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## Bibliography Section

### Liquid Column Chromatography

#### 1. REVIEWS AND BOOKS

- 3907 Berrueta, L.A., Gallo, B. and Vincente, F.: A review of solid phase extraction: basic principles and new developments. *Chromatographia*, 40 (1995) 474-483 - a review with 178 refs.
- 3908 Biernat, J.F., Konieczka, P., Tarbet, B.J., Bradshaw, J.S. and Izatt, R.M.: Complexing and chelating agents immobilized on silica gel and related materials and their application for sorption of inorganic species. *Sep. Purif. Methods*, 23 (1994) 77-348; C.A., 123 (1995) 18440m - a review with 878 refs.
- 3909 Cox, G.B.: The practical application of theory in preparative liquid chromatography. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 33-69; C.A., 122 (1995) 317600m - a review with 10 refs.
- 3910 Cserhati, T. and Valko, K.: *Chromatographic Determination of Molecular Interactions: Applications in Biochemistry, Chemistry, and Biophysics*. CRC, Boca Raton, 1994, 352 pp.; C.A., 123 (1995) 29011y.
- 3911 Ding, X., Zhang, Y. and Zhang, S.: (Development of capillary column technology in chromatographic analysis). *Xiandai Huagong*, 14 (1994) 18-33; C.A., 122 (1995) 254994v - a review with 5 refs.
- 3912 Hill, D.A.: Alternatives modes of operation of chromatography columns in the process situation. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 71-80; C.A., 122 (1995) 317601n - a review with 15 refs.
- 3913 Itoh, H.: (Introduction to chromatography-ion chromatography). *Bunseki*, (1995) 260-267; C.A., 123 (1995) 18465y - a review with 14 refs.
- 3914 Janson, J.-C.: Process scale size exclusion chromatography. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 81-98; C.A., 122 (1995) 317602p - a review with refs.
- 3915 Lloyd, L.L. and Kennedy, J.F.: Polymers and their application in liquid chromatography. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 99-130; C.A., 122 (1995) 317603q - a review with 48 refs.
- 3916 Manderi, H.: (Role of various chromatographic methods in industrial analytical chemistry). *Khim. Prom-st. (Moscow)*, (1994) 436-443; C.A., 122 (1995) 254992t - a review without refs.
- 3917 Mann, F.: Chromatography systems - Design and control. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 1-31; C.A., 122 (1995) 317599t - a review with 10 refs.

- 3918 Subramanian, G. (Editor): *Process Scale Liquid Chromatography*. VCH, Weinheim, 1995, 225 p.; C.A., 122 (1995) 294570k.
- 3919 Tong, D., Bartle, K.D. and Clifford, A.A.: Principles and applications of unified chromatography. *J. Chromatogr. A*, 703 (1995) 17-35 - a review with 90 refs.
- 3920 Weiss, J.: *Ion Chromatography*, 2nd Edition, VCH, Weinheim, 1994, 467 p.; C.A., 123 (1995) 46927u.
- 3921 Wu, C.-s. (Editor): *Handbook of Size Exclusion Chromatography. Chromatogr. Sci. Ser.*, Vol. 69, Dekker, New York, 1995, 463 p.; C.A., 122 (1995) 292047w.

See also 3933, 3939, 3960, 3968, 3969, 3970, 3971, 3972, 3980, 3983, 3991, 3994, 4002, 4004, 4011, 4030, 4033, 4036, 4041, 4050, 4053, 4057, 4055, 4058, 4059, 4061, 4062, 4064, 4065, 4066, 4069, 4070, 4071, 4074, 4077, 4088, 4091, 4101, 4102, 4103, 4104, 4115, 4119, 4150, 4151, 4165, 4178, 4196, 4202, 4215, 4266, 4268, 4291, 4293, 4320, 4332, 4334, 4361, 4377, 4378, 4385, 4388, 4389, 4398, 4441, 4615, 4656, 4664, 4701, 4705, 4709, 4714, 4720, 4721, 4722, 4727, 4856, 4863, 4890, 4895, 4896, 4940, 4968.

#### 2. FUNDAMENTALS, THEORY AND GENERAL

##### 2a. General

- 3922 Bagnati, R., Davoli, E. and Fanelli, R.: (Immunoaffinity chromatography). *Lab. 2000*, 7 (1993) 74-79; C.A., 122 (1995) 260177x.
- 3923 Buszewski, B., Gilpin, R.K. and Jaroniec, M.: Solvent peaks in the reversed phase chromatographic systems. *Chem. Anal. (Warsaw)*, 39 (1994) 653-661; C.A., 122 (1995) 323157p.
- 3924 Dumont, P.J., Fritz, J.S. and Schmidt, L.W.: Cation-exchange chromatography in non-aqueous solvents. *J. Chromatogr. A*, 706 (1995) 109-114.
- 3925 Ettre, L.S.: Early petroleum chemists and beginnings of chromatography. *Chromatographia*, 40 (1995) 207-216.
- 3926 Imazaka, T., Kawabate, Y., Kaneta, T. and Ishidzu, Y.: Optical chromatography. *Anal. Chem.*, 67 (1995) 1763-1765.
- 3927 Jackson, P.E., Romano, J.P. and Wildman, B.J.: Studies on system performance and sensitivity in ion chromatography. *J. Chromatogr. A*, 706 (1995) 3-12.

- 3928 Kundu, A., Vunnum, S. and Cramer, S.M.: Antibiotics as low-molecular-mass displacers in ion-exchange displacement chromatography. *J. Chromatogr. A*, 707 (1995) 57-67.
- 3929 Lightfoot, E.N., Athalye, A.M., Coffman, J.L., Roper, D.K. and Root, T.W.: Nuclear magnetic resonance and the design of chromatographic separations. *J. Chromatogr. A*, 707 (1995) 45-55.
- 3930 Malavasi, B.: (Internal or external standard or percentage area: how and why). *Lab. 2000*, 7 (1993) 67-71; *C.A.*, 122 (1995) 248496t.
- 3931 Marchetto, A., Mosello, R., Tartari, G.A., Muntau, H., Bianchi, M., Geiss, H., Serrini, G. and Serrini Lanza, G.: Precision of ion chromatographic analyses compared with that of other analytical techniques through intercomparison exercises. *J. Chromatogr. A*, 706 (1995) 13-19.
- 3932 McCalley, D.V.: Influence of organic solvent modifier and solvent strength on peak shape of some basic compounds in high-performance liquid chromatography using a reversed-phase column. *J. Chromatogr. A*, 708 (1995) 185-194.
- 3933 Meyer, V.R.: Error sources in the determination of chromatographic peak size ratios. *Adv. Chromatogr. (N.Y.)*, 35 (1995) 383-416; *C.A.*, 122 (1995) 329478r - a review with 68 refs.
- 3934 Mizrotsky, N. and Grushka, E.: Use of system peaks in liquid chromatography for continuous on-line monitoring of chemical reactions. *Anal. Chem.*, 67 (1995) 1737-1741.
- 3935 Nishimura, M., Hayashi, M., Yamamoto, A., Horikawa, T., Hayakawa, K. and Miyazaki, M.: Study on how mobile phase buffer composition effects the retention behavior of the system peak in non-suppressed ion chromatography. *J. Chromatogr. A*, 708 (1995) 195-201.
- 3936 Seaver, C. and Przybytek, J.: Solvent selection, Part II. Physical properties. *LC-GC*, 13 (1995) 220-227; *C.A.*, 122 (1995) 255054a.
- 3937 Sentell, K.B., Ryan, N.I. and Henderson, A.N.: Temperature and solvation effects on homologous series selectivity in reversed phase liquid chromatography. *Anal. Chim. Acta*, 307 (1995) 203-215.
- 3938 Woehlecke, H. and Ehwald, R.: Characterization of size-permeation limits of cell walls and porous separation materials by high-performance size-exclusion chromatography. *J. Chromatogr. A*, 708 (1995) 263-271.
- 3939 Yamauchi, Y.: (Basic principle in chromatography: liquid chromatography). *Bunseki*, (1995) 172-179; *C.A.*, 122 (1995) 249031z - a review with 6 refs.
- 3940 Zou, H., Zhang, Y. and Lu, P.: Effect of molecular structure on the solute-micelle and solute-stationary phase binding constants in micellar liquid chromatography. *Anal. Chim. Acta*, 310 (1995) 461-471.
- 2b. *Thermodynamics and theoretical relationships*
- 3941 Dai, C.-Z. and Lu, P.-Z.: A modification on the retention equation of liquid-solid chromatography  $\ln k' = A + B \ln C_{B1} + C C_{B1}$ . *Chin. Sci. Bull.*, 39 (1994) 1458-1462; *C.A.*, 122 (1995) 299676j.
- 3942 Felinger, A.: Superposition of chromatographic retention patterns. *Anal. Chem.*, 67 (1995) 2078-2087.
- 3943 Frey, D.D., Barnes, A. and Strong, J.: Numerical studies of multicomponent chromatography using pH gradients. *AIChE J.*, 41 (1995) 1171-1183; *C.A.*, 123 (1995) 28718x.
- 3944 Levin, M., Grozdoub, A., Leontiev, D. and Georgievsky, V.: Retention in liquid chromatography with multicomponent mobile phases: relationship with binary systems. *Chromatographia*, 40 (1995) 321-328.
- 3945 Marina, M.L., Garcia, M.A., Pastor, M. and Vera, S.: A statistical study of the correlation between  $k'$  or  $\log k'$  nad  $\log P_{ow}$  for a group of benzene and naphthalene derivatives in micellar liquid chromatography using a C-18 column. *Chromatographia*, 40 (1995) 185-192.
- 3946 Martys, N.S.: Numerical simulation of hydrodynamic dispersion in random porous media. *J. Chromatogr. A*, 707 (1995) 35-43.
- 3947 Mutlu, M., Gökmen, V. and Acar, J.: Comparison of dynamic behavior of C18 HPLC columns by stimulus-response analysis. I. Determination of Peclet numbers. *J. Liq. Chromatogr.*, 18 (1995) 1747-1755.
- 3948 Olivé, J. and Grimalt, J.O.: Relationships between different chromatographic peak description functions and numerical solutions of the mass balance equation. *J. Chromatogr. Sci.*, 33 (1995) 194-203.
- 3949 Roper, D.K. and Lightfoot, E.N.: Estimating plate heights in stacked-membrane chromatography by flow reversal. *J. Chromatogr. A*, 702 (1995) 69-80.
- 3950 Sadlej-Sosnowska, N.: Molecular complexation:  $\beta$ -cyclodextrin and steroid hormones inclusion complexes studied by high-performance liquid chromatography. *Eur. J. Pharm. Sci.*, 3 (1995) 1-5; *C.A.*, 122 (1995) 222613d.
- 3951 Shkinev, V.M., Dubrova, T.V., Molochnikova, N.P. and Volynets, M.P.: Chromatographic plate. *Russ. RU 2,002,260 (Cl. G01N30/90)*, 30 Oct. 1993, SU Appl. 4,890,804, 31 Oct. 1990; *C.A.*, 123 (1995) 47061u.
- 3952 Thede, R., Haberland, D., Below, E. and Jönsson, J.A.: Determination of rate constants of consecutive first order reactions occurring on chromatographic columns. *J. Liq. Chromatogr.*, 18 (1995) 1137-1156.
- 3953 Zhu, J.: Optimization of the column efficiency and production rate for displacement chromatography: an application of the shock layer theory. Avail. *Univ. Microfilms Int.*, Order No. DA9432251, 1994, 172 p.; *C.A.*, 123 (1995) 18696z.

For additional information see *C.A.*:  
122 (1995) 289920v.

For additional information see *C.A.*:  
122 (1995) 281026n, 323138h, 323154k, 329482n.

See also 3912, 3914, 3916, 3917, 3964, 3993.

See also 3975, 3987, 4010, 4017, 4022, 4028, 4029, 4044, 4086, 4376, 4383, 4384, 4578, 4691, 4713, 4719, 4801.

## 2c. Relationship between structure and chromatographic behaviour

- 3954 Pagliara, A., Khamis, E., Trinh, A., Carrupt, P.-A., Tsai, R.-S. and Testa, B.: Structural properties governing retention mechanisms on RP-HPLC stationary phases used for lipophilicity measurements. *J. Liq. Chromatogr.*, 18 (1995) 1721-1745.
- 3955 Reichelova, V., Liliemark, J. and Albertioni, F.: Structure-activity relationships of 2-chloro-2'-arabino-fluoro-2'-deoxy-adenosine and related analogues: protein binding, lipophilicity, and retention in reversed-phase LC. *J. Liq. Chromatogr.*, 18 (1995) 1123-1135.

See also 3958, 4583, 4777.

## 2d. Measurement of physico-chemical and related values

- 3956 Androver, A., Barba, D., Giona, M. and Spera, D.: Stochastic analysis of dispersion in size-exclusion chromatographic columns. *Stud. Surf. Sci. Catal.*, 87 (1994) 373-382; C.A., 122 (1995) 268917j.
- 3957 Chmil, V.D., Novitskaya, L.P. and Gertsyuk, M.: (Use of correlations between retention parameters in thin-layer and high-performance liquid chromatography for the identification of analyte compounds). *Zh. Fiz. Khim.*, 68 (1994) 1763-1769; C.A., 122 (1995) 281039u.
- 3958 Cichna, M., Markl, P. and Huber, J.F.K.: Determination of true octanol-water partition coefficients by means of solvent generated liquid-liquid chromatography. *J. Pharm. Biomed. Anal.*, 13 (1995) 339-351.
- 3959 Kaune, A., Knorrnschild, M. and Ketrup, A.: Predict 1-octanol-water partition coefficient by high-performance liquid chromatography gradient elution. *Fresenius J. Anal. Chem.*, 352 (1995) 303-312.
- 3960 Kim, J.P.: (Principles and applications of size exclusion chromatography (SEC)). *Anal. Sci. Technol.*, 7 (1994) 3A-22A; C.A., 122 (1995) 280990k - a review with refs.

For additional information see C.A.:

122 (1995) 229745g, 329584x.

See also 4038, 4060, 4117, 4118, 4148, 4173, 4184, 4280, 4317, 4391, 4432, 4692, 4693, 4789, 4832, 4929.

## 3. GENERAL TECHNIQUES

## 3a. Apparatus and accessories

- 3961 Bolvanov, Yu.A., Vlasov, S.V., Gel'fand, A.V., Kozhanova, L.A. and Shamovskii, G.G.: (Gradient pump for microcolumn liquid chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1851-1853; C.A., 122 (1995) 229684m.
- 3962 Bruno, T.J.: Permeation tube approach to long-term use of automatic sampler retention index standards. *J. Chromatogr. A*, 704 (1995) 157-162.
- 3963 Vigdergauz, M.S. and Arutyunov, J.I.: Method and apparatus for recording chromatographic spectra. *Russ. RU 2,022,265 (Cl G01N30/02)*, 30 Oct. 1994, SU Appl. 5,062,629, 18 Sep. 1992; C.A., 123 (1995) 47076c.

For additional information see C.A.:

122 (1995) 229798b, 280943x, 302569j, 305479r.

See also 4052, 4058.

## 3b. Detectors and detection reagents

- 3964 Alsberg, B.K.: Resolution of hidden minor peaks in multidetection chromatography by estimation of a single parameter in a 2-D transformation matrix. *Anal. Chim. Acta*, 309 (1995) 123-133.
- 3965 Astafieva, I., Eberlein, G., Nilsson, L., Shortt, D.W. and Wyatt, P.J.: Multimeric conformation. Multiangle laser light scattering and reversed-phase high-performance liquid chromatography. *Am. Biotechnol. Lab.*, 13 (1995) 30; C.A., 122 (1995) 260170q.
- 3966 Bolvanov, Yu.A., Kozhanova, L.A., Kuz'min, S.V. and Shamovskii, G.G.: (Fluorometric detector of the Milikhrom-4M-F chromatograph). *Zh. Fiz. Khim.*, 68 (1994) 1866-1867; C.A., 122 (1995) 229685n.
- 3967 Debberpuhl, D.A.: Pulsed electrochemical detection for the investigation and determination of amine compounds separated by high-performance liquid chromatography. Avail. *Univ. Microfilms Int.*, Order No. DA9503546, 1994, 169 p.; C.A., 122 (1995) 329544j.
- 3968 Emnéus, J. and Marko-Varga, G.: Biospecific detection in liquid chromatography. *J. Chromatogr. A*, 703 (1995) 191-243 - a review with 283 refs.
- 3969 Hayakawa, K. and Yamamoto, A.: (Advances of indirect photometric detection in liquid chromatography). *Bunseki Kagaku*, 44 (1995) 417-436; C.A., 123 (1995) 46748m - a review with 162 refs.
- 3970 Huang, F., Kang, J., Yu, J. and Hu, Y.: (Peak purity control in chromatography). *Sepu*, 13 (1995) 33-37; C.A., 122 (1995) 254996x - a review with 60 refs.
- 3971 Imai, K.: Chemiluminescence for high-sensitivity detection in HPLC. In: Crommelin, D.J.A., Midha, K.K. and Nagi, T. (Editors), *Top. Pharm. Sci. 1993, Proc. Int. Congr. Pharm. Sci. F.I.P.*, 53rd 1993, Medpharm Sci. Pub., Stuttgart, 1994, pp. 315-318; C.A., 122 (1995) 248443y - a review with 10 refs.
- 3972 Irth, H., Oosterkamp, A.J., Tjaden, U.R. and van der Greef, J.: Strategies for on-line coupling of immunoassays to high-performance liquid chromatography. *TrAC*, 14 (1995) 355-361 - a review with 30 refs.
- 3973 Maeder, M. and Molloy, K.J.: Lifetime resolved fluorescence detection in chromatography. Global analysis of emission decay surfaces. *Chemom. Intell. Lab. Syst.*, 28 (1995) 99-107; C.A., 123 (1995) 24732z.
- 3974 Mank, A.J.G., van der Laan, H.T.C., Lingeman, H., Brinkman, U.A.T. and Velthorst, N.H.: Visible diode laser-induced fluorescence detection in liquid chromatography after precolumn derivatization of amines. *Anal. Chem.*, 67 (1995) 1742-1748.
- 3975 Pigeon, M.G. and Rudin, A.: Correction for interdetector volume in size exclusion chromatography (SEC). *J. Appl. Polym. Sci.*, 57 (1995) 287-301; C.A., 123 (1995) 34175j.
- 3976 Rinke, G. and Hartig, C.: UV Photometer based on radioluminescence with applications in HPLC and process control. *Anal. Chem.*, 67 (1995) 2308-2313.

