytical and chemical profile of pidotimod. *Arzneim.-Forsch.*, 44 (1994) 1405-1410.
- 2406 Cutié, S.S. and Smith, C.G.: Determination of Methocel A15-LV cellulose ether in blends with microcrystalline cellulose. *J. Chromatogr. A*, 693 (1995) 371-375.
- 2407 D'Angelo, L., de Ponti, F., Crema, F., Caravaggi, M. and Crema, A.: Effect of food on the bioavailability of pidotimod in healthy volunteers. *Arzneim.-Forsch.*, 44 (1994) 1473-1475.
- 2408 Depin, J.C., Vigie, A., Chavernac, G., Rousselot, C., Lardy, C. and Guerrier, D.: Pharmacodynamics and antithrombotic effects after intravenous administration of the new thromboxane A₂ receptor antagonist sodium 4-[[1-[[[(4-chlorophenyl)sulfonyl]amino]ethyl]cyclopentyl]methyl]benzenacetate. *Arzneim.-Forsch.*, 44 (1994) 1203-1207.
- 2409 Ezan, E., Carde, P., le Kerneau, J., Arduouin, T., Thomas, F., Isnard, F., Deschamps de Paillette, E. and Grognat, J.-M.: Pharmacokinetics in healthy volunteers and patients of NAc-SDKP (seraspeneide), a negative regulator of hematopoiesis. *Drug Metab. Disp.*, 22 (1994) 943-948.
- 2410 Ferioli, V., Rustichelli, C., Vezzalini, F. and Gamberini, G.: Determination of azalaic acid in pharmaceuticals and cosmetics by RP-HPLC after pre-column derivatization. *Farmaco*, 49 (1994) 421-425; C.A., 121 (1994) 308502h.
- 2411 Hayes, F.J., Baker, T.R., Dobson, R.L.M. and Tsueda, M.S.: Rapid liquid chromatographic-mass spectrometric assay for oxymetazoline in whole rat blood. *J. Chromatogr. A*, 692 (1995) 73-81.
- 2412 Hsieh, J.Y.-K., Lin, C. and Matuszewski, B.K.: Robotic sample preparation and high-performance liquid chromatographic analysis of verlukast in human plasma. *J. Chromatogr. B*, 661 (1994) 307-312.
- 2413 Hung, B.-F., Hsu, Y.-N. and Yang, J.-M.: Determination of betahanechol chloride by indirect photometric chromatography. *Chin. Pharm. J. (Taipei)*, 46 (1994) 123-133; C.A., 121 (1994) 308484d.
- 2414 Jones, G.D., Hoff, T.A., Gunraj, P.E., Facchini, V. and Chauhan, P.B.: Assay and single dose pharmacokinetics of a novel systemic acyl coenzyme A cholesterol O-acyltransferase inhibitor, RP 73163, in rat plasma using automated solid-phase extraction with high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 119-131.
- 2415 Kalchenko, O.I. and Ignatyev, N.V.: (High-performance liquid chromatography in the analysis of tromexan). *Khim.-Farm. Zh.*, 28 (1994) 63-64; C.A., 121 (1994) 213158m.
- 2416 Kim, Y., Park, S., Park, J. and Lee, W.: Detection of benzthiazide by high-performance liquid chromatography-thermospray mass spectrometry. *J. Chromatogr. A*, 689 (1995) 170-174.
- 2417 Laryea, M.D., Zass, R., Ritgen, J. and Wendel, U.: Simultaneous determination of betaine and N,N-dimethylglycine in urine. *Clin. Chim. Acta*, 230 (1994) 169-175.
- 2418 Lau, O.-W. and Mok, C.-S.: High-performance liquid chromatographic determination of active ingredients in cough-cold syrups with indirect conductometric detection. *J. Chromatogr. A*, 693 (1995) 45-54.
- 2419 Mailland, F., Coppi, G. and Silingardi, S.: Pharmacokinetics and oral bioavailability of pidotimod in humans. *Arzneim.-Forsch.*, 44 (1994) 1465-1469.
- 2420 Naylor, P.H., Naylor, C.W., Sasaki, D. and Mutchnick, M.G.: Utilization of HPLC-ELISA to assess serum levels of thymosin α_1 following subcutaneous administration to human subjects. *J. Liq. Chromatogr.*, 17 (1994) 3541-3551.
- 2421 Pfeffer, M. and Wykoff, B.: An automated analytical high-performance liquid chromatographic procedure for iopamidol solutions using a benchmate workstation. *J. Liq. Chromatogr.*, 17 (1994) 4259-4271.
- 2422 Poirier, J.-M., Lebot, M. and Cheymol, G.: Cyclosporine in whole blood: Drug monitoring difficulties and presentation of a reliable normal-phase liquid chromatographic assay. *Ther. Drug Monit.*, 16 (1994) 388-394; C.A., 121 (1994) 271112c.
- 2423 Qin, X.-Z., Tsai, E.W., Sakuma, T. and Ip, D.P.: Pharmaceutical application of liquid chromatography-ion spray mass spectrometry. II. Ion chromatography-ion spray mass spectrometric characterization of alendronate. *J. Chromatogr. A*, 686 (1994) 205-212.
- 2424 Radulovic, D., Kocic-Pesic, V., Pecanac, D. and Zivanovic, L.: HPLC determination of sodium chromoglycate in pharmaceutical dosage forms. *Farmaco*, 49 (1994) 375-376; C.A., 121 (1994) 213131x.
- 2425 Rastogi, S.C. and Johansen, S.S.: Comparison of high-performance liquid chromatographic methods for the determination of 1,2-dibromo-2,4-dicyanobutane in cosmetic products. *J. Chromatogr. A*, 692 (1995) 53-57.
- 2426 Santoni, G., Medica, A., Gratteri, P., Furlanetto, S. and Pinzauti, S.: High-performance liquid chromatographic determination of benzalkonium and naphazoline or tetrahydrozoline in nasal and ophthalmic solutions. *Farmaco*, 49 (1994) 751-754; C.A., 122 (1995) 17336z.
- 2427 Sanwald, P., Huebert, N.D. and Haegle, K.D.: Simultaneous measurement of the major metabolites of dolasetron mesilate in human urine using solid-phase extraction and high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 101-107.
- 2428 Shaw, L.M., Bonner, H.S. and Brown, D.Q.: Metabolic pathways of WR-2721 (ethyol, amifostine) in the Balb/c mouse. *Drug Metab. Disp.*, 22 (1994) 895-902.
- 2429 Spöhrer, U. and Eyer, P.: Separation of geometric syn and anti isomers of obidoxime by ion-pair high-performance liquid chromatography. *J. Chromatogr. A*, 693 (1995) 55-61.
- 2430 Stevenson, A.J., Weber, M.P., Trudel, R., Leavitt, R., Woodard, D., Todt, F., Mendonca, M., Robillo, V., Young, L. et al.: Monitoring furosemide in race horses participating in an EIPH program. *J. Vet. Pharmacol. Ther.*, 17 (1994) 163-168; C.A., 121 (1994) 223773x.
- 2431 Tan, H.S.I., Xu, J. and Zheng, Y.: Cation-exchange high-performance liquid chromatographic assay of piperazine in some pharmaceutical formulations. *J. Chromatogr. A*, 693 (1995) 307-314.