- 3977 Ryerson, T.B.: New methods of sulphur monoxide formation for chemiluminescence detection in chromatography. Avail. *Univ. Microfilms Int.*, Order No. DA9506374, 1994, 149 p.; C.A., 122 (1995) 329226g.
- 3978 Sjögren, A. and Dasgupta, P.K.: Two-dimensional conductometric detection in ion chromatography. Analyte identification, quantitation of very weak acid anions, and universal calibration. *Anal. Chem.*, 67 (1995) 2110-2118.
- 3979 Van de Nesse, R.J., van der Wegen, R.J., Gooijer, C., Brinkman, U.A.T. and Velthorst, N.H.: Simultaneous and consecutive two-photon excited fluorescence detection in conventional-size liquid chromatography. *Anal. Chim. Acta*, 309 (1995) 135-144.
- 3980 Van de Nesse, R.J., Velthorst, N.H., Brinkman, U.A.T. and Gooijer, C.: Laser-induced fluorescence detection of native-fluorescent analytes in column liquid chromatography, a critical evaluation. *J. Chromatogr. A*, 704 (1995) 1-25 - a review with 69 refs.
- For additional information see C.A.:  
122 (1995) 229680g, 229791u, 247915s, 305462e.
- See also 3963, 4036, 4138, 4160, 4161, 4226, 4283, 4289, 4299, 4304, 4333, 4550, 4574, 4729, 4915, 4969, 4977, 4989, 4994.
- 3c. *Sorbents and columns, packing procedures*
- 3981 Ageev, A.N.: Method of manufacturing chromatograph column. *Russ. RU* 2,018,824 (Cl. G01N30/60), 30 Aug. 1994, SU Appl. 4,863,906, 04 Sep. 1990; C.A., 123 (1995) 46968h.
- 3982 Ageev, A.N., Lazaris, A.Ya. and Liskovets, M.A.: Columns for chromatography. *Russ. RU* 2,018,823 (Cl. G01N30/60), 30 Aug. 1994, SU Appl. 4,863,826, 04 Sep. 1990; C.A., 123 (1995) 46957d.
- 3983 Agrawal, P.D.: Precipitated silica: a review. *Chem. Eng. World*, 30 (1995) 31-33; C.A., 122 (1995) 269340c - a review with 5 refs.
- 3984 Buszewski, B., Godzola, R.M., Lodkowski, R., Sander, L.C. and Jaroniec, M.: Effect of stationary phase structural properties on retention and selectivity of EPA-NIST/PAH in reversed phase liquid chromatography. *Pol. J. Environ. Stud.*, 3 (1994) 9-14; C.A., 122 (1995) 281015h.
- 3985 Crini, G., Lekchiri, Y. and Morcellet, M.: Separation of structural isomers using cyclodextrin-polymers coated on silica beads. *Chromatographia*, 40 (1995) 296-302.
- 3986 Faikenhagen, J. and Dietrich, P.G.: New aspects concerning the stability of silica-based HPLC separation phases. *Am. Lab. (Shelton)*, 26 (1994) 48-54; C.A., 122 (1995) 229705u.
- 3987 Farschman, C.A., Manos, J.B. and Pinto, N.G.: Short-fiber chromatography columns: potential for process-scale bioseparations. *Sep. Sci. Technol.*, 30 (1995) 1325-1350; C.A., 122 (1995) 294023j.
- 3988 Guiochon, G. and Sarker, M.: Consolidation of the packing material in chromatographic columns under dynamic axial compression. I. Fundamental study. *J. Chromatogr. A*, 704 (1995) 247-268.
- 3989 Hirayama, C., Nagaoka, S., Matsumoto, T., Ihara, H., Honbo, J., Kurisaki, H. and Ikegami, S.: Liquid chromatographic separation of geometrical isomers using spherical carbon packings prepared from spherical cellulose particles. *J. Liq. Chromatogr.*, 18 (1995) 1509-1520.
- 3990 Hosoya, K., Kimata, K., Araki, T., Tanaka, N. and Frechet, J.M.J.: Temperature-controlled high-performance liquid chromatography using a uniformly sized temperature-responsive polymer-based packing material. *Anal. Chem.*, 67 (1995) 1907-1911.
- 3991 Hubert, P. and Dellacherie, E.: Water-soluble biospecific polymers for new affinity purification techniques. In: Dubin, P. (Editor), *Macromol. Complexes Chem. Biol.*, Springer, Berlin, 1994, pp. 229-243; C.A., 122 (1995) 215724n - a review with 57 refs.
- 3992 Jarrett, H.W.: Preparation of cDNA-silica using reverse transcriptase and its DNA sequence determination. *J. Chromatogr. A*, 708 (1995) 13-18.
- 3993 Jennissen, H.P.: Cyanogen bromide and tresyl chloride chemistry revisited: the special reactivity of agarose as a chromatographic and biomaterial support for immobilizing novel chemical groups. *J. Mol. Recognit.*, 8 (1995) 116-124; C.A., 122 (1995) 260488z.
- 3994 Kimata, K. and Tanaka, N.: (Structure and function of silica gel filters for reverse chromatography). *Hyomen*, 32 (1995) 178-189; C.A., 122 (1994) 249027c - a review with 74 refs.
- 3995 Krokhin, O.V., Smolenkov, A.D., Svintsova, N.V., Obrezkov, O.N. and Shpigun, O.A.: Modified silica as a stationary phase for ion chromatography. *J. Chromatogr. A*, 706 (1995) 93-98.
- 3996 Lam, P., Elliker, P.R., Wnek, G.E. and Przybycien, T.M.: Towards an electrochemically modulated chromatographic stationary phase. *J. Chromatogr. A*, 707 (1995) 29-33.
- 3997 Läubli, M.W. and Kampus, B.: Cation analysis on a new poly(butadiene-maleic acid)-based column. *J. Chromatogr. A*, 706 (1995) 99-102.
- 3998 Läubli, M.W. and Kampus, B.: Selectivity enhancement on a poly(butadiene-maleic acid)-coated cation phase induced by ethylene oxide-based complexing agents. *J. Chromatogr. A*, 706 (1995) 103-107.
- 3999 Lee, H.G. and Jarrett, H.W.: Glucuronic acid-silica, a novel support for high-performance cation-exchange chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1113-1122.
- 4000 Levison, P.R., Badger, S.E., Jones, R.M.H., Toome, D.W., Streater, M., Pathirana, N.D. and Wheeler, S.: Validation studies in the regeneration of ion-exchange celluloses. *J. Chromatogr. A*, 702 (1995) 59-68.
- 4001 Lorenzano-Porras, C.F., Annen, M.J., Flickinger, M.C., Carr, P.W. and McCormick, A.V.: Pore structure and diffusion tortuosity of prous ZrO<sub>2</sub> synthesized by two different colloid-aggregation processes. *J. Colloid Interface Sci.*, 170 (1995) 299-307; C.A., 123 (1995) 41531a.
- 4002 Matisova, E. and Skrabakova, S.: Carbon sorbents and their utilization for the preconcentration of organic pollutants in environmental samples. *J. Chromatogr. A*, 707 (1995) 145-179 - a review with 159 refs.
- 4003 Moeller, P., Sanchez, D., Allenmark, S. and Andersson, S.: Chiral polymeric adsorbents, tartaric acid derivatives as monomers, their preparation and use. *PCT Int. Appl. WO* 94 12,275 (Cl. B01J20/26), 09 Jun. 1994, SE Appl. 92/3,646, 03 Dec. 1992; 29 p.; C.A., 122 (1995) 316393j.

- 4004 Naka, K. and Maeda, S.: (Polymer chelate having iminodiacetic acid moiety). *Kagaku Kogyo*, 46 (1995) 397-403; C.A., 122 (1995) 266035w - a review with 24 refs.
- 4005 Nenajdenko, S.A., Belyakova, L.D. and Larionov, O.G.: Capillary chromatographic column. *Russ. RU 2,000,564* (Cl. G01N30/56), 07 Sep. 1993, SU Appl. 4,950,165, 27 Jun. 1991; C.A., 123 (1995) 47059z.
- 4006 Nesterenko, P.N., Elefterov, A.I., Tarasenko, D.A. and Shpigun, O.A.: Selectivity of chemically bonded zwitterion-exchange stationary phases in ion chromatography. *J. Chromatogr. A*, 706 (1995) 59-68.
- 4007 Nobuhara, K., Kato, M., Nakamura, M., Takami, M. and Kaneko, S.: Preparation and evaluation of magnesia-coated silica as column packing material for high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 45-53.
- 4008 Pirkle, W.H. and Terfloth, G.J.: Naproxen-derived segmented and sidechain-modified polysiloxanes as chiral stationary phases. *J. Chromatogr. A*, 704 (1995) 269-277.
- 4009 Plunkett, S.D. and Arnold, F.H.: Molecularly imprinted polymers on silica: selective supports for high-performance ligand-exchange chromatography. *J. Chromatogr. A*, 708 (1995) 19-29.
- 4010 Reschiglian, P. and Torsi, G.: Determination of particle size distribution by gravitational field-flow fractionation: dimensional characterization of silica particles. *Chromatographia*, 40 (1995) 467-473.
- 4011 Revilon, A.: Possibility of chromatographic characterization of porous materials, specially by inverse size exclusion chromatography. *Stud. Surf. Sci. Catal.*, 87 (1994) 363-372; C.A., 122 (1995) 249005u - a review with 35 refs.
- 4012 Seibert, D.S. and Poole, C.F.: Retention properties of a cyanopropylsiloxane-bonded silica-based sorbent for solid-phase extraction. *J. High Resolut. Chromatogr.*, 18 (1995) 226-230.
- 4013 Shalliker, R.A., Kavanagh, P.E. and Russell, I.M.: A potential application for large diameter pellicular supports in the reversed phase study of ultra high molecular mass polystyrenes. *Chromatographia*, 40 (1995) 307-312.
- 4014 Shojaosadaty, S.A. and Lyddiatt, A.: Preparation and characterization of immunoabsorbents for high performance liquid affinity chromatography (HPLAC). *Iran. J. Chem. Chem. Eng.*, 13 (1994) 59-67; C.A., 122 (1995) 260165s.
- 4015 Styskin, E.L., Zolotov, N.N., Slavin, M.N. and Vasiyarov, G.G.: (Use of Russian industrial standard columns for resolution of analytical problems in medicine and related areas by high-performance liquid chromatography). *Russ. Khim. Zh.*, 37 (1993) 105-110; C.A., 122 (1995) 310004m.
- 4016 Svec, F. and Fréchet, J.M.J.: Modified poly(glycidyl methacrylate-co-ethylene dimethacrylate) continuous rod columns for preparative-scale ion-exchange chromatography of proteins. *J. Chromatogr. A*, 702 (1995) 89-95.
- 4017 Torres-Lapasio, J.R., Medina-Hernandez, M.J., Villanueva-Camanas, R.M. and Garcia-Alvarez-Coque, M.C.: Description of the retention behaviour of solutes in micellar liquid chromatography with organic modifiers: comparison of two methods. *Chromatographia*, 40 (1995) 279-286.
- 4018 Ukeda, H., Ishii, T., Sawamura, M. and Kusunose, H.: Dynamic analysis of the binding process of bovine serum albumin on glutaraldehyde-activated controlled pore glass. *Anal. Chim. Acta*, 308 (1995) 261-268.
- 4019 Vissers, J.P.C., Claesens, H.A., Laven, J. and Cramers, C.A.: Colloid chemical aspects of slurry packing techniques in microcolumn liquid chromatography. *Anal. Chem.*, 67 (1995) 2103-2109.
- 4020 Walshe, M., Kelly, M.T., Smyth, M.R. and Ritchie, H.: Retention studies on mixed-mode columns in high-performance liquid chromatography. *J. Chromatogr. A*, 708 (1995) 31-40.
- 4021 Yarovsky, I., Aguilar, M.-I. and Hearn, M.T.: Influence of the chain length and surface density on the conformation and mobility of *n*-alkyl ligands chemically immobilized onto a silica surface. *Anal. Chem.*, 67 (1995) 2145-2153.
- 4022 Zimmerman, S.C. and Saionz, K.W.: Quantitative host-guest complexation studies using chemically bonded stationary phases. A comparison of HPLC and solution enthalpies. *J. Am. Chem. Soc.*, 117 (1995) 1175-1176; C.A., 123 (1995) 41525b.
- For additional information see C.A.:  
122 (1995) 215805q, 217076b, 220903z, 229794x, 229795y, 254784b, 281020f, 310269b, 323142e, 329228j, 329497w;  
123 (1995) 12529a.
- See also 3908, 3915, 4025, 4032, 4073, 4075, 4076, 4081, 4082, 4084, 4085, 4089, 4105, 4175, 4284, 4305, 4324, 4379, 4382, 4682, 4692, 4702, 4936, 4937, 4955, 4974.
- 3d. *Quantitative analysis*
- 4023 Gilbert, M.T., Barinov-Colligon, I. and Miksic, J.R.: Cross-validation of bioanalytical methods between laboratories. *J. Pharm. Biomed. Anal.*, 13 (1995) 385-394.
- See also 3978, 4136, 4582, 4731.
- 3e. *Preparative scale chromatography*
- 4024 Gagnon, P., Grund, E. and Lindbaeck, T.: Large-scale process development for hydrophobic interaction chromatography, part 1: gel selection and development of binding conditions. *Bio-Pharm. (Eugene)*, 8 (1995) 21-27; C.A., 122 (1995) 309994c.
- 4025 Gervais, D.P., Laughinghouse, W.S. and Carta, G.: Study of radial compression high-performance liquid chromatographic columns for preparative chromatography. *J. Chromatogr. A*, 708 (1995) 41-53.
- 4026 Hamada, J.S.: High performance liquid chromatography of *Bacillus circulans* peptidoglutaminase for laboratory and industrial uses. *J. Chromatogr. A*, 702 (1995) 163-172.
- 4027 Kodama, M., Ishizawa, S., Koiwa, A., Kanaki, T., Shibata, K. and Motomura, H.: Scale-up of liquid chromatography for industrial production of parenteral antibiotic E1077. *J. Chromatogr. A*, 707 (1995) 117-129.
- 4028 Liapis, A.I., Xu, Y., Cresser, O.K. and Tongta, A.: "Perfusion chromatography". The effects of intra-particle convective velocity and microsphere size on column performance. *J. Chromatogr. A*, 702 (1995) 45-57.
- 4029 Lin, B., Yun, T., Zhong, G. and Guiochon, G.: Shock layer analysis for a single-component in preparative elution chromatography. *J. Chromatogr. A*, 708 (1995) 1-12.

- 4030 Mical, A.J. and Wuonola, M.A.: Application of preparative liquid chromatography in new drug discovery. *Prog. Pharm. Biomed. Anal.*, 1 (1994) 261-278; C.A., 122 (1995) 248442z - a review without refs.
- 4031 Row, K.H.: Combined continuous and preparative chromatographic separation. *J. Chromatogr. A*, 707 (1995) 105-116.
- 4032 Sarker, M. and Guiochon, G.: Study of the packing behavior of axial compression columns for preparative chromatography. *J. Chromatogr. A*, 702 (1995) 27-44.
- 4033 Sofer, G.: Preparative chromatographic separations in pharmaceutical, diagnostic, and biotechnology industries: current and future trends. *J. Chromatogr. A*, 707 (1995) 23-28 - a review with 19 refs.
- 4034 Stadlbauer, E.A., Loehr, H., Oey, L.N., Jensen, D. and Dierkes, L.: Development of laboratory-scale preparative ion chromatography. *GIT Spez. Chromatogr.*, 14 (1994) 64-69; C.A., 123 (1995) 24480r.
- For additional information see C.A.:  
122 (1995) 323141d.
- See also 3909, 3918, 3949, 3988, 4000, 4016, 4039, 4042, 4049, 4065, 4080, 4086, 4101, 4165, 4185, 4227, 4276, 4344, 4347, 4376, 4379, 4383, 4384, 4387, 4390, 4413, 4418, 4506, 4557, 4560, 4561, 4842, 4975.
- 3f. *Programmed temperature, pressure, vapors, gradients*
- 4035 Ageev, A.N., Orlov, V.I. and Yashin, Ya.I.: (Temperature programming in liquid chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1873-1876; C.A., 122 (1995) 229713v.
- For additional information see C.A.:  
122 (1995) 323139j, 323143f.
- See also 4380, 4803.
4. SPECIAL TECHNIQUES
- 4a. *Automation*
- 4036 Feher, Z., Toth, K. and Pungor, E.: (Automatic and electrochemical measuring system). *Kem. Kozl.*, 77 (1993) 100-110; C.A., 122 (1995) 329204y - a review with 20 refs.
- 4037 Hawk, G.L. and Hensley, P.F.: Automated sample preparation for LC and GC analysis using a nonrobotic workstation. *Am. Lab. (Shelton)*, 27 (1995) 35-39; C.A., 122 (1995) 299178y.
- See also 4177, 4381, 4439.
- 4b. *Computerization and modelling*
- 4038 Chaminade, P., Feraud, S., Baillet, A. and Ferrier, D.: (Validation of an HPLC analytical method. Ruggedness test and method validation). *S.T.P. Pharma Prat.*, 5 (1995) 17-35; C.A., 123 (1995) 18005y.
- 4039 Charton, F. and Nicoud, R.-M.: Complete design of a simulated moving bed. *J. Chromatogr. A*, 702 (1995) 97-112.
- 4040 Guillaume, Y. and Guinard, C.: A new method to study column efficiency and the separation of seven compounds in reversed-phase chromatography. *J. Chromatogr. Sci.*, 33 (1995) 204-210.
- 4041 Head, M. and Yellin, B.: (Windows-NT based chromatographic data system). *CM Mag.*, 20 (1994) 22-24; C.A., 122 (1995) 305289d - a review without refs.
- 4042 Heuer, C., Seidel-Morgenstern, A. and Hugo, P.: Experimental investigation and modelling of closed-loop recycling in preparative chromatography. *Chem. Eng. Sci.*, 50 (1995) 1115-1127; C.A., 122 (1995) 243035g.
- 4043 Pirogov, A.V., Obrezkov, O.N. and Shpigun, O.A.: "Chromatogram generator" chromatogram modelling software. *J. Chromatogr. A*, 706 (1995) 31-36.
- 4044 Schmidt-Traub, H., Strube, J., Paul, H.I. and Michel, S.: (Dynamic simulation of the continuous SMB (simulated moving bed) chromatography process). *Chem.-Ing.-Tech.*, 67 (1995) 323-326; C.A., 123 (1995) 36348s.
- 4045 Stähle, L., Mian, A. and Borg, N.: Use of multivariate characterization, design and analysis in assay optimization. *J. Pharm. Biomed. Anal.*, 13 (1995) 369-376.
- 4046 Tonkovich, A.L.Y. and Carr, R.W.: Modelling of the simulated countercurrent moving-bed chromatographic reactor used for the oxidative coupling of methane. *Chem. Eng. Sci.*, 49 (1994) 4657-4665; C.A., 122 (1995) 218105x.
- 4047 Virliche, J.L. and Ayache, A.: (Application of a model ruggedness study to the validation of an HPLC analysis method). *S.T.P. Pharma Prat.*, 5 (1995) 37-48; C.A., 123 (1995) 18006z.
- 4048 Virliche, J.L. and Ayache, A.: A ruggedness test model and its application for HPLC method validation. *S.T.P. Pharma Prat.*, 5 (1995) 49-60; C.A., 123 (1995) 18007a.
- 4049 Wiblin, D.J., Roe, S.D. and Myhill, R.G.: Computer aided desktop scale-up and optimisation of chromatographic processes. *J. Chromatogr. A*, 702 (1995) 81-87.
- For additional information see C.A.:  
122 (1995) 255037x, 323140c.
- See also 3929, 4097, 4285, 4312, 4376, 4383, 4777, 4999.
- 4c. *Combination with other physico-chemical techniques (MS, IR etc.)*
- 4050 Albert, K.: On-line use of NMR detection in separation chemistry. *J. Chromatogr. A*, 703 (1995) 123-147 - a review with 27 refs.
- 4051 Bayer, E., Baumeister, E., Tallarek, U., Albert, K. and Guiochon, G.: NMR imaging of the chromatographic process. Deposition and removal of gadolinium ions on a reversed-phase liquid chromatographic column. *J. Chromatogr. A*, 704 (1995) 37-44.
- 4052 Berndt, H.: (High-performance flow atomic spectrometry (HPFAS). High-pressure nebulization for interface between HPLC and atomic spectrometry). *GIT Fachz. Lab.*, 39 (1995) 100-106; C.A., 122 (1995) 305416t.
- 4053 Careri, M., Manini, P. and Maspero, M.: Liquid chromatography-mass spectrometry in environmental analysis. *Ann. Chim. (Rome)*, 84 (1994) 475-508; C.A., 122 (1995) 305491p - a review with 143 refs.