- 2432 Taylor, P.J., Salm, P., Norris, R.L.G., Ravenscroft, P.J. and Pond, S.M.: Comparison of high-performance liquid chromatography and monoclonal fluorescence polarization immunoassay for the determination of whole-blood cyclosporin A in liver and heart transplant patients. *Ther. Drug Monit.*, 16 (1994) 526-530; C.A., 121 (1994) 291888p.
- 2433 Ushio, T. and Yamamoto, K.: High-performance liquid chromatography of enantiomers of {2-[4-(3-ethoxy-2-hydroxypropoxy)phenylcarbamoyl]ethyl}-dimethylsulfonium *p*-toluenesulfonate (suplastast tosilate) on a cellulose tris-3,5-dimethylphenylcarbamate column. *J. Chromatogr. A*, 684 (1994) 235-242.
- 2434 Van Waarde, A., Anthonio, R.L., Visser, T.J., Elsinga, P.H., Posthumus, H., Weemaes, A.-M.A., Blanksma, P.K., Visser, G.M., Paans, A.M.J. and Vaalburg, W.: Quantification of an ¹¹C-labelled β -adrenoceptor ligand, S-(-)CGP 12177, in plasma of humans and rats. *J. Chromatogr. B*, 663 (1995) 361-369.
- 2435 Whigan, D.B. and Schuster, A.E.: Manual and automated determination of 1- β -D-arabinofuranosyl-E-5-(2-bromovinyl)uracil and its metabolite (E)-5-(2-bromovinyl)uracil in urine. *J. Chromatogr. B*, 664 (1995) 357-363.
- 2436 Woolf, E., Au, T., Haddix, H. and Matuszewski, B.: Determination of L-735 524, an human immunodeficiency virus protease inhibitor, in human plasma and urine via high-performance liquid chromatography with column switching. *J. Chromatogr. A*, 692 (1995) 45-52.
- 2437 Zeder-Lutz, G., van Regenmortel, M.H.V., Wenger, R. and Alt-schuh, D.: Interaction of cyclosporin A and two cyclosporin analogs with cyclophilin: relationship between structure and binding. *J. Chromatogr. B*, 662 (1994) 301-306.
- 2438 Zehender, H., Denouel, J., Roy, M., le Saux, L. and Schaub, P.: Simultaneous determination of terbinafine (Lamisil) and five metabolites in human plasma and urine by high-performance liquid chromatography using on-line solid-phase extraction. *J. Chromatogr. B*, 664 (1995) 347-355.

For additional information see C.A.:

- 121 (1994) 213081f, 213176r, 263263n, 308512m;
122 (1995) 63956z.

See also 1499, 1554, 1677, 2073, 2119, 2135, 2199, 2201, 2326, 2339.

32h. Toxicological and forensic applications

- 2439 Below, E. and Burmann, M.: Application of HPLC equipment with rapid scan detection to the identification of drugs in toxicological analysis. *J. Liq. Chromatogr.*, 17 (1994) 4131-4144.
- 2440 Bonino, N., Diodati, J. and Cena, M.R.: Monitoring of urine by extraction chromatography with tri-N-octylphosphine oxide supported on a polypropylene column. *J. Radioanal. Nucl. Chem.*, 182 (1994) 103-110; C.A., 121 (1994) 275325x.
- 2441 Draisci, R., Lucentini, L., Giannetti, L. and Stacchini, A.: (Algal biotoxins in mussels: optimization of the HPLC method for okadaic acid determination). *Riv. Sci. Aliment.*, 22 (1993) 443-454; C.A., 121 (1994) 229114e.
- 2442 Grogg-Sulser, K., Helmlin, J.-J. and Clerc, J.-T.: Qualitative and quantitative determination of illicit heroin street samples by reversed-phase high-performance liquid chromatography: method development by CARTAGO-S. *J. Chromatogr. A*, 692 (1995) 121-129.
- 2443 Guittot, J., Durand, D., Bouillod, N. and Manchon, M.: Development of a solid/liquid extraction method for analysis of toxic drugs in serum using an automated liquid chromatograph: the Remedi. *Ann. Biol. Clin.*, 52 (1994) 111-115; C.A., 121 (1994) 220903d.
- 2444 Kovacs, E.M.: Use of high-performance liquid chromatography-diode array detection in forensic toxicology. *J. Chromatogr. A*, 692 (1995) 103-119.
- 2445 Low, A.S. and Taylor, R.B.: Analysis of common opiates and heroin metabolites in urine by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 225-233.
- 2446 Nishikawa, M., Nakajima, K., Tatsuno, M., Kasuya, F., Igarashi, K., Fukui, M. and Tsuchihashi, H.: The analysis of cocaine and its metabolites by liquid chromatography/atmospheric-pressure chemical-ionization mass spectrometry (LC/APCI-MS). *Forensic Sci. Int.*, 66 (1994) 149-158; C.A., 121 (1994) 294522a.
- 2447 Tenczer, J., Lappenberg-Pelzer, M., Schneider, V., Demme, U. and Köppel, C.: Fatal poisoning with detajmium: identification of detajmium and its metabolites and artifacts by gas chromatography-mass spectrometry and quantification by high-performance liquid chromatography. *J. Chromatogr. B*, 661 (1994) 47-55.

For additional information see C.A.:
121 (1994) 273951z.

See also 1719, 1803, 2106, 2117, 2121, 2521.

32i. Plant extracts

- 2448 Barthomeuf, C., Chmielowiec, C. and Pourrat, H.: TLC - densitometry for quality control of *Hedera helix* L. (Araliaceae). *J. Planar Chromatogr.*, 7 (1994) 474-476.
- 2449 Cai, Y., Phillipson, J.D., Harper, J.I. and Corne, S.J.: High-performance liquid chromatographic and proton magnetic resonance spectroscopic method for quality evaluation of *Paeonia* roots. *Phytochem. Anal.*, 5 (1994) 183-189; C.A., 121 (1994) 263791h.
- 2450 Chuang, W.-C. and Sheu, S.-J.: Determination of ginsenosides in ginseng crude extracts by high-performance liquid chromatography. *J. Chromatogr. A*, 685 (1994) 243-251.
- 2451 Du, Q., Li, M., Cheng, Q., Zhang, T.Y. and Ito, Y.: Purification of (-)-epigallocatechin from enzymatic hydrolysate of its gallate using high-speed counter-current chromatography. *J. Chromatogr. A*, 687 (1994) 174-177.
- 2452 Durand, A., Gerbaud, A. and Margraff, R.: Centrifugal partition chromatography method for purifying taxoids. *PCT Int. Appl.* WO 94 21, 622 (Cl. C07D305/14), 29 Sep. 1994, FR Appl. 93/3,251, 22 Mar. 1993; 14 p.; C.A., 122 (1995) 38810q.
- 2453 Graves, S.W. and Runyon, S.: Determination of methyleugenol in rodent plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 663 (1995) 255-262.

- 2454 Kruger, P.B., de V. Albrecht, C.F., Liebenberg, R.W. and van Jaarsveld, P.P.: Studies on hypoxoside and rooperol analogues from *Hypoxis rooperi* and *Hypoxis latifolia* and their biotransformation in man by using high-performance liquid chromatography with in-line sorption enrichment and diode-array detection. *J. Chromatogr. B*, 662 (1994) 71-78.
- 2455 Lee, Y.-C., Huang, C.-Y., Wen, K.-C. and Suen, T.-T.: Determination of liquiritin, glycyrrhizin, hesperidin, cinnamic acid, cinnamaldehyde, honokiol and magnolol in the traditional Chinese medicinal preparation Wuu-Ji-San by high-performance liquid chromatography. *J. Chromatogr. A*, 692 (1995) 137-145.
- 2456 Pande, A., Uniyal, G.C. and Shukla, Y.N.: Determination of chemical constituents of *Valeriana wallichii* by reverse phase HPLC. *Indian J. Pharm. Sci.*, 56 (1994) 56-58; C.A., 121 (1994) 225355m.
- 2457 Pietta, P.G., Mauri, P.L., Bruno, A. and Merfort, I.: MEKC as an improved method to detect falcifications in the flowers of *Arnica montana* and *A. chamissonis*. *Planta Med.*, 60 (1994) 369-372; C.A., 121 (1994) 238499m.
- 2458 Reif, K. and Metzger, W.: Determination of aflatoxins in medicinal herbs and plant extracts. *J. Chromatogr. A*, 692 (1995) 131-136.
- 2459 Sener, B. and Kucukboaci, N.: High-pressure liquid chromatographic determination of taxol in *Taxus baccata*. *J. Fac. Pharm. Gazi Univ.*, 11 (1994) 11-15; C.A., 121 (1994) 308452s.