- 4054 Carrier, A., Varfalvy, L. and Bertrand, M.J.: Development of an "in-source" thermospray-type interface for on-line capillary liquid chromatography-mass spectrometry. *J. Chromatogr. A*, 705 (1995) 205-217.
- 4055 Gelpi, E.: Biomedical and biochemical applications of liquid chromatography-mass spectrometry. *J. Chromatogr. A*, 703 (1995) 59-80 - a review with 95 refs.
- 4056 Giddings, J.C.: Sample dimensionality: a predictor of order-disorder in component peak distribution in multidimensional separation. *J. Chromatogr. A*, 703 (1995) 3-15.
- 4057 Grob, K.: Development of the transfer techniques for on-line high-performance liquid chromatography-capillary gas chromatography. *J. Chromatogr. A*, 703 (1995) 265-276 - a review with 55 refs.
- 4058 Niessen, W.M.A. and Tinke, A.P.: Liquid chromatography-mass spectrometry. General principles and instrumentation. *J. Chromatogr. A*, 703 (1995) 37-57 - a review with 161 refs.
- 4059 Pullen, F.S., Perkins, G.L., Burton, K.I., Ware, R.S., Teague, M.S. and Kiplinger, J.P.: Putting mass spectrometry in the hands of the end user. *J. Am. Soc. Mass Spectrom.*, 6 (1995) 394-399; C.A., 122 (1995) 324948j - a review with 8 refs.
- 4060 Reed, W.F.: Data evaluation for unified multi-detector size exclusion chromatography-molar mass, viscosity and radius of gyration distributions. *Macromol. Chem. Phys.*, 196 (1995) 1539-1575; C.A., 123 (1995) 10418q.
- 4061 Runov, V.K.: (Sorption-luminescence analysis). *Ross. Khim. Zh.*, 38 (1994) 36-41; C.A., 123 (1995) 46762m - a review with 89 refs.
- 4062 Slobodnik, J., van Baar, B.L.M. and Brinkman, U.A.T.: Column liquid chromatography-mass spectrometry: selected techniques in environmental applications for polar pesticides and related compounds. *J. Chromatogr. A*, 703 (1995) 81-121 - a review with 145 refs.
- 4063 Taylor, L.C.E., Johnson, R.L. and Raso, R.: Open access atmospheric pressure chemical ionization mass spectrometry for routine sample analysis. *J. Am. Soc. Mass Spectrom.*, 6 (1995) 387-393; C.A., 122 (1995) 325916j.
- 4064 Uden, P.C.: Element-specific chromatographic detection by atomic absorption, plasma atomic emission and plasma mass spectrometry. *J. Chromatogr. A*, 703 (1995) 393-416 - a review with 126 refs.

For additional information see C.A.:  
122 (1995) 305503u, 325969d.

See also 3919, 3972, 4129, 4130, 4162, 4218, 4242, 4255, 4265, 4338, 4349, 4381, 4385, 4453, 4556, 4596, 4597, 4601, 4605, 4613, 4630, 4632, 4654, 4659, 4667, 4676, 4689, 4694, 4715, 4716, 4718, 4726, 4742, 4751, 4792, 4793, 4794, 4809, 4819, 4829, 4877, 4895, 4896, 4916, 4927, 4954, 5006.

#### 4d. Affinity chromatography (advances)

- 4065 Goward, C.R.: Affinity chromatography and its applications in large-scale separations. In: Subramanian, G. (Editor), *Process Scale Liq. Chromatogr.*, VCH, Weinheim, 1995, pp. 193-214; C.A., 122 (1995) 312968c - a review with 55 refs.

- 4066 Jones, C., Patel, A., Griffin, S., Martin, J., Young, P., O'Donnell, K., Silverman, C., Porter, T. and Chaiken, I.: Current trends in molecular recognition and bioseparation. *J. Chromatogr. A*, 707 (1995) 3-22 - a review with 96 refs.
- 4067 Litaker, J., Donald, S., Spears, R. and Vincent, J.B.: Carbonic anhydrase and carboxypeptidase. A metalloprotein affinity metal chromatography. *Miner. Metall. Process.*, 12 (1995) 108-111; C.A., 123 (1995) 37661a.

For additional information see C.A.:  
123 (1995) 28605h, 28916k.

See also 3922, 3968, 3991, 4014, 4102, 4132, 4178, 4378, 4380, 4381, 4382, 4384, 4387, 4402, 4417, 4419, 4440, 4467, 4501, 4548, 4658, 4726.

#### 4e. Functional analysis

See 4913, 4926.

#### 4f. Trace analysis and pre-separation techniques

- 4068 McKenzie, E., Gettinby, G., Lloyd, J. and Caddy, B.: A statistical model for the response patterns to chemical tests for the absence or presence of trace materials. *Sci. Justice*, 35 (1995) 31-36; C.A., 123 (1995) 27354p.
- 4069 Spivak, B.Ya.: (Contemporary laboratory methods of separation and concentration of traces of elements). *Ross. Khim. Zh.*, 38 (1994) 7-12; C.A., 123 (1995) 24657d - a review with 32 refs.

See also 4012, 4132, 4145, 4820, 4940, 4944, 4951, 4985, 4993, 5013.

#### 4g. Enantiomers, separation

- 4070 Bojarski, J.: (Chromatographic resolution of enantiomers I. Methods). *Wiad. Chem.*, 47 (1993) 279-297; C.A., 122 (1995) 280986p - a review with 309 refs.
- 4071 Bojarski, J.: (Chromatographic resolution of enantiomers. II. Mechanisms and applications). *Wiad. Chem.*, 47 (1993) 419-443; C.A., 122 (1995) 248448d - a review with 440 refs.
- 4072 Chankvetadze, B., Chankvetadze, L., Sidamonidze, Sh., Yashima, E. and Okamoto, Y.: Enantioseparation of some chiral pharmaceuticals using narrow-bore liquid chromatography. *J. Pharm. Biomed. Anal.*, 13 (1995) 695-699.
- 4073 Chassaing, C., Thienpont, M.-H.S.A. and Felix, G.: Tris(phenyl-carbamate) derivatives of amylopectin as chiral stationary phases in HPLC. *J. High Resolut. Chromatogr.*, 18 (1995) 389-391.
- 4074 Clark, B.J.: Separations of enantiomeric compounds by chiral selectors in the mobile or solvent phase. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, 1994, pp. 311-328; C.A., 122 (1995) 313860y - a review with 50 refs.
- 4075 Haginaka, J., Miyano, Y., Saizen, Y., Seyama, C. and Murashima, T.: Separation of enantiomers on a pepsin-bonded column. *J. Chromatogr. A*, 708 (1995) 161-168.
- 4076 Haginaka, J., Seyama, C. and Murashima, T.: Retentive and enantioselective properties of ovomucoid-bonded silica columns. Influence of protein purity and isolation method. *J. Chromatogr. A*, 704 (1995) 279-287.

- 4077 Lippmann, T. and Mann, G.: (Chromatography of diastereometric calix(4)arenes). *GIT Fachz. Lab.*, 39 (1995) 203-204; *C.A.*, 123 (1995) 24925q - a review with 6 refs.
- 4078 Lough, W.J. and Noctor, T.A.G.: Multi-column approaches to chiral bioanalysis by liquid chromatography. *Prog. Pharm. Biomed. Anal.*, 1 (1994) 241-257; *C.A.*, 122 (1995) 255168r.
- 4079 Loza, E., Lola, D., Kemme, A. and Freimanis, J.: Enantiomeric enrichment of partially resolved 4-hydroxy-2-carboxymethylcyclopentanone derivatives by achiral phase chromatography. *J. Chromatogr. A*, 708 (1995) 231-243.
- 4080 Ma, Y., Ito, Y. and Foucault, A.: Resolution of gram quantities of racemates by high-speed counter-current chromatography. *J. Chromatogr. A*, 704 (1995) 75-81.
- 4081 Massolini, G., de Lorenzi, E., Ponci, M.C., Gandini, C., Caccialanza, G. and Monaco, H.L.: Egg yolk riboflavin binding protein as a new chiral stationary phase in high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 55-65.
- 4082 Matlin, S.A., Grieb, S.J. and Belenguer, A.M.: Flash chiral chromatography using carbohydrate carbamate-coated silica. *J. Chem. Soc., Chem. Commun.*, (1995) 301-302; *C.A.*, 122 (1995) 264620j.
- 4083 Oi, N., Kitahara, H. and Aoki, F.: (Extending the scope of enantiomer separation by ligand exchange HPLC with chiral copper complexes as stationary phases). *Kuromatogurafi*, 15 (1994) 58-59; *C.A.*, 122 (1995) 305513x.
- 4084 Oliveros, L., Lopez, P., Minguillon, C. and Franco, P.: Chiral chromatographic discrimination ability of a cellulose 3,5-dimethylphenylcarbamate/10-undecenoate mixed derivative fixed on several chromatographic matrices. *J. Liq. Chromatogr.*, 18 (1995) 1521-1532.
- 4085 Pirkle, W.H. and Selim, A.I.: An improved version of an old fluorocarinol chiral stationary phase. *J. High Resolut. Chromatogr.*, 18 (1995) 353-358.
- 4086 Rodrigues, A.E., Lu, Z.P., Loureiro, J.M. and Pais, L.S.: Separation of enantiomers of 1a,2,7,7a-tetrahydro-3-methoxynaphtha-(2,3b)-oxirane by liquid chromatography: laboratory-scale elution chromatography and modelling of simulated moving bed. *J. Chromatogr. A*, 702 (1995) 223-231.
- 4087 Roussel, C. and Favrou, A.: Cationic  $\beta$ -cyclodextrin: a new versatile chiral additive for separation of drug enantiomers by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 67-74.
- 4088 Sellergren, B.: Enantiomer separation using tailor-made phases prepared by molecular imprinting. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, 1994, pp. 69-93; *C.A.*, 122 (1995) 313859e - a review with 50 refs.
- 4089 Terfloth, G.J., Pirkle, W.H., Lynam, K.G. and Nicolas, E.C.: Broadly applicable polysiloxane-based chiral stationary phase for high-performance liquid chromatography and supercritical fluid chromatography. *J. Chromatogr. A*, 705 (1995) 185-194.
- 4090 Vilani, C. and Pirkle, W.H.: Chromatographic resolution of the interconverting stereoisomers of hindered sulfinyl and sulfonyl naphthalene derivatives. *Tetrahedron: Asymmetry*, 6 (1995) 27-30; *C.A.*, 122 (1995) 264674e.
- 4091 White, C.A. and Subramanian, G.: An introduction to enantioseparation by liquid chromatography. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, 1994, pp. 1-17; *C.A.*, 123 (1995) 24918q - a review with 55 refs.
- For additional information see *C.A.*:  
122 (1995) 322660k;  
123 (1995) 131b, 32332j.
- See also 4003, 4008, 4122, 4126, 4140, 4146, 4234, 4250, 4262, 4316, 4326, 4328, 4338, 4342, 4364, 4563, 4573, 4575, 4577, 4584, 4585, 4586, 4609, 4647, 4672, 4706, 4709, 4717, 4720, 4721, 4733, 4736, 4750, 4754, 4756, 4758, 4761, 4764, 4769, 4773, 4788, 4791, 4796, 4797, 4838, 4843, 4844.
- #### 4h. Other special techniques
- 4092 Ageev, A.N. and Yashin, Ya.I.: (High-temperature liquid chromatography). *Zh. Fiz. Khim.*, 68 (1994) 1749-1751; *C.A.*, 122 (1995) 229712u.
- 4093 Basak, S.K., Velayudhan, A., Kohlmann, K. and Landisch, M.R.: Electrochromatographic separation of proteins. *J. Chromatogr. A*, 707 (1995) 69-76.
- 4094 Broglia, S., Verotta, L. and Battistini, M.: Application of high-speed countercurrent chromatography to the separation of camptothecin and 9-methoxy-camptothecin. *Fitoterapia*, 65 (1994) 520-523; *C.A.*, 122 (1995) 286584c.
- 4095 Ching, C.B., Chu, K.H. and Hidajat, K.: Multicomponent separation using a column-switching chromatography method. *AIChE J.*, 40 (1994) 1843-1849; *C.A.*, 122 (1995) 217360q.
- 4096 Falle, S.A.E.G., Kallrath, J., Brockmuller, B., Schrieck, A., Giddings, J.R., Agar, D.W. and Watzemberger, O.: The dynamics of reverse flow chromatographic reactors with side stream feed. *Chem. Eng. Commun.*, 135 (1995) 185-211; *C.A.*, 123 (1995) 36274q.
- 4097 Foucault, A.P.: Theory of centrifugal partition chromatography. *Chromatogr. Sci. Ser.*, 68 (1995) 25-49; *C.A.*, 122 (1995) 232146j.
- 4098 Goosens, E.C., Beerthuizen, I.M., de Jong, D., de Jong, G.J. and Brinkman, U.A.T.: Reversed-phase liquid chromatography coupled on-line with capillary gas chromatography. Use of an anion-exchange membrane to remove an ion-pair reagent from the eluent. *Chromatographia*, 40 (1995) 267-271.
- 4099 Lee, S.T. and Olesik, S.V.: Normal-phase high-performance liquid chromatography using enhanced-fluidity liquid mobile phases. *J. Chromatogr. A*, 707 (1995) 217-224.
- 4100 Lucy, C.A. and Hausermann, B.P.: Co-current chromatography: a new mode of liquid-liquid chromatography. *Anal. Chim. Acta*, 307 (1995) 173-183.
- 4101 Roper, D.K. and Lightfoot, E.N.: Separation of biomolecules using adsorptive membranes. *J. Chromatogr. A*, 702 (1995) 3-26 - a review with 73 refs.
- 4102 Shang, Z. and Zhou, L.: (Current status, development and applications of membrane affinity chromatography). *Huaxue Jinchuan*, 7 (1995) 47-59; *C.A.*, 122 (1995) 285717m - a review with 69 refs.
- 4103 Thiebaut, D.: Countercurrent chromatography today. *Chim. Oggi*, 12 (1994) 38-44; *C.A.*, 123 (1995) 36012c - a review with 48 refs.
- 4104 Tyihak, E. and Mincsovcics, E.: (Development of layer-system liquid chromatography: identities and differences between overpressure layer chromatography (OPLC) and HPLC). *Kem. Kozl.*, 77 (1993) 79-99; *C.A.*, 122 (1995) 329471h - a review with 71 refs.



For additional information see C.A.:

122 (1995) 243314x, 294970r, 317884g, 323147k.

See also 3911, 3913, 3929, 3949, 4028, 4031, 4080, 4176, 4221, 4325, 4344, 4347, 4388, 4428, 4687, 4700, 4883, 4932, 4934, 4991, 4999.

## 5. HYDROCARBONS AND HALOGEN DERIVATIVES

### 5b. Cyclic hydrocarbons, fullerenes

- 4105 Akama, Y. and Kanno, H.: Liquid chromatographic separation of polycyclic aromatic hydrocarbons with cerium(IV) oxide as packing material. *Anal. Chim. Acta*, 309 (1995) 153-156.
- 4106 Donnevert, G. and Alter, E.: (Analysis of PAH in air. Quality control and interpretation of measuring data). *Staub-Reinhalt. Luft*, 54 (1994) 337-341; C.A., 122 (1995) 320984v.
- 4107 Gasper, M.P. and Armstrong, D.W.: A comparative study of Buckminsterfullerene and higher fullerene separations by HPLC. *J. Liq. Chromatogr.*, 18 (1995) 1047-1076.
- 4108 Goetze, H.J. and Hundertmark, C.: (Determination of polycyclic aromatic hydrocarbons (PAHs) in HEL-soots and reduction of pollutants in soot emission by ferrocene additive). *GIT Spez. Chromatogr.*, 14 (1994) 21-24; C.A., 122 (1995) 321185x.
- 4109 Jinno, K., Uemura, T., Ohta, H., Nagashima, H. and Itoh, K.: Liquid chromatographic separation of higher fullerenes with octadecylsilica stationary phase. *Chim. Oggi*, 12 (1994) 19-24; C.A., 123 (1995) 24717y.
- 4110 Kayali, M.N. and Rubio-Barroso, S.: Determination of benzo(a)pyrene in total particulate matter of Virginia and black tobacco smoke by HPLC with fluorimetric detection. *J. Liq. Chromatogr.*, 18 (1995) 1617-1632.
- 4111 Ohta, A., Saito, Y., Jinno, K., Pesek, J.J., Matuska, M.T., Chen, Y.-L., Archer, J., Fetzer, J.C. and Biggs, W.R.: Retention of fullerenes by octadecyl silica. Correlation with NMR spectra at low temperatures. *Chromatographia*, 40 (1995) 507-512.
- 4112 Saito, Y., Ohta, H., Nagashima, H., Itoh, K., Jinno, K. and Pesek, J.J.: Separation of fullerenes with liquid crystal bonded silica phases in microcolumn high-performance liquid chromatography. *J. Microcolumn Sep.*, 7 (1995) 41-49; C.A., 122 (1995) 280814f.
- 4113 Vladykin, G.B., Radchenko, A.Yu., Frolov, I.I. and Yashin, Ya.I.: (Determination of polyaromatic hydrocarbons with a Tsvet-3110 liquid chromatograph with a laser fluorometric detector). *Zh. Fiz. Khim.*, 68 (1994) 1868-1872; C.A., 122 (1995) 229762k.
- 4114 Weistrand, C., Jakobsson, E. and Norén, K.: Liquid-gel partitioning using Lipidex in the determination of polychlorinated biphenyls, naphthalenes, dibenzo-p-dioxins and dibenzofurans in blood plasma. *J. Chromatogr. B*, 669 (1995) 207-217.

For additional information see C.A.:

122 (1995) 229468u, 280823h.

See also 3945, 3989, 4155.

### 5c. Halogen derivatives

4115 Hess, P., de Boer, J., Cofino, W.P., Leonards, P.E.G. and Wells, D.E.: Critical review of the analysis of non- and mono-ortho-chlorobiphenyls. *J. Chromatogr. A*, 703 (1995) 417-465 - a review with 291 refs.

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

- 4116 Dhole, C.R. and Ghosal, G.K.: Detection and characterization of petroleum based accelerants in fire debris by HPLC. *J. Liq. Chromatogr.*, 18 (1995) 1767-1786.
- 4117 Fabinska, M.: (High-performance gel chromatography for the evaluation of molecular weight distribution in coal liquids). *Karbo-Energochem.-Ekol.*, 37 (1992) 167-170; C.A., 122 (1995) 295051d.
- 4118 Herod, A.A. and Kandiyoti, R.: Detection of high-molecular-mass materials in coal-derived liquids by independent techniques. *Fuel*, 74 (1995) 784-786; C.A., 122 (1995) 295087v.
- 4119 Pauls, R.E.: Chromatographic characterization of gasolines. *Adv. Chromatogr. (N.Y.)*, 35 (1995) 259-342; C.A., 122 (1995) 269577k - a review with 202 refs.