For additional information see C.A.:

121 (1994) 213110q, 286692r, 286693s, 308454u;
122 (1995) 64528y, 64553c.

See also 1521, 1553, 1554, 1558, 1609, 1704.

33. CLINICO-CHEMICAL APPLICATIONS

33a. General papers and reviews

See 2179.

33b. Complex mixtures and profiling (single compounds by cross-reference only)

For additional information see C.A.:

122 (1995) 4944w.

See also 1625, 1631, 1642, 1669, 1673, 1676, 1718, 1724, 1727, 1731, 1790, 1949, 1979, 2083, 2087, 2126, 2153, 2164, 2254.

34. FOOD ANALYSIS

34a. General papers and reviews

- 2460 Bertrand, A.: (Primary chemical substances [in wine] currently determined by chromatography). *Acquiss. Recent. Chromatogr. Vin Cours Eur. Form. Contin.*, (1993) 1-16; C.A., 122 (1995) 8259z - a review with 8 refs.

- 2461 Nakazawa, H., Horie, M. and Shida, Y.: (Overview of liquid chromatography-mass spectrometry in food analysis). *Foods Food Ingredients J. Jpn.*, 159 (1994) 4-15; C.A., 121 (1994) 253954z - a review with 56 refs.

34b. Complex mixtures (single compounds by cross-reference only)

- 2462 Bailey, R.G., Nursten, H.E. and McDowell, I.: A liquid chromatography-mass spectrometry study of a black tea liquor using the plasmaspray interface. *J. Sci. Food Agric.*, 66 (1994) 203-208; C.A., 121 (1994) 279188c.
- 2463 Calero Barcoj, J., Martinez Nieto, L. and Garcia-Granados Lopez de Hierro, A.: Countercurrent attraction process for recovering acids, phenols alcohol and their derivatives, from olive-pressing waste. *Span. ES 2,051,238 (Cl. B01D15/08)*, 01 Jun. 1994, Appl. 9,202,366, 24 Nov. 1992; 6 p.; C.A., 121 (1994) 208409q.
- 2464 Robards, K. and Antolovich, M.: Application of chromatography and pattern recognition to quality assessment of orange juice. *Chem. Aust.*, 61 (1994) 392-395; C.A., 121 (1994) 299413a.
- 2465 Sontag, G. and Bernwieser, I.: HPLC coupled with a colometric electrode-array detector. Determination of phloretin glucoside in juices for adulteration detection. *Dtsch. Lebensm.-Rundsch.*, 90 (1994) 72-73; C.A., 121 (1994) 253989q.

For additional information see C.A.:

121 (1994) 254006d, 254022f, 254024h, 279150j.

See also 1540, 1547, 1555, 1568, 1572, 1580, 1603, 1604, 1608, 1633, 1648, 1649, 1654, 1678, 1688, 1689, 1693, 1705, 1706, 1710, 1711, 1730, 1732, 1740, 1754, 1758, 1774, 1900, 1909, 2091, 2132, 2142, 2152, 2160, 2167, 2170, 2179, 2182, 2207, 2211, 2229, 2235, 2273, 2362, 2366, 2375, 2376, 2441, 2541.

34c. Organoleptically important compounds (flavors, odors, volatiles)

See 1678.

35. ENVIRONMENTAL ANALYSIS

35a. General papers and reviews

See 1379, 1436.

35b. Air pollution (complex mixtures; single compounds by cross-reference only)

- 2466 Possanzini, M. and Di Palo, V.: Determination of volatile carbonyl compounds in air by HPLC analysis of fluorescent derivatives. *Comm. Eur. Communities, (Rep.)*, 2 (1994) 731-736; C.A., 121 (1994) 285552h.

For additional information see C.A.:

121 (1994) 307322n.

See also 1528, 2542.

- 35c. *Water pollution (complex mixtures; single compounds by cross-reference only)*
- 2467 Fiehn, O., Reemtsma, T. and Jekel, M.: Extraction and analysis of various benzothiazoles from industrial wastewater. *Anal. Chim. Acta*, 295 (1994) 297-305.
- 2468 Fuchs, F. and Heidt, A.: Application of hydrophobic interaction chromatography (HIC) in water analysis. *Acta Hydrochim. Hydrobiol.*, 22 (1994) 121-129; C.A., 121 (1994) 237937r.
- 2469 Nivet, J.M. and Dessin, H.: (Application of ion-exchange liquid chromatography to the analysis of anions in pharmaceutical-quality water). *S.T.P. Pharma Prat.*, 4 (1994) 177-192; C.A., 121 (1994) 238489h - a review with 2 refs.
- 2470 Volmer, D.: (Analysis of pesticides in aqueous environmental samples by thermospray HPLC-MS). *G/T Fachz. Lab.*, 38 (1994) 16-24; C.A., 121 (1994) 307773k.

See also 1490, 1529, 1548, 1563, 1745, 2215, 2216, 2218, 2221, 2223, 2224, 2225, 2227, 2230, 2233, 2483, 2501, 2511, 2517, 2531, 2544.

35d. *Soil pollution (complex mixtures; single compounds by cross-reference only)*

See 1537, 1734, 2222, 2224.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

36a. *Surfactants*

- 2471 Jandera, P. and Urbanek, J.: Comparison of chromatographic behaviour of oligoethylene glycol nonylphenyl ether non-ionic and anionic surfactants in reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 689 (1995) 255-267.
- 2472 Lemr, K., Zanette, M. and Marcomini, A.: Reversed-phase high-performance liquid chromatographic separation of 1-naphthyl isocyanate derivatives of linear alcohol polyethoxylates. *J. Chromatogr. A*, 686 (1994) 219-224.
- 2473 Trathnigg, B., Maier, B. and Thamer, D.: Analysis of polyethers by isocratic HPLC with universal detectors. III. A study on reproducibility. *J. Liq. Chromatogr.*, 17 (1994) 4285-4302.
- 2474 Ye, M.Y., Walkup, R.G. and Hill, K.D.: Determination of surfactant sodium lauryl ether sulfate by ion pairing chromatography with suppressed conductivity detection. *J. Liq. Chromatogr.*, 17 (1994) 4087-4097.

See also 1659.

36b. *Antioxidants and preservatives*

- 2475 Ashida, S., Noguchi, S.F. and Suzuki, T.: Antioxidative components, xanthone derivatives, in *Swertia japonica*, Makino. *J. Am. Oil Chem. Soc.*, 71 (1994) 1095-1099.
- 2476 Gopala Krishna, A.G. and Prabhakar, J.V.: Antioxidant constituents of peanut oil. *J. Am. Oil Chem. Soc.*, 71 (1994) 1245-1249.

- 2477 Motchnik, P.A., Frei, B. and Ames, B.N.: Measurement of antioxidants in human blood plasma. *Methods Enzymol.*, 234(Oxygen Radicals in Biological Systems, Pt. D) (1994) 269-279; C.A., 121 (1994) 296288c.
- 2478 Nerin, C., Salafranca, J., Cacho, J. and Rubio, C.: Separation of polymer and on-line determination of several antioxidants and UV stabilizers by coupling size-exclusion and normal-phase high-performance liquid chromatography columns. *J. Chromatogr. A*, 690 (1995) 230-236.
- 2479 Tian, L.L. and White, P.J.: Antipolymerization activity of oat extract in soybean and cottonseed oils under frying conditions. *J. Am. Oil Chem. Soc.*, 71 (1994) 1087-1094.

For additional information see C.A.:
122 (1995) 63961x.

See also 2290, 2425.

36c. *Complex mixtures, technical products and unidentified compounds*

- 2480 Alen, R.: Analysis of low-molecular-mass compounds as an aid for monitoring oxygen delignification. *Cellul. Chem. Technol.*, 27 (1993) 281-286; C.A., 121 (1994) 233288g.
- 2481 Balogh, D.T., Curvelo, A.A.S. and de Groote, R.A.M.C.: Molecular weight of organosolv lignins. In: Kennedy, J.F. and Phillips, G.O. (Editors), *Cellul.: Chem. Biochem. Mater Aspects*, Horwood, London, 1993, pp. 279-284; C.A., 122 (1995) 12333m.
- 2482 Erhan, S.Z. and Bagby, M.O.: Polymerization of vegetable oils and their uses in printing inks. *J. Am. Oil Chem. Soc.*, 71 (1994) 1223-1226.
- 2483 Karpyuk, A.D., Smirnova, G.B., Poletaeva, I.L., Betekhtin, S.F. and Ignatova, Z.N.: (Ion chromatography in monitoring of aqueous coolants). *Energetik*, (1994) 17-18; C.A., 121 (1994) 265972s.
- 2484 Lameloise, M.-L. and Lewandowski, R.: Purification of beet molasses by ion-exclusion chromatography: fixed-bed modelling. *J. Chromatogr. A*, 685 (1994) 45-52.
- 2485 Lord, B.S. and Stringham, R.W.: Monitoring formation of a diamine process intermediate by reversed-phase liquid chromatography. *Anal. Chem.*, 66 (1994) 4370-4374.
- 2486 Suckling, I.D., Pasco, M.F., Hortling, B. and Sundquist, J.: Assessment of lignin condensation by GPC analysis of lignin thioacidolysis products. *Holzforschung*, 48 (1994) 501-503; C.A., 122 (1995) 58502u.
- 2487 Xu, B., Madrali, E.S., Wu, F., Li, C.-Z., Herod, A.A. and Kandiyoti, R.: Characterization of successive extract fractions released from a sample of coal during liquefaction in a flowing-solvent reactor. *Energy Fuels*, 8 (1994) 1360-1369; C.A., 121 (1994) 234332d.
- 2488 Zeisler, P., Hamm, U. and Goetsching, L.: (Application of ion chromatography in the pulp and paper industry). *Papier (Darmstadt)*, 48 (1994) 18-26; C.A., 122 (1995) 58533e.

For additional information see C.A.:
121 (1994) 258552b, 270866q, 283079k, 291602r;
122 (1995) 33436n, 38677b.

See also 1511, 1536, 1617, 2512.