For additional information see C.A.:

122 (1995) 218254v.

See also 3984, 4898.

## 6. ALCOHOLS

See 4696.

## 7. PHENOLS

- 4120 Belyamova, T.T., Korenman, Ya.I., Fokin, V.N. and Yashin, Ya.I.: (Liquid chromatography of phenol derivatives with electrochemical detection). *Zh. Fiz. Khim.*, 68 (1994) 1877-1879; C.A., 122 (1995) 229714w.
- 4121 Calvarano, I. and Calvarano, M.: (HPLC determination of o-phenylphenol in citrus essential oils). *Essenze, Deriv. Agrum.*, 64 (1994) 248-258; C.A., 123 (1995) 17437d.
- 4122 Li, S., Lundquist, K. and Soubbotin, N.: Separation of diastereomers of lignin model compounds of the 1,3-diol type as borate complexes by ion-exchange chromatography. *Holzfor-schung*, 48 (1994) 509-511; C.A., 123 (1995) 35532k.
- 4123 Puig, D. and Barceló, D.: Off-line and on-line solid-phase extraction followed by liquid chromatography for the determination of priority phenols in natural waters. *Chromatographia*, 40 (1995) 435-444.
- 4124 Shi, R. and Schwedt, G.: (HPLC and TLC analysis of phenolic compounds in wine). *Dtsch. Lebensm.-Rundsch.*, 91 (1995) 14-17; C.A., 123 (1995) 31515j.

See also 4155, 4565, 4823.

## 8. SUBSTANCES CONTAINING HETEROCYCLIC OXYGEN

See also 3989, 4114, 4687.

## 8a. Flavonoids

- 4125 Bronner, W.E. and Beecher, G.R.: Extraction and measurement of prominent flavonoids in orange and grapefruit juice concentrates. *J. Chromatogr. A*, 705 (1995) 247-256.
- 4126 Ficarra, P., Ficarra, R., Bertucci, C., Tommasini, S., Calabro, M.L., Costantino, D. and Carulli, M.: Direct enantiomeric separation of flavanones by high performance liquid chromatography using various chiral stationary phases. *Planta Med.*, 61 (1995) 171-176; C.A., 123 (1995) 28738d.
- 4127 Pekic, B., Zekovic, Z. and Lipojevic, Z.: HPLC determination of apigenin and its glucosides in chamomile (*Matricaria chamomilla* L.). *Zb. Matice Srp. Prirod. Nauke*, 86 (1994) 37-41; C.A., 122 (1995) 248458g.
- 4128 Siles, B.A., Halsall, H.B. and Dorsey, J.G.: Retention and selectivity of flavanones on homopolypeptide-bonded stationary phases in both normal- and reversed-phase liquid chromatography. *J. Chromatogr. A*, 704 (1995) 289-305.

## 8b. Aflatoxins and other mycotoxins

- 4129 Cappiello, A., Famigliani, G. and Tirillini, B.: Determination of aflatoxins in peanut meal by LC-MS with a particle beam interface. *Chromatographia*, 40 (1995) 411-416.
- 4130 Hua, Y., Lu, W., Henry, M.S., Pierce, R.H. and Cole, R.B.: On-line high-performance liquid chromatography - electrospray ionization mass spectrometry for the determination of brevetoxins in "red tide" algae. *Anal. Chem.*, 67 (1995) 1815-1823.
- 4131 Kühn, I., Valenta, H. and Rohr, K.: Determination of ochratoxin A in bile of swine by high-performance liquid chromatography. *J. Chromatogr. B*, 668 (1995) 333-337.
- 4132 Kussak, A., Andersson, B. and Andersson, K.: Determination of aflatoxins in airborne dust from feed factories by automated immunoaffinity column clean-up and liquid chromatography. *J. Chromatogr. A*, 708 (1995) 55-60.
- 4133 Rice, L.G., Ross, P.F., Dejong, J., Plattner, R.D. and Coats, J.R.: Evaluation of a liquid chromatographic method for the determination of fumonisins in corn, poultry feed, and *Fusarium* culture material. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 1002-1009.
- 4134 Trucksess, M.W., Stack, M.E., Allen, S. and Barrion, N.: Immunoaffinity column coupled with liquid chromatography for determination of fumonisin B<sub>1</sub> in canned and frozen sweet corn. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 705-710.

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

- 4135 Fedorov, L.A. and Dostovalova, V.I.: The new strategy and future of dioxins' analysis: The supplement of nuclear magnetic resonance (NMR). *Organohalogen Compd.*, 19 (1994) 77-79; C.A., 123 (1995) 24966d.
- 4136 Qin, B., Chen, Q.-P., Shi, L.-W. and Lou, Z.-C.: Separation and quantitative determination of three coumarins in the Chinese traditional drug Zihuyadiding, herba violae, by high-performance liquid chromatography. *J. Chin. Pharm. Sci.*, 3 (1994) 157-163; C.A., 122 (1995) 222980w.

For additional information see C.A.:  
122 (1995) 274218y.

## 9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

- 4137 Clasadonte, M.T., Zerbo, A. and Ciralo, L.: (Benzoyl peroxide in food: analysis and health aspects). *Riv. Merceol.*, 33 (1994) 155-164; C.A., 123 (1995) 54387h.
- 4138 Gachanja, A.N., Lewis, S.W. and Worsfold, P.J.: Determination of aldehydes in used engine oils by liquid chromatography with chemiluminescence detection. *J. Chromatogr. A*, 704 (1995) 329-337.
- 4139 Gori, G., Meneghetti, P., Sturaro, A., Parvoli, G., Doretti, L. and Bartolucci, G.B.: High performance liquid chromatographic determination of methyl ethyl ketone in urine as its 3-methyl-2-benzothiazolinone hydrazone derivative. *Chromatographia*, 40 (1995) 336-340.
- 4140 Küsters, E., Gerber, G. and Antia, F.D.: Enantioseparation of a chiral epoxide by simulated moving bed chromatography using Chiralcel-OD. *Chromatographia*, 40 (1995) 387-393.
- 4141 Lin, Y., Dueker, S.R., Jones, A.D., Ebeler, S.E. and Clifford, A.J.: Protocol for collection and HPLC analysis of volatile carbonyl compounds in breath. *Clin. Chem. (Washington)*, 41 (1995) 1028-1032.
- 4142 Manitto, P., Monti, D., Speranza, G., Mulinacci, N., Vincieri, F., Griffini, A. and Pifferi, G.: Studies on cascara, part 2. Structures of cascarosides E and F. *J. Natural Prod.*, 58 (1995) 419-423.
- 4143 Orsi, F., Homoki, P. and Vu Nam Phong.: (Determination of methylglyoxal in caramel samples). *Nahrung*, 39 (1995) 90-97; C.A., 123 (1995) 54352t.
- 4144 Possanzini, M. and DiPalo, V.: Determination of olefinic aldehydes and other volatile carbonyls in air samples by DNPH-coated cartridges and HPLC. *Chromatographia*, 40 (1995) 134-138.
- 4145 Risner, C.H.: High-performance liquid chromatographic determination of major carbonyl compounds from various sources in ambient air. *J. Chromatogr. Sci.*, 33 (1995) 168-176.
- 4146 Toyooka, T. and Liu, Y.-M.: Enantioseparation of carbonyl compounds by high-performance liquid chromatography based on diastereomer formation. *Anal. Proc.*, 31 (1994) 265-268; C.A., 122 (1995) 255021n.
- 4147 Zhang, S.-X., Chen, K., Liu, X.-J., Zhang, D.-C., Tao-Wiedmann, T.-W., Leu, S.-L., McPhail, A.T. and Lee, K.-H.: The isolation and structural elucidation of three new neolignans, puberulins A, B, and C, as platelet activating factor receptor antagonists from *Piper puberulum*. *J. Natural Prod.*, 58 (1995) 590-597.

See also 3989, 4130, 4879, 4914.

## 10. CARBOHYDRATES

## 10a. Mono and oligosaccharides. Structural studies

- 4148 Adachi, S., Mizuno, T. and Matsuno, R.: Concentration dependence of the distribution coefficient of maltooligosaccharides on a cation-exchange resin. *J. Chromatogr. A*, 708 (1995) 177-183.

- 4149 Boschker, H.T.S., Bertilsson, S.A., Dekkers, E.M.J. and Cappenberg, T.E.: An inhibitor-based method to measure initial decomposition of naturally occurring polysaccharides in sediments. *Appl. Environ. Microbiol.*, 61 (1995) 2186-2192; C.A., 123 (1995) 4846m.
- 4150 Churms, S.C.: High performance hydrophilic interaction chromatography of carbohydrates with polar sorbents. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 103-146; C.A., 122 (1995) 309915c - a review with 134 refs.
- 4151 Churms, S.C.: Modern size-exclusion chromatography of carbohydrates and glycoconjugates. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 233-265; C.A., 122 (1995) 309919g - a review with 137 refs.
- 4152 Dunkel, M.P.H. and Amado, R.: Analysis of endo-(1→5)- $\alpha$ -L-arabinanase degradation patterns of linear (1→5)- $\alpha$ -L-arabinooligosaccharides by high-performance anion-exchange chromatography with pulsed amperometric detection. *Carbohydr. Res.*, 268 (1995) 151-158; C.A., 123 (1995) 56425t.
- 4153 Estuardo Araujo, B.: Justification of a change in the technique for extraction in final molasses based on determination of the actual purity of molasses by high-performance liquid chromatography (HPLC). *Int. Sugar J.*, 94 (1994) 185-188; C.A., 122 (1995) 242648x.
- 4154 Fischer, K., Bipp, H.-P., Bieniek, D. and Kettrup, A.: Determination of monomeric sugar and carboxylic acids by ion-exclusion chromatography. *J. Chromatogr. A*, 706 (1995) 361-373.
- 4155 Goldberg, D.M., Ng, E., Karumanchiri, A., Yan, J., Diamandis, E.P. and Soleas, G.J.: Assay of resveratrol glucosides and isomers in wine by direct-injection high-performance liquid chromatography. *J. Chromatogr. A*, 708 (1995) 89-98.
- 4156 Goodall, I., Dennis, M.J., Parker, I. and Sharman, M.: Contribution of high-performance liquid chromatographic analysis of carbohydrates to authenticity testing of honey. *J. Chromatogr. A*, 706 (1995) 353-359.
- 4157 Hamamoto, T., Kurosawa, N., Lee, Y.-C. and Tsuji, S.: Donor substrate specificities of Gal $\beta$ 1,4GlcNAc  $\alpha$ 2,6-sialyltransferase and Gal $\beta$ 1,3GalNAc  $\alpha$ 2,3-sialyltransferase: comparison of N-acetyl and N-glycolylneuraminic acids. *Biochim. Biophys. Acta*, 1244 (1995) 223-228.
- 4158 Hester, R.D., Farina, G.E. and Nanguneri, S.: Process for separating acid-sugar mixtures using ion exclusion chromatography. U.S. US 5,407,580 (Cl. 210-635; B01D15/08), 18 Apr. 1995, Appl. 128,174, 29 Sep. 1993; 25 p.; C.A., 122 (1995) 318670w.
- 4159 Kerns, R.J. and Linhardt, R.J.: Separation of hydroxyl protected heparin derived disaccharides using reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 705 (1995) 369-373.
- 4160 Kim, Y.S., Liu, J., Han, X.J., Pervin, A. and Linhardt, R.J.: Analysis of fluorescently labeled sugars by reversed-phase ion-pairing high-performance liquid chromatography. *J. Chromatogr. Sci.*, 33 (1995) 162-167.
- 4161 Kwon, H. and Kim, J.: High performance liquid chromatography of mono- and oligosaccharides derivatized with *p*-aminobenzoic ethyl ester on a C<sub>18</sub>-bonded silica column. *J. Liq. Chromatogr.*, 18 (1995) 1437-1449.
- 4162 Larsen, E.H.: Speciation of dimethylarsinyl-riboside derivatives (arsenosugars) in marine reference materials by HPLC-ICP-MS. *Fresenius J. Anal. Chem.*, 352 (1995) 582-588.
- 4163 Lloyd, L.L., Wase, D.A.J. and Kennedy, J.F.: Alkaline stability of the oligosaccharides present in beet medium invert sugar. *Food Chem.*, 53 (1995) 117-124; C.A., 122 (1995) 289221t.
- 4164 Moller, H.J., Moller-Pedersen, T., Damsgaard, T.E. and Poulsen, J.H.: Demonstration of immunogenic keratan sulphate in commercial chondroitin 6-sulphate from shark cartilage. Implications for ELISA assays. *Clin. Chim. Acta*, 236 (1995) 195-204.
- 4165 Mort, A.J. and Pierce, M.L.: Preparation of carbohydrates for analysis by HPLC and HPCE. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 3-37; C.A., 122 (1995) 309913a - a review with 91 refs.
- 4166 Nilsson, K.G.I., Sakaguchi, K., Gemeiner, P. and Mosbach, K.: Molecular imprinting of acetylated carbohydrate derivatives into methacrylic polymers. *J. Chromatogr. A*, 707 (1995) 199-203.
- 4167 Pant, I. and Trenerry, V.C.: The determination of sorbic acid and benzoic acid in a variety of beverages and foods by micellar electrokinetic capillary chromatography. *Food Chem.*, 53 (1995) 219-226; C.A., 122 (1995) 289223v.
- 4168 Paoletti, L.C. and Johnson, K.D.: Purification of preparative quantities of group B *Streptococcus* type III oligosaccharides. *J. Chromatogr. A*, 705 (1995) 363-368.
- 4169 Prodollet, J., Bruehlhart, M., Lador, F., Martinez, C., Obert, L., Blanc, M.B. and Parchet, J.-M.: Determination of free and total carbohydrate profile in soluble coffee. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 749-761.
- 4170 Prodollet, J., Bugner, E. and Feinberg, M.: Determination of carbohydrates in soluble coffee by anion-exchange chromatography with pulsed amperometric detection: interlaboratory study. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 768-782.
- 4171 Pye, D.A. and Kumar, S.: Molecular attributes of bovine aortic endothelial cell heparan sulfate. *Biochim. Biophys. Acta*, 1266 (1995) 235-244.
- 4172 Roberts, R.E.: Development of fast pulsed electrochemical detection of carbohydrates separated by liquid chromatography and capillary electrophoresis. Avail. *Univ. Microfilms Int.*, Order No. DA9503589, 1994, 146 p.; C.A., 122 (1995) 305519d.
- 4173 Sadlej-Sosnowska, N.: Inclusion complexes of steroid hormones with cyclodextrins studied by the Hummel-Dreyer method using reversed-phase liquid chromatography. *J. Pharm. Biomed. Anal.*, 13 (1995) 701-704.
- 4174 Saska, M. and Lancrenon, X.: Applications of continuous chromatographic separation in the sugar industry. III. Desugaring of cane molasses. *Int. Sugar J.*, 96 (1994) 403-410; C.A., 122 (1995) 293781t.
- 4175 Schoor, A., Erdmann, N., Effmert, U. and Mikkat, S.: Determination of the cyanobacterial osmolyte glucosylglycerol by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 89-97.
- 4176 Shieh, M.T. and Barker, P.E.: Saccharification of modified starch to maltose in a semi-continuous counter-current chromatographic reactor-separator (SCCR-5). *J. Chem. Technol. Biotechnol.*, 63 (1995) 125-134; C.A., 123 (1995) 12184j.
- 4177 Vérette, E., Qian, F. and Mangani, F.: On-line dialysis with high-performance liquid chromatography for the automated preparation and analysis of sugars and organic acids in foods and beverages. *J. Chromatogr. A*, 705 (1995) 195-203.
- 4178 Yamamoto, K., Tsuji, T. and Osawa, T.: Analysis of asparagine-linked oligosaccharides by sequential lectin affinity chromatography. *Mol. Biotechnol.*, 3 (1995) 25-36; C.A., 122 (1995) 260050a - a review with 37 refs.

For additional information see C.A.:

122 (1995) 260584c, 310241m, 317257e.

See also 4055, 4095, 4186, 4187, 4189, 4193, 4196, 4198, 4209, 4511.

10b. *Polysaccharides, mucopolysaccharides, lipopolysaccharides*

- 4179 Cheng, L. and Kindel, P.K.: Effect of cations on the elution of pectic polysaccharides from anion-exchange resins. *Anal. Biochem.*, 228 (1995) 109-114.
- 4180 Flamme, W.T., Juergens, H.-U. and Jansen, G.G.: Quantitative determination of amylose and amylopectin in starches by HPSEC with DMSO as solvent and eluant. *Am. Lab. (Shelton)*, 26 (1994) 29-32; C.A., 122 (1995) 242657z.
- 4181 Hiscock, D.R.R., Canfield, A. and Gallagher, J.T.: Molecular structure of heparan sulphate synthesised by bovine aortic endothelial cells. *Biochim. Biophys. Acta*, 1244 (1995) 104-112.
- 4182 Hoque, E.: High-performance size-exclusion chromatographic characterization of water-soluble polymeric substances produced by *Phanerochaete chrysosporium* from free and wheat cell wall bound 3,4-dichloroaniline. *J. Chromatogr. A*, 708 (1995) 273-281.
- 4183 Huckerby, T.N., Dickenson, J.M., Brown, G.M. and Nieduszynski, I.A.: Keratanase digestion of keratan sulphates: characterization of large oligosaccharides from the N-acetylglucosamine repeat sequence and from the non-reducing terminal chain caps. *Biochim. Biophys. Acta*, 1244 (1995) 17-29.
- 4184 Kennedy, J.F., Rivera, Z.S., Lloyd, L.L., Warner, F.P. and da Silva, M.P.C.: Determination of the molecular weight distribution of hydroxyethyl cellulose by gel filtration chromatography. *Carbohydr. Polym.*, 26 (1995) 31-34; C.A., 122 (1995) 268371b.
- 4185 Krämer, P., Qinzierz, U., Grübler, G., Tschakert, J., Voelter, W. and Mayer, H.: Rational approach to fractionation, isolation, and characterization of polysaccharides from the lichen *Cetraria islandica*. *Arzneim.-Forsch.*, 45 (1995) 726-731.
- 4186 Leitao, M.C.A., Alarco Silva, M.L., Januario, M.I.N. and Azinheira, H.G.: Galacturonic acid in pectic substances of sunflower head residues: quantitative determination by HPLC. *Carbohydr. Polym.*, 26 (1995) 165-169; C.A., 123 (1995) 8143c.
- 4187 Lopatin, S.A., Ilyin, M.M., Pustobaev, V.N., Bezchetnikova, Z.A., Varlamov, V.P. and Davankov, V.A.: Mass-spectrometric analysis of N-acetylchitooligosaccharides prepared through enzymatic hydrolysis of chitosan. *Anal. Biochem.*, 227 (1995) 285-288.
- 4188 Midura, R.J., Calabro, A., Yanagishita, M. and Hascall, V.C.: Nonreducing and structures of chondroitin sulfate chains on aggrecan isolated from Swarm rat chondrosarcoma cultures. *J. Biol. Chem.*, 270 (1995) 8009-8015.
- 4189 Mulder, H., Dideberg, F., Schachter, H., Spronk, B.A., de Jong-Brink, M., Kamerling, J.P. and Vliegthart, J.F.G.: In the biosynthesis of N-glycans in connective tissue of the snail *Lymnaea stagnalis* of incorporation GlcNAc by  $\beta$ 2GlcNAc-transferase I is an essential prerequisite for the action of  $\beta$ 2GlcNAc-transferase II and  $\beta$ 2Xyl-transferase. *Eur. J. Biochem.*, 232 (1995) 272-283.
- 4190 Razi, N., Feyzi, E., Björk, I., Naggi, A., Casu, B. and Lindahl, U.: Structural and functional properties of heparin analogues obtained by chemical sulphation of *Escherichia coli* K5 capsular polysaccharide. *Biochem. J.*, 309 (1995) 465-472.
- 4191 Romaris, M., Bassols, A. and David, G.: Effect of transforming growth factor- $\beta$ 1 and basic fibroblast growth factor on the expression of cell surface proteoglycans in human lung fibroblasts. Enhanced glycanation and fibronectin-binding of CD44 proteoglycan, and down-regulation of glypican. *Biochem. J.*, 310 (1995) 73-81.
- 4192 Snow, A.D., Kinsella, M.G., Parks, E., Sekiguchi, R.T., Miller, J.D., Kimata, K. and Wight, T.N.: Differential binding of vascular cell-derived proteoglycans (perlecan, biglycan, decorin, and versican) to the beta-amyloid protein of Alzheimer's disease. *Arch. Biochem. Biophys.*, 320 (1995) 84-95.
- 4193 Striegel, A.M. and Timpa, J.D.: Molecular characterization of polysaccharides dissolved in N,N-dimethylacetamide-lithium chloride by gel-permeation chromatography. *Carbohydr. Res.*, 267 (1995) 271-290; C.A., 122 (1995) 242658a.
- 4194 Volpi, N., Fregni, R. and Venturelli, T.: Activity of chondroitin ABC lyase on dermatan sulfate partially degraded by cupric-ion-mediated free-radical treatment. *J. Chromatogr. B*, 669 (1995) 197-205.

For additional information see C.A.:

122 (1995) 309999h, 322609a.

See also 4176, 4490.

10c. *Glycoproteins and their constituents*

- 4195 Chen, C., Durrant, H.J., Newton, R.P. and Ratcliffe, N.A.: A study of novel lectins and their involvement in the activation of the prophenoloxidase system in *Blaberus discoidalis*. *Biochem. J.*, 310 (1995) 23-31.
- 4196 El Rassi, Z.: Reversed-phase and hydrophobic interaction chromatography of carbohydrates and glycoconjugates. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 41-101; C.A., 122 (1995) 309941b - a review with 264 refs.
- 4197 Engelmänn, S., Ebeling, O. and Schwartz-Albiez, R.: Modulated glycosylation of proteoglycans during differentiation of human B lymphocytes. *Biochim. Biophys. Acta*, 1267 (1995) 6-14.
- 4198 Fu, D. and O'Neill, R.A.: Monosaccharide composition analysis of oligosaccharides and glycoproteins by high-performance liquid chromatography. *Anal. Biochem.*, 227 (1995) 377-384.
- 4199 Goulut-Chassaing, C. and Bourrillon, R.: Structural differences between complex-type Asn-linked glycans chains of glycoproteins in rat hepatocytes and Zajdela hepatoma cells. *Biochim. Biophys. Acta*, 1244 (1995) 30-40.
- 4200 Hayes, B.K., Greis, K.D. and Hart, G.W.: Specific isolation of O-linked N-acetylglucosamine glycopeptides from complex mixtures. *Anal. Biochem.*, 228 (1995) 115-122.
- 4201 Hemmerich, S., Leffler, H. and Rosen, S.D.: Structure of the O-glycans in GlyCAM-1, an endothelial-derived ligand for L-selectin. *J. Biol. Chem.*, 270 (1995) 12035-12047.
- 4202 Honda, S.: Basic studies on carbohydrate-protein interaction by high performance affinity chromatography and high performance capillary affinity electrophoresis using lectins as protein models. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 211-231; C.A., 122 (1995) 309918f - a review with 10 refs.

- 4203 Houri, J.-J., Ogier-Denis, E., de Stefanis, D., Bauvy, C., Baccino, F.M., Isidoro, C. and Codogno, P.: Differentiation-dependent autophagy controls the fate of newly synthesized N-linked glycoproteins in the colon adenocarcinoma HT-29 cell line. *Biochem. J.*, 309 (1995) 521-527.
- 4204 Kanno, C., Hwangbo, S. and Azuma, N.: Rapid and simple procedure for purifying PAS-4 glycoprotein from bovine milk fat globule membrane. *Biosci., Biotechnol., Biochem.*, 59 (1995) 848-852; *C.A.*, 123 (1995) 28751c.
- 4205 Kremmer, T., Boldizsár, M., Kovács, J., Paulik, E., Bencsik, K. and Szajáni, B.: Determination and analysis of human serum alpha-1-acid glycoprotein by liquid chromatographic methods. *J. Liq. Chromatogr.*, 18 (1995) 1207-1218.
- 4206 Lee, T.K., Krohan, W.N. and Lubon, H.: Proteolytic processing of human protein C in swine mammary gland. *J. Biochem. (Tokyo)*, 118 (1995) 81-87.
- 4207 Mariani, A., Mezzi, G. and Malesci, A.: Purification and assay of secretory lithostathine in human pancreatic juice by fast protein liquid chromatography. *Gut*, 36 (1995) 622-629; *C.A.*, 123 (1995) 4823b.
- 4208 Odo, S., Kamino, K., Kanai, S., Maruyama, T. and Harayama, S.: Biochemical characterization of a Ca<sup>2+</sup>-dependent lectin from the hemolymph of a photosymbiotic marine bivalve, *Tridacna derasa* (Röding). *J. Biochem. (Tokyo)*, 117 (1995) 965-973.
- 4209 Ogawa, H., Yoneda, A., Seno, N., Hayashi, M., Ishizuka, I., Hase, S. and Matsumoto, I.: Structures of the N-linked oligosaccharides on human plasma vitronectin. *Eur. J. Biochem.*, 230 (1995) 994-1000.
- 4210 Pilatte, Y., Rostoker, G., Violleau, K., Basta, M. and Hammer, C.H.: Further identification of human plasma glycoproteins interacting with the galactose-specific lectin Jacalin. *J. Chromatogr. B*, 668 (1995) 1-11.
- 4211 Salimath, P.V., Spiro, R.C. and Freeze, H.H.: Identification of a novel glycosaminoglycan core-like molecule II.  $\alpha$ -GalNAc-Capped xylosides can be made by many cell types. *J. Biol. Chem.*, 270 (1995) 9164-9168.
- 4212 Scott, P.G., Nakano, T. and Dodd, C.M.: Small proteoglycans from different regions of the fibrocartilaginous temporomandibular joint disc. *Biochim. Biophys. Acta*, 1244 (1995) 121-128.
- 4213 Siddiqui, S., Hasan, S. and Salahuddin, A.: Isolation and characterization of *Cajanus cajan* lectin. *Arch. Biochem. Biophys.*, 319 (1995) 426-431.
- 4214 To, W.Y., Leung, J.C.K. and Lai, K.N.: Identification and characterization of human serum alpha2-HS glycoprotein as a jacalin-bound protein. *Biochim. Biophys. Acta*, 1249 (1995) 58-64.
- 4215 Townsend, R.R.: Analysis of glycoconjugates using high-pH anion-exchange chromatography. *J. Chromatogr. Libr.*, Vol. 58, 1995, pp. 181-209; *C.A.*, 122 (1995) 309917e - a review with 141 refs.
- 4216 Yamada, S., Murakami, T., Tsuda, H., Yoshida, K. and Sugahara, K.: Isolation of the porcine heparin tetrasaccharides with glucuronate 2-O-sulfate. Heparinase cleaves glucuronate 2-O-sulfate-containing disaccharides in highly sulfated blocks in heparin. *J. Biol. Chem.*, 270 (1995) 8696-8705.
- 4217 Zhu, B.C.R., Drake, R.R., Schweingruber, H. and Laine, R.A.: Inhibition of glycosylation by amphomycin and sugar nucleotide analogs PP36 and PP55 indicates that *Haloferax volcanii*  $\beta$ -glucosylates both glycoproteins and glycolipids through lipid-linked sugar intermediates: evidence for three novel glycoproteins and a novel sulfated dihexacyl-archaeol glycolipid. *Arch. Biochem. Biophys.*, 319 (1995) 355-364.

For additional information see C.A.:

122 (1995) 285789m;

123 (1995) 5142r.

See also 4055, 4151, 4173, 4386, 4397.

## 11. ORGANIC ACIDS AND LIPIDS

### 11a. Organic acids and simple esters

4218 Albert, K., Braumann, U., Streck, R., Spraul, M. and Ecker, R.: Application of direct on-line coupling HPLC and SFC with HNMR spectroscopy for the investigation of monomeric acrylates. *Fresenius J. Anal. Chem.*, 352 (1995) 521-528.

4219 Bieganowska, M.L. and Petruczynik, A.: Retention parameters of some isomeric 2-benzoylbenzoic acids in reversed-phase ion-pair high performance thin-layer and column chromatography. *Chromatographia*, 40 (1995) 453-457.

4220 Bloodworth, B.C., Harn, C.S., Hock, C.T. and Boon, Y.O.: Liquid chromatographic determination of *trans*-10-hydroxy-2-decenoic acid content in commercial products containing royal jelly. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 1019-1023.

4221 Bousquet, O. and le Goffic, F.: Counter-current chromatographic separation of polyunsaturated fatty acids. *J. Chromatogr. A*, 704 (1995) 211-216.

4222 Candito, M., Krstulovic, A.M. and Chambon, P.: Stability of 3,4-dihydroxyphenylacetic acid in plasma extracts assayed by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 669 (1995) 413-415.

4223 Carvalho, F., Bastos, M.L., Remiao, F. and Ferreira, M.A.: Determination of oxalates in cork stoppers by HPLC with electrochemical detection. *Am. J. Enol. Vitic.*, 46 (1995) 63-66; *C.A.*, 122 (1995) 313127q

4224 Egekeze, J.O., Danielski, M.C., Grinberg, N., Smith, G.B., Sidler, D.R. and Perpall, H.J., Bicker, G.R. and Tway, P.C.: Kinetic analysis and subambient temperature chromatography of an active ester. *Anal. Chem.*, 67 (1995) 2292-2295.

4225 Friedrich, J., Zuzek, M., Bencina, M., Cimerman, A., Strancar, A. and Radez, I.: High-performance liquid chromatographic analysis of mevinolin as mevinolinic acid in fermentation broths. *J. Chromatogr. A*, 704 (1995) 363-367.

4226 Gatti, R., Andrisano, V., di Pietra, A.M. and Cavrini, V.: Analysis of aliphatic dicarboxylic acids in pharmaceuticals and cosmetics by liquid chromatography (HPLC) with fluorescence detection. *J. Pharm. Biomed. Anal.*, 13 (1995) 589-595.

4227 Hidajat, K., Ching, C.B. and Rao, M.S.: Preparative-scale liquid chromatographic separation of  $\omega$ -3 fatty acids from fish oil sources. *J. Chromatogr. A*, 702 (1995) 215-221.

- 4228 Honmura, A., Ishii, A., Mizukawa, H. and Haruki, E.: (High-pressure liquid chromatographic detection of hydroxyl radicals in brain using salicylate as an *in vivo* trap. Useful extraction method of hydroxylation products with alumina). *Igaku to Seibutsugaku*, 130 (1995) 107-111; C.A., 123 (1995) 27311x.
- 4229 Inoue, Y., Tani, K. and Suzuki, Y.: Evaluation of hydrous zirconium oxide loaded porous polymer resin for ion chromatographic separation of carboxylic acids. *Chromatographia*, 40 (1995) 577-580.
- 4230 Kashiwada, Y., Nishizawa, M., Yamagishi, T., Tanaka, T., Nonaka, G.-i., Cosentino, L.M., Snider, J.V. and Lee, K.-H.: Anti-AIDS agents, 18. Sodium and potassium salts of caffeic acid tetramers from *Arnebia euchroma* as anti-HIV agents. *J. Natural Prod.*, 58 (1995) 392-400.
- 4231 Kurata, K.: Separation of juvenile hormone metabolites with a silica-based gel permeation column. *J. Chromatogr. B*, 668 (1995) 322-326.
- 4232 Levai, F., Liu, C.-M., Tse, M.M. and Lin, E.T.: Pre-column fluorescence derivatization using leucine-coumarinylamide for HPLC determination of mono- and dicarboxylic acids in plasma. *Acta Physiol. Hung.*, 83 (1995) 39-46; C.A., 123 (1995) 51383t.
- 4233 Lodi, S. and Rossin, G.: Determination of some organic acids in sugar factory products. *J. Chromatogr. A*, 706 (1995) 375-383.
- 4234 Ōi, N., Kitahara, H. and Aoki, F.: Direct separation of carboxylic acid and amine enantiomers by high-performance liquid chromatography on reversed-phase silica gels coated with chiral copper(II) complexes. *J. Chromatogr. A*, 707 (1995) 380-383.
- 4235 Pilch, B. and Grill, D.: Determination of organic and inorganic sulfur by ion chromatography in small quantities of plant material. *J. Plant. Physiol.*, 146 (1995) 10-14; C.A., 123 (1995) 51399c.
- 4236 Polman, K.: A novel method for isolating and analyzing organic acids in biological cultures. *Appl. Biochem. Biotechnol.*, 51/52 (1995) 519-525; C.A., 122 (1995) 285800h.
- 4237 Saccani, G., Gherardi, S., Trifirò, A., Bordini, C.S., Calza, M. and Freddi, C.: Use of ion chromatography for the measurement of organic acids in fruit juices. *J. Chromatogr. A*, 706 (1995) 395-403.
- 4238 Stratford, M.R.L., Parkins, C.S., Everett, S.A., Dennis, M.F., Stubbs, M. and Hill, S.A.: Analysis of the acidic microenvironment in murine tumours by high-performance ion chromatography. *J. Chromatogr. A*, 706 (1995) 459-462.
- 4239 Tan, R.X., Wang, W.Z., Yang, L. and Wei, J.H.: A new eudesmonic acid from *Artemisia phaeolepsis*. *J. Natural Prod.*, 58 (1995) 288-290.
- 4240 Tanaka, K., Ohta, K., Fritz, J.S., Lee, Y.-S. and Shim, S.-B.: Ion-exclusion chromatography with conductimetric detection of aliphatic carboxylic acids on an H<sup>+</sup>-form cation-exchange resin column by elution with polyols and sugars. *J. Chromatogr. A*, 706 (1995) 385-393.
- 4241 Todd, J.S. and Gerwick, W.H.: Isolation of a cyclic carbonate, a  $\gamma$ -butyrolactone and a new indole derivative from the maine cyanobacterium *Lyngbya majuscula*. *J. Natural Prod.*, 58 (1995) 586-589.
- See also 3952, 4040, 4079, 4083, 4154, 4167, 4177, 4899, 4945, 4983, 4988, 4995, 5000.
- 11b. *Prostaglandins*
- 4242 Yang, Y., Griffiths, W.J., Lindgren, J.A. and Sjoevall, J.: Liquid chromatography/mass spectrometry with collision-induced dissociation of arachidonic acid metabolites derivatized with aminobenzenesulfonic acid. *Rapid Commun. Mass Spectrom.*, 9 (1995) 289-299; C.A., 122 (1995) 256500e.
- See also 4079.
- 11c. *Lipids and their constituents*
- 4243 Bergqvist, M.H.J. and Herslöf, B.G.: Isolation and purification of digalactosyldiacylglycerols. *Chromatographia*, 40 (1995) 129-133.
- 4244 Bertello, L.E., Goncalvez, M.F., Colli, W. and de Lederkremer, R.M.: Structural analysis of inositol phospholipids from *Trypanosoma cruzi* epimastigote forms. *Biochem. J.*, 310 (1995) 255-261.
- 4245 Cao, Y., Deng, H., Zhu, Q., Qian, Y. and Liu, L.: (Determination of the content of triglycerides in emulsion injections by HPLC using ELSD). *Yaowu Fenxi Zazhi*, 15 (1995) 38-40; C.A., 122 (1995) 222991a.
- 4246 El-Hamdy, A.H. and El-Fizga, N.K.: Detection of olive oil adulteration by measuring its authenticity factor using reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 708 (1995) 351-355.
- 4247 Nunez, A. and Piazza, G.J.: Analysis of lipoxygenase kinetics by high-performance liquid chromatography with a polymer column. *Lipids*, 30 (1995) 129-133; C.A., 122 (1995) 309632h.
- 4248 Ogiso, M., Okinaga, T., Ohta, M., Komoto, M. and Hoshi, M.: Identification and synthetic pathway of sialyl-Lewis<sup>x</sup>-containing neolacto-series gangliosides in lens tissues. 1. Characterization of gangliosides in human senile cataractous lens. *Biochim. Biophys. Acta*, 1256 (1995) 166-174.
- 4249 Ou, Z., Ogamo, A., Guo, L., Konda, Y., Harigaya, Y. and Nakagawa, Y.: Identification and quantitation of choline glycerophospholipids that contain aldehyde residues by fluorometric high-performance liquid chromatography. *Anal. Biochem.*, 227 (1995) 289-294.
- 4250 Redden, P.R., Lin, X., Fahey, J. and Horrobin, D.F.: Stereospecific analysis of the major triacylglycerol species containing  $\gamma$ -linolenic acid in Evening Primrose oil and borage oil. *J. Chromatogr. A*, 704 (1995) 99-111.
- 4251 Shears, S.B., Ali, N., Craxton, A. and Bembenek, M.E.: Synthesis and metabolism of bis-diphosphoinositol tetrakisphosphate *in vitro* and *in vivo*. *J. Biol. Chem.*, 270 (1995) 10489-10497.
- 4252 Surel, O., Ducruet, V., Famelart, M.H. and Lamberet, G.: (Quantification of lipids in low-fat dairy products with light-scattering detector). *Analisis*, 23 (1995) 31-34; C.A., 122 (1995) 313162x.
- 4253 Watanabe, K. and Nishiyama, M.: Characterization of a novel brain neutral glycosphingolipid composition in house musk shrew (*Suncus murinus*). *Eur. J. Biochem.*, 230 (1995) 971-976.

For additional information see C.A.:  
122 (1995) 285793h.

For additional information see C.A.:

- 122 (1995) 285770y;  
123 (1995) 28724w, 51326b.

See also 4217, 4685, 4891.

#### 11d. Lipoproteins and their constituents

See 4396.

### 12. ORGANIC PEROXIDES

- 4254 Qi, X. and Baldwin, R.P.: Liquid chromatography and electrochemical detection of organic peroxides by reduction at an iron phthalocyanine chemically modified electrode. *Electroanalysis*, 5 (1993) 547-554; C.A., 123 (1995) 24963a.

See also 4137.

### 13. STEROIDS

#### 13a. General techniques

- 4255 Komatsu, F., Morioka, M., Fujita, Y., Sugahara, K. and Kodama, H.: Determination of various steroids in normal adrenal glands and adrenocortical tumors by liquid chromatography/atmospheric pressure ionization mass spectrometry. *J. Mass Spectrom.*, 30 (1995) 698-702; C.A., 123 (1995) 1176g.

See also 4584, 4585.