37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES
- 2489 Bernard, A., Bories, C., Loiseau, P.M. and Cardot, P.J.P.: Selective elution and purification of living *Trichomonas vaginalis* using gravitational field-flow fractionation. *J. Chromatogr. B*, 664 (1995) 444-448.
- 2490 Davis, L.S., McIlraith, M.J., Paecheo, T., Becker, B., Adix, L.M., Thomas, R., Wacholtz, M.C. and Lipsky, P.E.: Assessment of a positive selection technique using an avidin column to isolate human peripheral blood T cell subsets. *J. Immunol. Methods*, 175 (1994) 247-257; C.A., 121 (1994) 275965f.
- 2491 Lucas, L., García-Pérez, A.-I., Jimeno, P., Pérez, M.T., Pinilla, M., Sancho, P. and Luque, J.: Surface properties of crosslinked erythrocytes as studied by counter-current distribution in aqueous polymer two-phase systems. *J. Chromatogr. B*, 664 (1995) 137-144.
- 2492 Petric, R., Nicholson, D.W. and Ford-Hutchinson, A.W.: Renal leukotriene C₄ synthase: characterization, partial purification and alterations in experimental glomerulonephritis. *Biochim. Biophys. Acta*, 1254 (1995) 207-215.
- 2493 Tazuma, S., Ochi, H., Teramen, K., Yamashita, Y., Horikawa, K., Miura, H., Hirano, N., Sasaki, M., Aihara, N., Hatsushika, S., Tao, S., Ohya, T. and Kajiyama, G.: Degree of fatty acyl chain unsaturation in biliary lecithin dictates cholesterol nucleation and crystal growth. *Biochim. Biophys. Acta*, 1215 (1994) 74-78.
- 2494 Vermuri, S. and Rhodes, C.T.: Separation of liposomes by a gel filtration chromatographic technique: a preliminary evaluation. *Pharm. Acta Helv.*, 69 (1994) 107-113; C.A., 121 (1994) 308270f.
- See also 1481, 2056.
38. INORGANIC COMPOUNDS
- 2495 Fischer, C.-H.: Analysis of colloids. VI. Semiconductor colloids of high monodispersity by preparative size exclusion chromatography. *J. Liq. Chromatogr.*, 17 (1994) 3593-3611.
- 38a. Cations
- 2496 Cheng, J., Liu, Q. and Liu, J.: (Platinum family metal analysis by high-performance liquid chromatography). *Fenxi Huaxue*, 22 (1994) 630-635; C.A., 121 (1994) 244306n - a review with 51 refs.
- 2497 Chuang, Y.S., Lee, K.W., Hwang, J.Y. and Lee, Y.M.: Separation of chromium(III) and chromium(VI) by carboxymethylated polyamine-polyurea resin column. *Anal. Sci. Technol.*, 7 (1994) 205-211; C.A., 121 (1994) 314093n.
- 2498 Chuveleva, E.A., Kharitonov, O.V. and Firsova, L.A.: (Modeling the behavior of curium and americium with separation by the method of elution-complexing agent chromatography). *Radiokhimiya*, 36 (1994) 167-170; C.A., 121 (1994) 266016v.
- 2499 Dadachova, E., Mirzadech, S., Lambrecht, R.M., Hetherington, E.L. and Knapp, F.F., Jr.: Separation of carrier-free holmium-166 from neutron-irradiated dysprosium targets. *Anal. Chem.*, 66 (1994) 4272-4277.
- 2500 Donald, S., Spires, K. and Vincent, J.B.: Potential for decontamination of plutonium-containing solutions using transferrin metalloprotein affinity metal chromatography. *J. Inorg. Biochem.*, 56 (1994) 167-171; C.A., 121 (1994) 310102w.
- 2501 Groschner, M. and Appriou, P.: Three-column system for pre-concentration and speciation determination of trace metals in natural waters. *Anal. Chim. Acta*, 297 (1994) 369-376.
- 2502 Haldna, U. and Yakovleva, I.: Glycine-sodium carbonate eluents for ion chromatography. *Eesti Tead Akad. Toim., Keem.*, 43 (1994) 55-60; C.A., 122 (1995) 22654f.
- 2503 Inaba, K., Freiser, H. and Muralidharan, S.: Effect of kinetic factors on the efficiencies of centrifugal partition chromatographic separations of tervalent lanthanides with bis(2,4,4-trimethylpentyl)phosphinic acid extractant. *Solvent Extr. Res. Dev., Jpn.*, 1 (1994) 13-29; C.A., 122 (1995) 70802z.
- 2504 Janos, P.: Ion-interaction chromatographic separation of metal cations in the presence of complexing agents. *Fresenius J. Anal. Chem.*, 350 (1994) 646-648.
- 2505 Khuhawar, M., Lanjwani, S.N. and Khaskhely, G.Q.: High-performance liquid chromatographic determination of vanadium in crude petroleum oils using bis(salicylaldehyde)tetramethylethylenediamine. *J. Chromatogr. A*, 689 (1995) 39-43.
- 2506 Kieber, R.J. and Jones, S.B.: An undergraduate laboratory for the determination of sodium, potassium, and chloride: using an ion-exchange resin, ion chromatography, and atomic absorption spectrophotometry. *J. Chem. Educ.*, 71 (1994) A218, A220, A222; C.A., 121 (1994) 229900h.
- 2507 Kittel, N.E.V.D., Seuvert, A. and Wuensch, G.: (Analysis for trace metals in high-purity refractory metals with matrix separation). *An. Quim.*, 90 (1994) 116-124; C.A., 121 (1994) 314732z.
- 2508 Korovin, V.Yu., Yagodin, G.A. and Savel'eva, V.I.: (Separation of zirconium and hafnium with a solid extractant based on tributylphosphate). *Zh. Prikl. Khim. (S.-Peterburg)*, 67 (1994) 758-761; C.A., 122 (1995) 60663r.
- 2509 Mehra, M.C., Cormier, J.-G. and Ayikoe, K.: Ion chromatographic determination of cations with iodic acid. *Chim. Acta Turc.*, 22 (1994) 161-167; C.A., 122 (1995) 70924r.
- 2510 Mohite, B.S., Zambare, D.N. and Mahadik, B.E.: Separation of barium from associated elements using poly(dibenzo-18-crown-6) and column chromatography. *Analyst (Cambridge)*, 119 (1994) 2033-2036.
- 2511 Nagaosa, Y. and Segawa, S.: Reversed-phase HPLC determination of titanium(IV) and iron(II) with sodium 1,2-dihydroxybenzene-3,5-disulfonic acid. *J. High Resolut. Chromatogr.*, 17 (1994) 770-772.
- 2512 Padarauskas, A.V.: (Analysis of superconducting La-Sr-Cu based materials by ion-pair chromatography). *Izv. Vyssh. Uchebn. Zaved. Khim. Khim. Tekhnol.*, 36 (1993) 27-30; C.A., 121 (1994) 291455v.
- 2513 Panesar, K.S., Singh, O.V. and Tandon, S.N.: Liquid-liquid extraction and reversed phase chromatographic behavior of some 3d metal ions using bis(2,4,4-trimethylpentyl)dithiophosphinic acid (Cynex 301). *Talanta*, 41 (1994) 1341-1344; C.A., 122 (1995) 70799d.
- 2514 Pesavento, M., Biesuz, R. and Cortina, J.L.: Sorption of metal ions on a weak acid cation-exchange resin containing carboxylic groups. *Anal. Chim. Acta*, 298 (1994) 225-232.