#### 13b. Pregnane and androstane derivatives

- 4256 Choi, K.-P., Molnár, I., Yamashita, M. and Murooka, Y.: Purification and characterization of the 3-ketosteroid-A<sup>1</sup>-dehydrogenase of *Arthrobacter simplex* produced in *Streptomyces lividans*. *J. Biochem. (Tokyo)*, 117 (1995) 1043-1049.
- 4257 Dodds, H.M., Maguire, D.J., Mortimer, R.H., Addison, R.S. and Cannell, G.R.: High performance liquid chromatographic separation of cortisol, cortisone, and their 20-reduced metabolites in perfusion media. *J. Liq. Chromatogr.*, 18 (1995) 1809-1820.
- 4258 Gavrilin, M.V., Kompantseva, Ye.V. and Ushakova, L.S.: (Determination of corticosteroids in ointments by HPLC). *Farmatsiya (Moscow)*, 43 (1994) 64-65; C.A., 123 (1995) 41027r.
- 4259 Schrive, I., Dusseau, M., Freiermuth, M. and Plasse, J.C.: (Simple method for the determination of fluorocortisone and hydrocortisone in capsules). *J. Pharm. Clin.*, 13 (1994) 45-48; C.A., 123 (1995) 18042h.
- 4260 Shimada, K. and Nishimura, S.: Studies on neurosteroids. II. Retention behavior of derivatized 20-oxosteroids and their sulfates using high-performance liquid chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1691-1701.
- 4261 Wong, F.A., Juzwin, S.J., Tischio, N.S. and Flor, S.C.: Determination of norgestimate in serum by automated high-performance liquid chromatography and subsequent radioimmunoassay. *J. Liq. Chromatogr.*, 18 (1995) 1851-1861.

For additional information see C.A.:

- 123 (1995) 4822a.

See also 4737.

#### 13c. Estrogens

- 4262 Lamparczyk, H. and Zarzycki, P.K.: Effect of temperature on separation of estradiol stereoisomers and equilin by liquid chromatography using mobile phases modified with  $\beta$ -cyclodextrin. *J. Pharm. Biomed. Anal.*, 13 (1995) 543-549.
- 4263 Miller, R.B. and Chen, C.: A stability-indicating HPLC method for the determination of 17 $\beta$ -estradiol-3-phosphate in an ophthalmic solution. *Chromatographia*, 40 (1995) 204-206.

For additional information see C.A.:

- 122 (1995) 260192y.

See also 3950, 4858.

#### 13d. Sterols

- 4264 Arneth, W. and Al-Ahmad, H.: (Cholesterol. Determination in muscle adipose tissue, and offal by HPLC). *Fleischwirtschaft*, 75 (1995) 185-187; C.A., 123 (1995) 54383d.
- 4265 Chaves das Neves, H.J. and Gaspar, E.M.M.S.: HRGC-MS and HPLC-MS identification of new ketosterols in an extract of wheat straw. *J. High Resolut. Chromatogr.*, 18 (1995) 299-303.
- 4266 Guardiola, F., Codony, R., Rafecas, M. and Boatella, J.: (Analytical methods for oxysterol determination). *Grasas Aceites (Seville)*, 45 (1994) 164-192; C.A., 123 (1995) 51322x - a review with 84 refs.
- 4267 Guardiola, F., Codony, R., Rafecas, M. and Boatella, J.: Comparison of three methods for the determination of oxysterols in spray-dried egg. *J. Chromatogr. A*, 705 (1995) 289-304.
- 4268 Okazaki, M.: (Simultaneous measurements of total cholesterol and HDL-cholesterol by HPLC). *Kensa to Gijutsu*, 22 (1994) 1055-1061; C.A., 122 (1995) 260085r - a review with 11 refs.
- 4269 Szedlacsek, S.E., Wasowicz, E., Hulea, S.A., Nishida, H.I., Kummerow, F.A. and Nishida, T.: Esterification of oxysterols by human plasma lecithin-cholesterol acyltransferase. *J. Biol. Chem.*, 270 (1995) 11812-11819.

See also 4277.

#### 13e. Bile acids and alcohols

- 4270 Scalia, S., Giunchedi, P., Conte, U. and Pazzi, P.: Determination of the *in vitro* dissolution profiles ursodeoxycholic acid preparations by HPLC with online sample handling. *Arch. Pharm. (Weinheim)*, 328 (1995) 363-365; C.A., 122 (1995) 322347p.

#### 13f. Ecdysones and other insect steroid hormones

- 4271 Gildengorn, V.D., Tyukavin, Yu.A. and Volodin, V.V.: Preparative RP-HPLC of ecdysteroids. *Eur. J. Entomol.*, 92 (1995) 285; C.A., 122 (1995) 285771z.

- 4272 Pis, J., Girault, J.-P., Grau, V. and Lafont, R.: Analysis of ecdysteroid conjugates: chromatographic characterization of sulfates, phosphates and glucosides. *Eur. J. Entomol.*, 92 (1995) 41-50; C.A., 123 (1995) 28712r.

13g. Other steroids

- 4273 Iorizzi, M., Bryan, P., McClintock, J., Minale, L., Palgiano, E., Maurelli, S., Riccio, R. and Zollo, F.: Chemical and biological investigation of the polar constituents of the starfish *Luidia clathrata*, collected in the gulf of Mexico. *J. Natural Prod.*, 58 (1995) 653-671.

14. STEROID GLYCOSIDES AND SAPONINS

- 4274 Gil, R.G., Lin, L.-Z., Chai, H.-B., Pezzuto, J.M. and Cordell, G.A.: Cardenolides from *Nierembergia aristata*. *J. Natural Prod.*, 58 (1995) 848-856.

For additional information see C.A.:

122 (1995) 222994d, 299188b.

See also 4276.

15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

15a. Terpenes

- 4275 Andrisano, V., Bonazzi, D. and Cavrini, V.: HPLC analysis of liquorice triterpenoids - applications to the quality control of pharmaceuticals. *J. Pharm. Biomed. Anal.*, 13 (1995) 597-605.
- 4276 Chaboud, A., Rougny, A., Proliac, A., Raynaud, J. and Cabalion, P.: A new triterpenoid saponin from *Polyscias fructicosa*. *Pharmazie*, 50 (1995) 371.
- 4277 Fliesler, S.J. and Keller, R.K.: Metabolism of [<sup>3</sup>H]farnesol to cholesterol and cholesterologenic intermediates in the living rat eye. *Biochem. Biophys. Res. Commun.*, 210 (1995) 695-702.
- 4278 Marner, F.-J. and Kasel, T.: Biomimetic synthesis of iridal skeleton. *J. Natural Prod.*, 58 (1995) 319-323.
- 4279 Rodríguez, A.D., González, E. and González, C.: Additional dolabellane diterpenes from the Caribbean gorgonian octocoral *Eunicea laciniata*. *J. Natural Prod.*, 58 (1995) 226-232.

See also 4888.

15b. Essential oils

- 4280 Denayer, R. and Tilquin, B.: (Determination of retention indexes of essential oil components). *Riv. Ital. EPPOS*, 5 (1994) 7-12; C.A., 122 (1995) 247999x.

See also 4121.

16. NITRO AND NITROSO COMPOUNDS

- 4281 Breitkopf, K.: (Safe nitrate determination). *LaborPraxis*, 18 (1994) 64-66; C.A., 122 (1995) 247745m.
- 4282 Yamauchi, S.: Nitrobenzenes in reversed-phase liquid chromatography. New candidates for internal standards. *J. Chromatogr. A*, 704 (1995) 323-328.

For additional information see C.A.:

123 (1995) 36609c.

See also 3985, 4008.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17a. Amines and polyamines

- 4283 Achilli, G., Perego, C., Ponzio, E.F. and Montico, T.D.: (Use of a double electrode coulometric detectors for determining monoamines and their derivatives). *Spectra Anal.*, 23 (1994) 59-63; C.A., 122 (1995) 260330s.
- 4284 Bauza, T., Blaise, A., Daumas, F. and Cabanis, J.C.: Determination of biogenic amines and their precursor amino acids in wines of the Vallée du Rhône by high-performance liquid chromatography with precolumn derivatization and fluorimetric detection. *J. Chromatogr. A*, 707 (1995) 373-379.
- 4285 Bergens, A. and Danielsson, R.: Decomposition of diphenylamine in nitrocellulose based propellants-I. Optimization of a numerical model to concentration-time data for diphenylamine and its primary degradation products determined by liquid chromatography with dual-amperometric detection. *Talanta*, 42 (1995) 171-183; C.A., 122 (1995) 294733r.
- 4286 Busto, O., Mestres, M., Guasch, J. and Borrell, F.: Determination of biogenic amines in wine after clean-up by solid-phase extraction. *Chromatographia*, 40 (1995) 404-410.
- 4287 Fujihara, S., Abe, H. and Yoneyama, T.: A new polyamine 4-aminobutylcadaverine. Occurrence and its biosynthesis in root nodules of adzuki bean plant *Vigna angularis*. *J. Biol. Chem.*, 270 (1995) 9932-9938.
- 4288 Lehotay, J., Hatrick, S. and Motosicka, A.: Trace analysis of ethanolamine in water using ion pair chromatography with on-line preconcentration. *J. Liq. Chromatogr.*, 18 (1995) 1647-1654.
- 4289 Leroy, P., Barbaras, M., Colin, J.L. and Nicolas, A.: Ion-exchange liquid chromatography method with indirect UV detection for the assay of choline in pharmaceutical preparations. *J. Pharm. Biomed. Anal.*, 13 (1995) 581-588.
- 4290 Liang, L., Cai, B., Tao, J. and Yang, C.: (Determination of *p*-aminophenol in urine by reversed-phase high performance liquid chromatography (RP-HPLC)). *Sepu*, 13 (1995) 229-230; C.A., 123 (1995) 27326f.
- 4291 Muskiet, F.A.J., Dorhout, B., van den Berg, G.A. and Hessels, J.: Investigation of polyamine metabolism by high-performance liquid chromatographic and gas chromatographic profiling methods. *J. Chromatogr. B*, 667 (1995) 189-198 - a review with 51 refs.



- 4292 Peyrin, L., Cottet-Emard, J.M., Pagliari, R., Cottet-Emard, R.M., Badet, C. and Mornex, R.: (Measurement of plasma methoxyamines: a practical advance in the diagnosis of pheochromocytoma). *Pathol. Biol.*, 42 (1994) 847-854; *C.A.*, 123 (1995) 25797m.
- 4293 Riley, C.M., Stobaugh, J.F. and Lunte, S.M.: Novel approaches to the liquid chromatographic analysis of primary amines, amino acids and peptides. *Prog. Pharm. Biomed. Anal.*, 1 (1994) 41-89; *C.A.*, 122 (1995) 222972v - a review with refs.
- 4294 Schenkel, E., Berlaumont, V., Dubois, J., Helson-Cambier, M. and Hanocq, M.: Improved high-performance liquid chromatographic method for the determination of polyamines as their benzoylated derivatives: application to P388 cancer cells. *J. Chromatogr. B*, 668 (1995) 189-197.
- 4295 Veciana-Nogues, M.T., Hernandez-Jover, T., Marine-Font, A. and Vidal-Carou, M. del C.: Liquid chromatographic method for determination of biogenic amines in fish and fish products. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 1045-1050.

For additional information see C.A.:

- 122 (1995) 285834x;  
123 (1995) 4837j.

See also 3924, 3967, 3974, 4083, 4085, 4234, 4894.

17b. *Catecholamines and their metabolites*

- 4296 Camanas, R.M.V., Mallols, J.M.S., Lapasio, J.R.T. and Ramis-Ramos, G.: Analysis of pharmaceutical catecholamines by micellar liquid chromatography with spectrophotometric detection. *Analyst (Cambridge)*, 120 (1995) 1767-1772.
- 4297 Cui, Y., Fu, Y., Li, Y. and Peng, B.: (Assay of 5-hydroxytryptamine in the dental pulp of white rat using ion-pair reversed-phase HPLC). *Sepu*, 13 (1995) 231-233; *C.A.*, 123 (1995) 28733y.
- 4298 Lindner, K.-J., Hartig, P., Tedroff, J., Ljungström, A., Bjurling, P. and Långström, B.: Liquid chromatographic analysis of brain homogenates and microdialysates for the quantification of L-[<sup>3</sup>H]-DOPA and its metabolites for the validation of positron emission tomography studies. *J. Pharm. Biomed. Anal.*, 13 (1995) 361-367.
- 4299 Ragab, G.H., Nohta, H., Kai, M., Ohkura, Y. and Zaitso, K.: 1,2-Diarylethylenediamines as sensitive pre-column derivatizing reagents for chemiluminescence detection of catecholamines in HPLC. *J. Pharm. Biomed. Anal.*, 13 (1995) 645-650.
- 4300 Scheuer, R. and Roedel, W.: (Determination of biogenic amines in fermented meat products). *Fleischwirtschaft*, 75 (1995) 73-75; *C.A.*, 123 (1995) 31513g.

See also 4222.

17c. *Urea and guanidine derivatives*

- 4301 Hung, J.C. and Wilson, M.E.: Rapid radiochemical purity testing for (<sup>131</sup>I)m-iodobenzylguanidine. *Nucl. Med. Biol.*, 22 (1995) 227-229; *C.A.*, 122 (1995) 274209w.
- 4302 Matsudo, T. and Sasaki, M.: Determination of urea and citrulline in fermented foods and beverages. *Biosci., Biotechnol., Biochem.*, 59 (1995) 827-830; *C.A.*, 123 (1995) 8154g.

See also 4928.

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

See 3945.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

18a. *Amino acids and their derivatives*

- 4303 Carratù, B., Boniglia, C. and Bellomonte, G.: Optimization of the determination of amino acids in parenteral solutions by high-performance liquid chromatography with precolumn derivatization using 9-fluorenylmethyl chloroformate. *J. Chromatogr. A*, 708 (1995) 203-208.
- 4304 Cavalli, S. and Cardellicchio, N.: Direct determination of seleno-amino acids in biological tissues by anion-exchange separation and electrochemical detection. *J. Chromatogr. A*, 706 (1995) 429-436.
- 4305 Cayol, M., Capitan, P., Prugnaud, J., Genest, M., Beaufriere, B. and Obled, C.: Cation-exchange resins release amino acids: consequences for tracer studies. *Anal. Biochem.*, 227 (1995) 392-394.
- 4306 Cumiskey, W.R., Pagani, E.D. and Bode, D.C.: Enrichment and analysis of desmosine and isodesmosine in biological fluids. *J. Chromatogr. B*, 668 (1995) 199-207.
- 4307 Fekkes, D., van Dalen, A., Edelman, M. and Voskuilen, A.: Validation of the determination of amino acids in plasma by high-performance liquid chromatography using automated pre-column derivatization with o-phthaldialdehyde. *J. Chromatogr. B*, 669 (1995) 177-186.
- 4308 Hata, K., Miura, M., Fukumoto, S. and Matsumoto, T.: Assay of serum pyridinoline: a potential marker for bone resorption. *Clin. Chim. Acta*, 235 (1995) 221-227.
- 4309 Joergensen, L. and Thestrup, H.N.: Determination of amino acids in biomass and protein samples by microwave hydrolysis and ion-exchange chromatography. *J. Chromatogr. A*, 706 (1995) 421-428.
- 4310 Johnson, J.L. and Rajagopalan, K.V.: An HPLC assay for detection of elevated urinary S-sulfocysteine, a metabolic marker of sulfite oxidase deficiency. *J. Inherited Metab. Dis.*, 18 (1995) 40-47; *C.A.*, 123 (1995) 4832d.
- 4311 Kim, D.-H. and Garcia, A.A.: Retention behavior of amino acids using immobilized Ag(I) chromatography. *Biotechnol. Prog.*, 11 (1995) 465-467; *C.A.*, 123 (1995) 51400w.
- 4312 Kitakawa, A., Yonemoto, T. and Tadaki, T.: A mathematical model for the separation of amino acids using ion exchange chromatography. *Food Bioprod. Process.*, 72 (1994) 201-208; *C.A.*, 122 (1995) 289242a.
- 4313 Kozarenko, T.D., Seredkova, S.V. and Yushchishina, L.I.: Method for chromatographic analysis of mixture of amino acids and peptides. *Russ. RU 2,024,864 (Cl. G01N30/06)*, 15 Dec. 1994, SU Appl. 4,949,496, 26 Jun. 1991; *C.A.*, 123 (1995) 47102h.