- 2515 Pesavento, M., Profumo, A. and Sastre, A.: Chromatographic behavior of trace metal ions on a strong base anion exchange resin functionalized by azo ligands. *Talanta*, 41 (1994) 1689-1697; C.A., 122 (1995) 70804b.
- 2516 Pin, C., Briot, D., Bassin, C. and Poirrasson, F.: Concomitant separation of strontium and samarium-neodymium for isotopic analysis in silicate samples, based on specific extraction chromatography. *Anal. Chim. Acta*, 298 (1994) 209-217.
- 2517 Rottmann, L. and Heumann, K.G.: Determination of heavy metal interactions with dissolved organic materials in natural aquatic systems by coupling a high-performance liquid chromatography system with an inductively coupled plasma mass spectrometer. *Anal. Chem.*, 66 (1994) 3709-3715.
- 2518 Rubio, R., Padro, A. and Rauret, G.: LC-HG-QCAAS versus LC-HG-ICP/OES in arsenic speciation. *Fresenius J. Anal. Chem.*, 351 (1995) 331-333.
- 2519 San Andrés, M.P., Vera, S. and Marina, M.L.: Determination of Ni(II), Co(II) and Cu(II) as diethyldithiocarbamate complexes by high-performance liquid chromatography using hexadecyltrimethylammonium bromide in the mobile phase. *J. Chromatogr. A*, 685 (1994) 271-278.
- 2520 Sledziona, M., Wodecki, Z., Kolodziejczyk, A.M. and Nowicki, W.: Chromatographic separation of some transition metal ions on chelating column bearing acetylacetone moiety. *Chem. Anal. (Warsaw)*, 39 (1994) 149-152; C.A., 122 (1995) 45124x.
- 2521 Tomlinson, M.J., Wang, J. and Caruso, J.A.: Speciation of toxicologically important transition metals using ion chromatography with inductively coupled plasma mass spectrometric detection. *J. Anal. At. Spectrom.*, 9 (1994) 957-964; C.A., 121 (1994) 223766x.
- 2522 Urnile, C. and Huber, J.F.K.: Determination of hexavalent chromium and accompanying anions in one run using isocratic ion chromatography with column switching. *Talanta*, 41 (1994) 1101-1106; C.A., 121 (1994) 270646t.
- 2523 Wu, J., Zhou, C.Y., Chi, H., Wong, M.K., Lee, H.K., Ong, H.Y. and Ong, C.N.: Determination of serum aluminium using an ion-pair reversed-phase high-performance liquid chromatographic-fluorimetric system with lumogallion. *J. Chromatogr. B*, 663 (1995) 247-253.
- 2524 Wuping, L. and Qiping, L.: Study on retention behaviour of platinum metal complexes in reversed-phase high-performance liquid chromatography. *Fresenius J. Anal. Chem.*, 350 (1994) 671-673.
- 2525 Yamane, T.: (Ion chromatography). *Materia*, 33 (1994) 341-345; C.A., 121 (1994) 244297k - a review with 19 refs.
- 2526 Yamane, T., Aruga, Y. and Ogawa, T.: Flow-injection system for sensitive and rapid determination of trace molybdenum(VI) and tungsten(VI) based on catalytic reaction and its application to ion chromatography. *Monatsch. Chem.*, 125 (1994) 20-24; C.A., 121 (1994) 220560q.
- 2527 Zhang, X. and Jiang, X.: Study on the combination of electrography and ion chromatography. *Int. Lab.*, 24, No. 11 (1994) 10-12.
- 2528 Zhang, X., Lin, C., Liu, L. and Qiao, G.: Determination of platinum by ion-pair reversed-phase high-performance liquid chromatography with 4,4'-bis(dimethylamino)thiobenzophenone. *J. Chromatogr. A*, 684 (1994) 354-359.
- 2529 Zhuravlev, A.A., Ribnov, V.V. and Ganiev, A.G.: (Separation of platinum and silver from hydrochloric acid solutions on aluminum oxide). *Dokl. Akad. Nauk Resp. Uzb.*, (1993) 37-38; C.A., 121 (1994) 314694p.
- For additional information see C.A.:
 121 (1994) 220424y, 220449k, 220508d, 225395z, 270551h, 314845p;
 122 (1995) 22648g, 22656h, 22756r, 11640x.
- See also 1296, 1364, 1454, 2150, 2385, 2544, 2545.
- 38b. Anions*
- 2530 Albrich, H., Mueller, M. and Pinhack, H.: (Determination of fluorine, chlorine and bromine after ashing). *GIT Fachz. Lab.*, 38 (1994) 837-838; C.A., 121 (1994) 270850e.
- 2531 Grennaro, M.C., Abrigo, C., Saini, G., Muntau, H., Serrini, G. and Geiss, H.: Sulfate determination in lagoon water (Venice) by reversed-phase ion-interaction chromatography - a method validation. *Fresenius J. Anal. Chem.*, 350 (1994) 702-705.
- 2532 Hajos, P., Horvath, O. and Denke, V.: Prediction of retention for halide anions and oxoanions in suppressed ion chromatography using multiple species eluent. *Anal. Chem.*, 67 (1995) 434-441.
- 2533 Marengo, E., Gennaro, M.C., Abrigo, C. and Dinardo, A.: Chemometric optimization of azide sensitivity in reversed-phase ion-interaction HPLC. *Anal. Chem.*, 66 (1994) 4229-4235.
- 2534 McNeff, C., Zhao, Q. and Carr, P.W.: High-performance anion exchange of small anions with polyethylenimine-coated porous zirconia. *J. Chromatogr. A*, 684 (1994) 201-211.
- 2535 Miura, Y., Tsubamoto, M. and Koh, T.: Ion chromatographic determination of sulphide, sulphite and thiosulphate in mixtures by means of their post column reactions with iodine. *Anal. Sci.*, 10 (1994) 595-600; C.A., 121 (1994) 220554r.
- 2536 Mura, P., Papet, Y., Sanchez, A. and Piriou, A.: Rapid and specific high-performance liquid chromatographic method for the determination of iodide in urine. *J. Chromatogr. B*, 664 (1995) 440-443.
- 2537 Popa, M.I.: High performance liquid chromatography of chloride in polymers. *Bul. Inst. Politeh. Iasi, Sect. 2: Chim. Ing. Chim.*, 39 (1993) 89-93; C.A., 122 (1995) 64565h.
- 2538 Stahl, R.: Routine determination of anions by capillary electrophoresis and ion chromatography. *J. Chromatogr. A*, 686 (1994) 143-148.
- 2539 Sumiyoshi, K., Yagi, T. and Nakamura, H.: Determination of cyanide by high-performance liquid chromatography using postcolumn derivatization with o-phthalaldehyde. *J. Chromatogr. A*, 690 (1995) 77-82.
- 2540 Vasconcelos, M.T.S.D., Gomes, C.A.R. and Machado, A.A.S.C.: Ion chromatographic determination of fluoride in welding fumes with elimination of high contents of iron by solid-phase extraction. *J. Chromatogr. A*, 685 (1994) 53-60.
- 2541 Yuan, Z., Dai, H. and Nie, H.: (HPLC determination of residue of inorganic bromide in oranges). *Fenxi Ceshi Xuebao*, 13 (1994) 53-57; C.A., 121 (1994) 299399a.