- 4314 Lindner, K.-J., Hartvig, P., Tyrefors, N., Hedlund, C. and Lågström, B.: An automated liquid chromatographic plasma analysis of amino acids used in combination with positron emission tomography (PET) for determination of *in vivo* plasma kinetics. *J. Pharm. Biomed. Anal.*, 13 (1995) 353-359.
- 4315 Liu, H.J., Chang, Y., Yan, H.W., Yu, F.H. and Liu, X.X.: Determination of amino acids in food and feed by derivatization with 6-aminoquinolyl-N-hydroxysuccinimidyl carbamate and reversed-phase liquid chromatographic separation. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 736-748.
- 4316 Masako, I., Hamano, Y. and Ganno, S.: (Enantiomer separation of prelabelled amino acids by reverse phase packing materials). *Kuromatogurafi*, 15 (1994) 84-85; *C.A.*, 122 (1995) 255023q.
- 4317 Mikhalkin, A.P. and Vlasov, V.N.: Correlation between parameters of hydrophobic and colloidal properties of N-acylamino acids and their salts. *Kolloidn. Zh.*, 57 (1995) 56-60; *C.A.*, 122 (1995) 323193x.
- 4318 Nakajima, K., Ohta, K. and Takada, T.: Study on the vaporisation of sulphur-containing amino acids in a hydrogen flame by use of molecular emission cavity analysis and liquid chromatography. *Anal. Chim. Acta*, 309 (1995) 163-168.
- 4319 Péter, A., Tóth, G., Olajos, E., Fülöp, F. and Tourwé, D.: Monitoring of optical isomers of some conformationally constrained amino acids with tetrahydroisoquinoline or tetraline ring structures. Part II. *J. Chromatogr. A*, 705 (1995) 257-265.
- 4320 Pomilio, A.B.: (Amino acid separation using high-resolution liquid chromatography) *Acta Bioquim. Clin. Latinoam.*, 28 (1994) 527-554; *C.A.*, 123 (1995) 51318a - a review with 73 refs.
- 4321 Shang, Z.-H., Yu, Y.-N., Guo, W., Jiang, H. and Zhou, L.-M.: Sensitive analysis of amino acids in injection liquor by reverse-phase HPLC. *Chin. J. Chem.*, 13 (1995) 163-168; *C.A.*, 122 (1995) 274197r.
- 4322 Smolders, I., Sarre, S., Michotte, Y. and Ebinger, G.: The analysis of excitatory, inhibitory and other amino acids in rat brain microdialysates using microbore liquid chromatography. *J. Neurosci. Methods*, 57 (1995) 47-53; *C.A.*, 122 (1995) 282394t.
- 4323 Swart, R., Kraak, J.C. and Poppe, H.: Highly efficient separations on 5 µm internal diameter open tubular capillaries coated with thick polyacrylate stationary phases. *Chromatographia*, 40 (1995) 587-593.
- 4324 Takeuchi, T. and Miwa, T.: Fluorescence enhancement of dansylamino acids by bovine serum albumin as mobile phase additive in microcolumn liquid chromatography. *Chromatographia*, 40 (1995) 159-162.
- 4325 Takeuchi, T. and Miwa, T.: Fluorimetric detection of dansyl amino acids by packed flow cell in liquid chromatography. *Chromatographia*, 40 (1995) 545-549.
- 4326 Vogt, C., Georgi, A. and Werner, G.: Enantiomeric separation of D/L-carnitine using HPLC and CZE after derivatization. *Chromatographia*, 40 (1995) 287-295.
- 4327 Wu, Y.C., Monnier, V. and Friedlander, M.: Reliable determination of furosine in human serum and dialysate proteins by high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 328-332.
- See also 4080, 4085, 4293, 4302, 4328, 4334, 4350, 4361, 4364.
- 18b. *Peptides, peptidic and proteinous hormones, growth factors*
- 4328 Brückner, H. and Lüpke, M.: Derivatisation of DL-amino acids by urethane-protected  $\alpha$ -amino acid N-carboxyanhydrides for separation by LC. *Chromatographia*, 40 (1995) 601-606.
- 4329 Cardamone, M., Puri, N.K. and Brandon, M.R.: Comparing the refolding and reoxidation of recombinant porcine growth hormone from a urea denatured state and from *Escherichia coli* inclusion bodies. *Biochemistry*, 34 (1995) 5773-5794.
- 4330 Chadwick, M.P., May, F.E.B. and Westley, B.R.: Production and comparison of mature single-domain "trefoil" peptides pNR-2/pS2 Cys<sup>58</sup> and pNR-2/pS2 Ser<sup>58</sup>. *Biochem. J.*, 308 (1995) 1001-1007.
- 4331 Chang, J., Schindler, P., Ramsier, U. and Lai, P.: The disulfide folding pathway of human epidermal growth factor. *J. Biol. Chem.*, 270 (1995) 9207-9216.
- 4332 Chen, H. and Horváth, Cs.: High-speed high-performance liquid chromatography of peptides and proteins. *J. Chromatogr. A*, 705 (1995) 3-20 - a review with 62 refs.
- 4333 Chen, J.-G., Vinski, E., Colizza, K. and Weber, S.G.: Optimization of a modified electrode for the sensitive and selective detection of  $\alpha$ -dipeptides. *J. Chromatogr. A*, 705 (1995) 171-184.
- 4334 Cui, H., Leon, J., Reusset, E. and Bult, A.: Selective determination of peptides containing specific amino acid residues by high-performance liquid chromatography and capillary electrophoresis. *J. Chromatogr. A*, 704 (1995) 27-36 - a review with 51 refs.
- 4335 Forood, B., Perez-Paya, E., Houghten, R.A. and Blondelle, S.E.: Formation of an extremely stable polyalanine  $\beta$ -sheet macromolecule. *Biochem. Biophys. Res. Commun.*, 211 (1995) 7-13.
- 4336 Francis, G.L., Regester, G.O., Webb, H.A. and Ballard, F.J.: Extraction from cheese whey by cation-exchange chromatography of factors that stimulate the growth of mammalian cells. *J. Dairy Sci.*, 78 (1995) 1209-1218; *C.A.*, 123 (1995) 48017w.
- 4337 Galanopoulou, A.S., Seidah, N.G. and Patel, Y.C.: Direct role of furin in mammalian prosomatostatin processing. *Biochem. J.*, 309 (1995) 33-40.
- 4338 Goodlett, D.R., Abuaf, P.A., Savage, P.A., Kowalski, K.A., Mukherjee, T.K., Tolan, J.W., Corkum, N., Goldstein, G. and Crowther, J.B.: Peptide chiral purity determination: hydrolysis in deuterated acid, derivatization with Marfey's reagent and analysis using high-performance liquid chromatography-electrospray ionization-mass spectrometry. *J. Chromatogr. A*, 707 (1995) 233-244.
- 4339 Hendy, G.N., Bennett, H.P.J., Gibbs, B.F., Lazure, C., Day, R. and Seidah, N.G.: Parathyroid hormone is preferentially cleaved to parathyroid hormone by the prohormone convertase furin. A mass spectrometric study. *J. Biol. Chem.*, 270 (1995) 9517-9525.
- 4340 Herraiz, T. and Casal, V.: Evaluation of solid-phase extraction procedures in peptide analysis. *J. Chromatogr. A*, 708 (1995) 209-221.

For additional information see *C.A.*:

- 122 (1995) 289192j;  
123 (1995) 54391e.

- 4341 Herraiz, T., Casal, V. and Polo, M.C.: Reversed-phase HPLC analysis of peptides in standard and dairy samples using online absorbance and post-column OPA-fluorescence detection. *Z. Lebensm.-Unters. Forsch.*, 199 (1994) 265-269; *C.A.*, 123 (1995) 31459u.
- 4342 Jansen, J.M., Copinga, S., Gruppen, G., Isaksson, R., Witte, D.T. and Grol, C.J.: Semipreparative enantiomeric separation of a series of putative melatonin receptor agents using triacetyl cellulose as chiral stationary phase. *Chirality*, 6 (1994) 596-604; *C.A.*, 122 (1995) 223004t.
- 4343 Kassel, D.B., Green, M.D., Wehbie, R.S., Swanstrom, R. and Berman, J.: HIV-1 protease specificity derived from a complex mixture of synthetic substrates. *Anal. Biochem.*, 228 (1995) 259-266.
- 4344 Knight, M., Fagarasan, M.O., Takahashi, K., Geblaoui, A.Z., Ma, Y. and Ito, Y.: Separation and purification of peptides by high-speed counter-current chromatography. *J. Chromatogr. A*, 702 (1995) 207-214.
- 4345 Kubo, H., Tsujimura, A., Toriba, A. and Kinoshita, T.: Ultraviolet detection of peptides by reversed-phase liquid chromatography using an in-line reactor containing copper metal. *Anal. Chim. Acta*, 309 (1995) 169-172.
- 4346 Kukman, I.L., Zelenik-Blatnik, M. and Abram, V.: Isolation of low-molecular-mass hydrophobic bitter peptides in soybean protein hydrolysates by reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 113-120.
- 4347 Ma, Y. and Ito, Y.: Separation of peptide derivatives by pH-zone-refining countercurrent chromatography. *J. Chromatogr. A*, 702 (1995) 197-206.
- 4348 Nakazato, M., Shiomi, K., Date, Y., Matsukura, S., Kongawa, K., Minamino, N. and Matsuo, H.: Isolation and sequence determination of 6- and 8-kDa precursors of human neutrophil peptides from bone marrow, plasma and peripheral blood neutrophils. *Biochem. Biophys. Res. Commun.*, 211 (1995) 1053-1062.
- 4349 Nylander, I., Tan-No, K., Winter, A. and Silberring, J.: Processing of prodynorphin-derived peptides in striatal extracts. Identification by electrospray ionization mass spectrometry linked to size-exclusion chromatography. *Life Sci.*, 57 (1995) 123-129; *C.A.*, 123 (1995) 1469e.
- 4350 O'Callaghan, D.M., Donnelly, W.J., Slattery, H.M. and Mulvihill, D.M.: Non-size exclusion effects during gel permeation chromatography of milk protein hydrolysates on an FPLC Superose 12 column. *J. Liq. Chromatogr.*, 18 (1995) 1543-1562.
- 4351 Partilla, J.S., You, J. and Rothman, R.B.: High-performance liquid chromatographic resolution of synthetic opiate and "antio-piate" peptides from human plasma. *J. Chromatogr. B*, 667 (1995) 49-56.
- 4352 Péter, A., Tóth, G., Olajos, E. and Tourwé, D.: Chromatographic behaviour of opioid peptides containing  $\beta$ -methylphenylalanine isomers. *J. Chromatogr. A*, 705 (1995) 267-273.
- 4353 Saito, T., Kawabata, S.-i., Shigenaga, T., Takayenoki, Y., Cho, J., Nakajima, H., Hirata, M. and Iwanaga, S.: A novel big defensin identified in horseshoe crab hemocytes: isolation, amino acid sequence, and antibacterial activity. *J. Biochem. (Tokyo)*, 117 (1995) 1131-1137.
- 4354 Siddiqui, M.Z., Sharma, A.K., Kumar, S., Kumar, A. and Bhat, P.N.: Single-step bulk purification of synthetic tetrapeptide tuftsin by high performance liquid chromatography. *Indian J. Biochem. Biophys.*, 32 (1995) 55-59; *C.A.*, 122 (1995) 222800n.
- 4355 Strege, M.A. and Lagu, A.L.: Analysis of recombinant human growth hormone in *Escherichia coli* fermentation broth by micellar high-performance liquid chromatography. *J. Chromatogr. A*, 705 (1995) 155-161.
- 4356 Suzuki, S., One, Y., Okubo, T., Takegawa, T. and Takemoto, K.: Isolation and characterization of novel antimicrobial peptides, rugosins A, B and C, from the skin of the frog, *Rana nigosa*. *Biochem. Biophys. Res. Commun.*, 212 (1995) 249-254.
- 4357 Xiao, S., Pollock, H.G., Taugog, A. and Rawitch, A.B.: Characterization of hormonogenic sites in an N-terminal, cyanogen bromide fragment of human thyroglobulin. *Arch. Biochem. Biophys.*, 320 (1995) 96-105.
- 4358 Yang, C.-S., Tsai, P.-J., Chen, W.-Y., Liu, L. and Kuo, J.-S.: Determination of extracellular glutathione in livers of anaesthetized rats by microdialysis with on-line high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 41-48.
- 4359 Zhao, Q., Garreau, I., Sannier, F. and Piot, J.M.: Identification of hemorphins from bovine hemoglobin hydrolysate: application of UV second order derivative spectroscopy. *J. Liq. Chromatogr.*, 18 (1995) 1077-1092.

For additional information see *C.A.*:  
123 (1995) 1172c.

See also 3954, 4293, 4313, 4367, 4373, 4527.

#### 18c. Elucidation of structure of proteins and enzymes

- 4360 Ashton, R.W. and Scheraga, H.A.: Preparation and characterization of anhydrothrombin. *Biochemistry*, 34 (1995) 6454-6463.
- 4361 Bailey, J.M.: Chemical methods of protein sequence analysis. *J. Chromatogr. A*, 705 (1995) 47-65 - a review with 117 refs.
- 4362 Chang, J., Schindler, P. and Chatrenet, B.: The disulfide structures of scrambled hirudins. *J. Biol. Chem.*, 270 (1995) 11992-11997.
- 4363 Gan, Q., Witkop, G.L., Sloane, D.L., Straub, K.M. and Sigal, E.: Identification of a specific methionine in mammalian 15-lipoxygenase which is oxygenated by the enzyme product 13-HPODE: dissociation of sulfoxide formation from self-inactivation. *Biochemistry*, 34 (1995) 7069-7079.
- 4364 Jhee, K.-H., Yoshimura, T., Esaki, N., Yonaha, K. and Soda, K.: Thermostable ornithine aminotransferase from *Bacillus* sp. YM-2: purification and characterization. *J. Biochem. (Tokyo)*, 118 (1995) 101-108.
- 4365 King, S.M. and Patel-King, R.S.: The  $M_r = 8,000$  and  $11,000$  outer arm dynein light chains from *Chlamydomonas flagella* have cytoplasmic homologues. *J. Biol. Chem.*, 270 (1995) 11445-11452.
- 4366 Laeng, P., Bouillon, P., Taupenot, L. and Labourdette, G.: Long-term induction of an aldose reductase protein by basic fibroblast growth factor in rat astrocytes *in vitro*. *Electrophoresis (Weinheim)*, 16 (1995) 1240-1250.

- 4367 Li, S., Hguyen, T.H., Schöneich, Ch. and Borchardt, R.T.: Aggregation and precipitation of human relaxin induced by metal-catalyzed oxidation. *Biochemistry*, 34 (1995) 5762-5772.
- 4368 Matsumoto, N., Kita, K., Kojima, S., Yamamoto, K., Irimura, T., Miyagi, M., Tsunasawa, S. and Toyoshima, S.: Lymphocyte isoforms of mouse p50 LSP1, which are phosphorylated in mitogen-activated T cells, are formed through alternative splicing and phosphorylation. *J. Biochem. (Tokyo)*, 118 (1995) 237-243.
- 4369 Miller, C.G., Hawke, D.H., Tso, J. and Early, S.: Automated C-terminal protein sequence analysis using the Hewlett-Packard G1009 A C-terminal protein sequencing system. In: Crabb, J.W. (Editor), *Tech. Protein Chem. VI, [Pap. Symp. Protein Soc.]*, 8th 1994, Academic, San Diego, 1995, pp. 219-227; C.A., 123 (1995) 51377u.
- 4370 Momoi, T., Suzuki, M., Titani, K., Hisanaga, S., Ogawa, H. and Saito, A.: Amino acid sequence of a modified  $\beta$ 2-microglobulin in renal failure patient urine and long-term dialysis patient blood. *Clin. Chim. Acta*, 236 (1995) 135-144.
- 4371 Reid, G.E., Ji, H., Eddes, J.S., Moritz, R.L. and Simpson, R.J.: Nonreducing two-dimensional polyacrylamide gel electrophoretic analysis of human colonic proteins. *Electrophoresis (Weinheim)*, 16 (1995) 1120-1130.
- 4372 Rohde, M.F., Clogston, C., Merewether, L.A., Derby, P. and Nugent, K.D.: Protein sequence analysis using microbore PTH separations. In: Crabb, J.W. (Editor), *Tech. Protein Chem. VI, [Pap. Symp. Protein Soc.]*, 8th 1994, Academic, San Diego, 1995, pp. 201-208; C.A., 123 (1995) 28716v.
- 4373 Rothenberg, M.E., Eilertson, C.D., Klein, K., Zhou, Y., Lindberg, I., McDonald, J.K., Mackin, R.B. and Noe, B.D.: Processing of mouse proglucagon by recombinant prohormone convertase 1 and immunopurified prohormone convertase *in vitro*. *J. Biol. Chem.*, 270 (1995) 10136-10146.
- 4374 Touzet, P., Morin, C., Damerval, C., le Guilloux, M., Zivy, M. and de Vienne, D.: Characterizing allelic proteins for genome mapping in maize. *Electrophoresis (Weinheim)*, 16 (1995) 1289-1294.
- See also 4340, 4425, 4426, 4460.
19. PROTEINS
- 19a. General techniques
- 4375 Bian, L. and Geng, X.: (Studies on the methods of increasing solute concentration in determination of adsorption isotherms of proteins with frontal chromatography). *Sepu*, 13 (1995) 174-177; C.A., 123 (1995) 28730v.
- 4376 Gallant, S.R., Kundu, A. and Cramer, S.M.: Modeling non-linear elution of proteins in ion-exchange chromatography. *J. Chromatogr. A*, 702 (1995) 125-142.
- 4377 Himmel, M.E., Baker, J.O. and Mitchell, D.J.: Size exclusion chromatography of proteins. *Chromatogr. Sci. Ser.*, 69 (1995) 409-428; C.A., 123 (1995) 51305u - a review with 74 refs.
- 4378 Jacob, L.: (Biochromatography, Part 2). *CLB Chem. Labor. Biotech.*, 45 (1994) 483-485; C.A., 122 (1995) 285669x - a review with 3 refs.
- 4379 Jayaraman, G., Li, Y.-F., Moore, J.A. and Cramer, S.M.: Ion-exchange displacement chromatography of proteins. Dendritic polymers as novel displacers. *J. Chromatogr. A*, 702 (1995) 143-155.
- 4380 Jennings, L.S., Teo, K.L., Wang, F.Y. and Yu, Q.: Optimal protein separation. *Comput. Chem. Eng.*, 19 (1995) 567-573; C.A., 122 (1995) 217376z.
- 4381 Kassel, D.B., Consler, T.G., Shalaby, M., Sekhri, P., Gordon, N. and Nadler, T.: Direct coupling of an automated 2-dimensional microcolumn affinity chromatography-capillary HPLC system with mass spectrometry for biomolecule analysis. In: Crabb, J.W. (Editor), *Tech. Protein Chem. VI, [Pap. Symp. Protein Soc.]*, 8th 1994, Academic, San Diego, 1995, pp. 39-46; C.A., 123 (1995) 28714t.
- 4382 Lee, W.-C., Lin, C.-H., Ruaan, R.-C. and Hsu, K.-Y.: High-performance affinity chromatography of proteins on non-porous polystyrene beads. *J. Chromatogr. A*, 704 (1995) 307-314.
- 4383 Li, Y. and Pinto, N.G.: Model for ion-exchange equilibria of macromolecules in preparative chromatography. *J. Chromatogr. A*, 702 (1995) 113-123.
- 4384 Miles, D. and Garcia, A.A.: Separation of biotin labeled proteins from their unlabeled counterparts using immobilized platinum affinity chromatography. *J. Chromatogr. A*, 702 (1995) 173-189.
- 4385 Nguyen, D.N., Becker, G.W. and Riggin, R.M.: Protein mass spectrometry: applications to analytical biotechnology. *J. Chromatogr. A*, 705 (1995) 21-45 - a review with 112 refs.
- 4386 Rohrer, J., Thayer, J., Avdalovic, N. and Weitzhandler, M.: HPAEC-PAD analysis of monoclonal antibody glycosylation. In: Crabb, J.W. (Editor), *Tech. Protein Chem. VI, [Pap. Symp. Protein Soc.]*, 8th 1994, Academic, San Diego, 1995, pp. 65-73; C.A., 123 (1995) 53743j.
- 4387 Tharakan, J. and Belizaire, M.: Ligand efficiency in axial and radial flow immunoaffinity chromatography of factor IX. *J. Chromatogr. A*, 702 (1995) 191-196.
- 4388 Thoenes, J. and Kula, M.-R.: Membrane chromatography - an integrative concept in the downstream processing of proteins. *Biotechnol. Prog.*, 11 (1995) 357-367; C.A., 123 (1995) 54168n - a review with 10 refs.
- 4389 Toowns, J.K.: Moisture content in proteins: its effects and measurement. *J. Chromatogr. A*, 705 (1995) 115-127 - a review with 46 refs.
- 4390 Wu, D.-R. and Greenblatt, H.C.: Effect of stationary phase on preparative protein separation in reversed-phase chromatography. *J. Chromatogr. A*, 702 (1995) 157-162.
- See also 3928, 3999, 4016, 4055, 4093, 4101, 4332, 4398, 4399, 4402, 4418, 4714, 4960.
- 19b. Proteins of cells, viruses and subcellular particles
- 4391 Costa, L., Moya, G., Gonzalez, E.M., Caballero, A., Falcon, V. and Vega, M.: (Determination of purity and molecular homogeneity of recombinant hepatitis B virus surface antigen by gel filtration HPLC). *Biotechnol. Appl.*, 11 (1994) 86-90; C.A., 123 (1995) 18018e.

- 4392 Kil, S.-J., Oleksa, L.M., Landis, G.C. and Sanders, C.R., II.: Progress in the development of solvent and chromatography systems appropriate for bitopic membrane proteins. In: Crabb, J.W. (Editor), *Tech. Protein Chem. VI, [Pap. Symp. Protein Soc.]*, 8th 1994, Academic, San Diego, 1995, pp. 301-310; C.A., 123 (1995) 4827f.
- 4393 Kuwana, T., Mullock, B.M. and Luzio, J.P.: Identification of a lysosomal protein causing lipid transfer, using a fluorescence assay designed to monitor membrane fusion between rat liver endosomes and lysosomes. *Biochem. J.*, 308 (1995) 937-946.
- 4394 Lu, H.S., Chang, D., Brankow, D. and Wen, D.: Detection of neu differentiation factor with a biospecific affinity sensor during chromatography. *J. Chromatogr. A*, 705 (1995) 163-169.
- 4395 Svensson, L.T., Wilcke, M. and Alexson, S.E.H.: Peroxisome proliferators differentially regulate long-chain acyl-CoA thioesterases in rat liver. *Eur. J. Biochem.*, 230 (1995) 813-820.