For additional information see C.A.:

121 (1994) 291441n, 291602r;
 122 (1995) 45320h, 45323m.

See also 1725, 1862, 2286, 2469, 2483, 2502, 2522.

38c. Permanent and rare gases

2542 Hekmat, M., Smith, R. and Fung, P.: An evaluation of the Occupational Health and Safety Administration method for the "determination of chlorine dioxide in workplace atmosphere". *Am. Ind. Hyg. Assoc. J.*, 55 (1994) 1087-1089; *C.A.*, 122 (1995) 37517n.

38d. Volatile inorganic compounds

2543 Gamoh, K. and Sakamoto, M.: (Indirect liquid chromatographic determination of hydroxyl radical based on the production of methanesulfonic acid). *Bunseki Kagaku*, 43 (1994) 691-696; *C.A.*, 121 (1994) 250073a.

See also 1352.

39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS

2544 Cobb, J., Warwick, P., Carpenter, R.C. and Morrison, R.T.: Determination of strontium-90 in water and urine samples using ion chromatography. *Analyst (Cambridge)*, 119 (1994) 1759-1764.

2545 Vajda, N., Kis-Benedek, G., Bodizs, D. and Vodicska, M.: (Radiochemical determination of ^{210}Pb by using a crown ether). *Izotoptech., Diagn.*, 37 (1994) 25-30; *C.A.*, 121 (1994) 270584w.

See also 1650, 1736, 2265, 2440.