For additional information see C.A.:  
122 (1995) 274036n.

See also 4371, 4464.

19c. *Proteins synthesized by genetic manipulation, monoclonal antibodies*

- 4396 Abumiya, T., Enyoji, E.-i., Kokawa, T., Karnikubo, Y.-i. and Kato, H.: An anti-tissue factor pathway inhibitor (TFPI) monoclonal antibody recognized the third Kunitz domain (K3) of free-form TFPI but not lipoprotein-associated forms in plasma. *J. Biochem. (Tokyo)*, 118 (1995) 178-182.
- 4397 Calero, M., Méndez, E. and García, E.: Expression of the human complex-forming glycoprotein HC ( $\alpha$ 1-microglobulin) in *Escherichia coli*. *Biochim. Biophys. Acta*, 1249 (1995) 91-99.
- 4398 Harris, R.J.: Processing of C-terminal lysine and arginine residues of proteins isolated from mammalian cell culture. *J. Chromatogr. A*, 705 (1995) 129-134 - a review with 28 refs.
- 4399 Le Borgne, S., Graber, M. and Condoret, J.S.: Experimental and theoretical analysis of the chromatographic behavior of protein purification fusions carrying charged tails. *Bioseparation*, 5 (1995) 53-64; C.A., 123 (1995) 4834f.
- 4400 Moya, G., Costa, L. and Gonzalez, E.: (Studies on the preparation of recombinant human interferon  $\alpha$  2B by reverse phase liquid chromatography method validation) *Biotechnol. Appl.*, 11 (1994) 64-67; C.A., 123 (1995) 51378v.
- 4401 Perez, L., Lopez, S., Beldarrain, A., Arenal, D. and Penton, E.: Purification of recombinant hepatitis B surface antigen (re-HBsAg) from *P. pastoris*: A process development study. In: Galindo, E. and Ramirez, O.T. (Editors), *Adv. Bioprocess Eng.*, Kluwer, Dordrecht, 1994, pp. 527-534; C.A., 122 (1995) 263662n.
- 4402 Vola, R., Lombardi, A., Tarditi, L., Björck, L. and Mariani, M.: Recombinant proteins L and LG: efficient tools for purification of murine immunoglobulin G fragments. *J. Chromatogr. B*, 668 (1995) 209-218.

For additional information see C.A.:  
123 (1995) 1177h.

See also 4355, 4444, 4458, 4714.

19d. *Microbial and plant proteins*

- 4403 Boutillon, C., Wintjes, R., Lippens, G., Drobecq, H. and Tartar, A.: Synthesis, three-dimensional structure, and specific  $^{15}\text{N}$ -labelling of the streptococcal protein G B1-domain. *Eur. J. Biochem.*, 231 (1995) 166-180.
- 4404 Cattaneo, T.M.P., Feroldi, A., Toppino, P.M. and Olieman, C.: Sample preparation for selective and sensitive detection of soya proteins in dairy products with chromatographic and electrophoretic techniques. *Neth. Milk Dairy J.*, 48 (1994) 225-234; C.A., 122 (1995) 263757x.
- 4405 Duranti, M., Gius, C., Sessa, F. and Vecchio, G.: The saccharide chain of lupin and conglutin  $\gamma$  is not responsible for the protection of the native protein from degradation by trypsin, but facilitates the refolding of the acid-treated protein to the resistant conformation. *Eur. J. Biochem.*, 230 (1995) 886-891.
- 4406 Holler, A., Bashkirova, V.I., Solinger, J.A., Reinhart, U. and Meyer, W.-D.: Use of monoclonal antibodies in the functional characterization of the *Saccharomyces cerevisiae* Sep1 protein. *Eur. J. Biochem.*, 231 (1995) 329-336.
- 4407 Jacobs, T. and Leippe, M.: Purification and molecular cloning of a major antibacterial protein of the protozoan parasite *Entamoeba histolytica* with lysozyme-like properties. *Eur. J. Biochem.*, 231 (1995) 831-838.
- 4408 Lapveteläinen, A., Bietz, J.A. and Huebner, F.R.: Reversed-phase high-performance liquid chromatography of oat proteins: application to cultivar comparison and analysis of the effect of wet processing. *Cereal Chem.*, 72 (1995) 259-264; C.A., 123 (1995) 8113t.
- 4409 Lee, C.-F. and Lin, J.-Y.: Amino acid sequences of trypsin inhibitors from the melon *Cucumis melo*. *J. Biochem. (Tokyo)*, 118 (1995) 28-22.
- 4410 Papeta, N.F., Tsilosani, G.M., Nikolaishvili, N.T. and Kvesitadze, G.I.: (Identification, purification and characterization of xylanase from *Nocardia* sp. inhibiting the growth of some phytopathogenic fungi). *Biokhimiya (Moscow)*, 60 (1995) 578-584.
- 4411 Ross, R.F., Young, T.F. and Zhang, Q.: Characterization of *Mycoplasma hyopneumoniae* adhesins. *PCT Int. Appl. WO 95 09,870 (Cl. C07K14/30)*, 13 Apr. 1995, US Appl. 132,798, 07 Oct. 1993; 84 pp.; C.A., 123 (1995) 5153v.
- 4412 Treptau, T., Kissmehl, R., Wissmann, J.-D. and Plattner, H.: A 63 kDa phosphoprotein undergoing rapid dephosphorylation during exocytosis in *Paramecium* cells shares biochemical characteristics with phosphoglucosyltransferase. *Biochem. J.*, 309 (1995) 557-567.

See also 4401, 4437.

19e. *Proteins of blood, serum and blood cells*

- 4413 Adachi, T., Mogi, M., Harada, M. and Kojima, K.: Selective removal of immunoglobulin E from rat blood by membrane-immobilized antibody. *J. Chromatogr. B*, 668 (1995) 327-332.
- 4414 Bill, E., Lutz, U., Karlsson, B.-M., Sparrman, M. and Allgaier, H.: Optimization of protein G chromatography for biopharmaceutical monoclonal antibodies. *J. Mol. Recognit.*, 8 (1995) 90-94; C.A., 122 (1995) 263578q.

- 4415 Boden, V., Winzerling, J.J., Vijayalakshmi, M. and Porath, J.: Rapid one-step purification of goat immunoglobulins by immobilized metal ion affinity chromatography. *J. Immunol. Methods*, 181 (1995) 225-232; *C.A.*, 122 (1995) 288325t.
- 4416 Bottomley, S.P., Sutton, B.J. and Gore, M.G.: Elution of human IgG from affinity columns containing immobilized variants of protein A. *J. Immunol. Methods*, 182 (1995) 185-192; *C.A.*, 123 (1995) 53755q.
- 4417 Bueno, S.M.A., Haupt, K. and Vijayalakshmi, M.A.: Separation of immunoglobulin G from human serum by pseudobioaffinity chromatography using immobilized L-histidine in hollow fibre membranes. *J. Chromatogr. B*, 667 (1995) 57-67.
- 4418 Burrows, S.D., Franklin, S.G., Brigham-Burke, M.R., Brooks, I.S., McNulty, D.E., Feild, J.A., Anumula, K.R. and O'Shannessy, D.J.: Biological and biophysical characterization of recombinant soluble human E-selection purified at large scale by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 668 (1995) 219-231.
- 4419 Denizli, A., Rad, A.Y. and Piskin, E.: Protein A immobilized poly-hydroxyethylmethacrylate beads for affinity sorption of human immunoglobulin G. *J. Chromatogr. B*, 668 (1995) 13-19.
- 4420 Dhanabal, M., Fryxell, D.K. and Ramakrishnan, S.: A novel method to purify immunotoxins from free antibodies using modified recombinant toxins. *J. Immunol. Methods*, 182 (1995) 165-175; *C.A.*, 123 (1995) 53754p.
- 4421 Drozd, R., Guevara, I. and Naskalski, J.W.: Immunoglobulin cleavage by hypochlorous acid treatment. *Clin. Chim. Acta*, 236 (1995) 155-160.
- 4422 Hochberger, A.: (Requirements of a modern MPLC system: configuration and procedure of a medium pressure chromatographic unit). *BioTec (Wuerzburg)*, 7 (1995) 18-24; *C.A.*, 122 (1995) 285766b.
- 4423 Hoffer, L., Schwinn, H., Biesert, L. and Josic, D.: Improved virus safety and purity of a chromatographically produced Factor IX concentrate by nanofiltration. *J. Chromatogr. B*, 669 (1995) 187-196.
- 4424 Hunt, A.J., Lynch, P.D., Londo, T., Dimond, P., Gordon, N.F., McCormack, T., Schutz, A., Percoskie, M., Cao, X., McGrath, J.P., Putney, S. and Hamilton, R.A.: Development and monitoring of purification process for nerve growth factor fusion antibody. *J. Chromatogr. A*, 708 (1995) 61-70.
- 4425 Kato, T., Ogami, K., Shimada, Y., Iwamatsu, A., Sohma, Y., Akahori, H., Horie, K., Kokubo, A., Kudo, Y., Maeda, E., Kobayashi, K., Ohashi, H., Ozawa, T. et al.: Purification and characterization of thrombopoietin. *J. Biochem. (Tokyo)*, 118 (1995) 229-236.
- 4426 Mhatre, R., Nashabeh, W., Schmalzing, D., Yao, X., Fuchs, M., Whitney, D. and Regnier, F.: Purification of antibody Fab fragments by cation-exchange chromatography and pH gradient elution. *J. Chromatogr. A*, 707 (1995) 225-231.
- 4427 Mochizuki, S. and Kobayashi, T.: Method of purifying plasminogen. *PCT Int. Appl. WO 95 04,077 (Cl. C07K14/745)*, 09 Feb. 1995, JP Appl. 93/187896, 29 Jul. 1993; 18 p.; *C.A.*, 122 (1995) 222814v.
- 4428 Strancar, A., Stadler, M.A. and Josic, D.: Chromatographic preparation of virus-inactivated Factor VIII-containing compositions. *Ger. DE 4,337,573 (Cl. C07K14/755)*, 18 May 1995, Appl. 04 Nov. 1993, 4 p.; *C.A.*, 123 (1995) 17851j.
- 4429 Zhang, Y., Wisner, A., Xiong, Y. and Bon, C.: A novel plasminogen activator from snake venom. Purification, characterization, and molecular cloning. *J. Biol. Chem.*, 270 (1995) 10246-10255.
- For additional information see *C.A.*:  
122 (1995) 274037p.
- See also 4205, 4354, 4387, 4400, 4402, 4442.
- 19f. *Structural and muscle proteins*
- 4430 Dahlmann, B., Kuehn, L. and Reinauer, H.: Studies on the activation by ATP of the 26 S proteasome complex from rat skeletal muscle. *Biochem. J.*, 309 (1995) 195-202.
- 4431 Fujii, T., Yamana, K., Ogoma, Y. and Kondo, Y.: Interaction of calponin with phospholipids. *J. Biochem. (Tokyo)*, 117 (1995) 999-1003.
- 4432 Pernigo, N., Bottura, M. and Ravizza, R.: (Definition of the mean molecular weight of a gelatin lysate used as a plasma substitute, by means of size-exclusion gel-permeation chromatography). *Riv. Tossicol.: Sper. Clin.*, 24 (1994) 63-72; *C.A.*, 123 (1995) 18025e.
- 4433 Price, K.M., Silman, R., Armstrong, P., Teisner, B. and Grudzin-skas, J.G.: The typing of fetal antigen 2 in human amniotic fluid. *Clin. Chim. Acta*, 236 (1995) 181-194.
- 19g. *Protamines, histones and other nuclear proteins*
- 4434 Ibrahim, M.A., Hamed, R.R. and Rasched, I.: Purification and characterization of a novel acid-soluble nuclear protein from developing embryos of the camel tick *Hyalomma dromedarii* (Acarina: Ixodidae). *Biochim. Biophys. Acta*, 1249 (1995) 79-85.
- 4435 Slominskii, P.A. and Limborskaya, S.A.: Isolation of a new nuclear protein specifically binding with M13-type minisatellite. *Russ. J. Genet. (Transl. of Genetika Moscow)*, 31 (1995) 507-508; *C.A.*, 122 (1995) 310020p.
- See also 4374, 4508.
- 19h. *Chromoproteins and metalloproteins*
- 4436 Borguet, F., Cornelis, R., Delanghe, J., Lambert, M.-C. and Lameire, N.: Study of the chromium binding in plasma of patients on continuous ambulatory peritoneal dialysis. *Clin. Chim. Acta*, 238 (1995) 71-84.
- 4437 Brodhun, B. and Haeder, D.-P.: A novel procedure to isolate the chromoproteins in the paraxial body of the flagellate *Euglena gracilis*. *J. Photochem. Photobiol., B*, 28 (1995) 39-45; *C.A.*, 122 (1995) 310015r.
- 4438 Fago, A. and Weber, R.E.: The hemoglobin system of the hagfish *Myxine glutinosa*: aggregation state and functional properties. *Biochim. Biophys. Acta*, 1249 (1995) 109-115.
- 4439 Galanello, R., Barella, S., Gasperini, D., Perseu, L., Paglietti, E., Sollaino, C., Paderi, L., Pirroni, M.G., Maccioni, L. and Mosca, A.: Evaluation of an automatic HPLC analyzer for thalassemia and hemoglobin variants screening. *J. Autom. Chem.*, 17 (1995) 73-76; *C.A.*, 123 (1995) 4841f.

- 4440 Kabzinski, A.K.M. and Takagi, T.: The application of affinity chromatography for quantitative determination of metallothionein in physiological fluids by an indirect method based on analysis of metal contents. *Biomed. Chromatogr.*, 9 (1995) 123-129; C.A., 123 (1995) 2869x.
- 4441 Kuroda, M.: (Low molecular-weight proteins in urine). *Kensa to Gijutsu*, 22 (1994) 1041-1048; C.A., 122 (1995) 260084q - a review with 9 refs.
- 4442 Oremek, G.M., Unkelbach, U., Solem, E. and Seiffert, U.B.: Determination of HbA<sub>1c</sub> on the Hitachi 747 analyser. A comparison with the chromatographic method. *Eur. J. Clin. Chem. Clin. Biochem.*, 33 (1995) A21.
- 4443 Richards, M.P. and Beattie, J.H.: Comparison of different techniques for the analysis of metallothionein isoforms by capillary electrophoresis. *J. Chromatogr. B*, 669 (1995) 27-37.
- 4444 Roush, D.J., Gill, D.S. and Willson, R.C.: Preferred high-performance liquid chromatographic anion-exchange chromatographic contact region for recombinant rat cytochrome b<sub>5</sub>. *J. Chromatogr. A*, 704 (1995) 339-349.
- 4445 Vernet, M., Reversez, J.C., Revenant, M.C., Sotta, C., Charlier de Breusing, C., Benoit, M.O., Guillemin, C., Paris, M. and Plomteux, G.: (Multicenter evaluation of serum carbohydrate-deficient-transferrin by two chromatographic methods). *Ann. Biol. Clin.*, 52 (1994) 535-546; C.A., 122 (1995) 285764z.
- 4446 Winzerling, J.J., Nez, P., Porath, J. and Law, J.H.: Rapid and efficient isolation of transferrin and ferritin from *Manduca sexta*. *Insect Biochem. Mol. Biol.*, 25 (1995) 217-224; C.A., 122 (1995) 260473r.
- 19i. *Proteins of glands, gland products, various zymogens (incl. milk proteins)*
- 4447 Bernard, J.-P., Barthet, M., Gharib, B., Michel, R., Lilova, A., Sahel, J., Dagorn, J.-C. and de Reggi, M.: Quantification of human lithostathine by high performance liquid chromatography. *Gut*, 36 (1995) 630-636; C.A., 122 (1995) 285768d.
- 4448 Champagne, D.E., Nussenzeig, R.H. and Ribeiro, J.M.C.: Purification, partial characterization, and cloning of nitric oxide-carrying heme proteins (nitrophorins) from salivary glands of the blood-sucking insect *Rhodnius prolixus*. *J. Biol. Chem.*, 270 (1995) 8691-8695.
- 4449 De Reggi, M., Capton, C., Gharib, B., Wieruszski, J.-M., Michel, R. and Fournet, B.: The glycan moiety of human pancreatic lithostathine. Structure characterization and possible pathophysiological implications. *Eur. J. Biochem.*, 230 (1995) 503-510.
- 4450 Gatti, M., Locci, F., Cattaneo, T.M.P., Neviani, E. and Rampilli, M.: (Whey protein analysis in milk of different species - a comparative study by FPLC and HPLC methods). *Sci. Tec. Latt.-Casearia*, 45 (1994) 233-246; C.A., 122 (1995) 289179k.
- 4451 Kawasaki, T., Taniuchi, Y., Hisamichi, N., Fujimura, Y., Suzuki, M., Titani, K., Sakai, Y., Kaku, S., Satoh, N., Takenaka, T., Handa, M. and Sawai, Y.: Tokaracetin, a new platelet antagonist that binds to platelet glycoprotein Ib and inhibits von Willenbrand factor-dependent shear-induced platelet aggregation. *Biochem. J.*, 308 (1995) 947-953.
- 4452 Marrakchi, N., Zingali, R.B., Karoui, H., Bon, C. and El Ayeb, M.: Cerastocytin, a new thrombin-like platelet activator from the venom of the Tunisian viper *Cerastes cerastes*. *Biochim. Biophys. Acta*, 1244 (1995) 147-156.
- 4453 Mollé, D. and Léonil, J.: Heterogeneity of the bovine  $\kappa$ -casein caseinomacropptide, resolved by liquid chromatography on-line with electrospray ionization mass spectrometry. *J. Chromatogr. A*, 708 (1995) 223-230.
- 4454 Pacakova, V., Stulik, K., Hau, P.T., Jelinek, I., Vins, I. and Sykora, D.: Comparison of high-performance liquid chromatography and capillary electrophoresis for the determination of some bee venom components. *J. Chromatogr. A*, 700 (1995) 187-193.
- For additional information see C.A.:  
122 (1995) 286062f.
- See also 4000, 4204, 4206, 4207, 4336, 4429.
- 19j. *Proteins of brain, cerebrospinal fluid and eye*
- 4455 Cherian, M. and Abraham, E.C.: Diabetes affects  $\alpha$ -crystallin chaperone function. *Biochem. Biophys. Res. Commun.*, 212 (1995) 184-189.
- 4456 Lu, S.-F., Pan, F.-M. and Chiou, S.-H.: Sequence analysis of frog  $\alpha$ -crystallin cDNA and its deduced primary structure: comparison of F<sub>1A</sub> subunit chains among different vertebrate species. *Biochem. Biophys. Res. Commun.*, 210 (1995) 974-981.
- 19k. *Proteins of neoplastic tissue and transformed cells*
- 4457 Saijo, S., Watanabe, N. and Kobayashi, Y.: Comparison of reactivity of monoclonal antibody (3F2) to trimeric tumor necrosis factor (TNF- $\alpha$ ) with that to monomeric TNF- $\alpha$ . *J. Biochem. (Tokyo)*, 118 (1995) 28-32.
- 4458 Tomida, M.: Analysis of recombinant soluble mouse D-factor/LIF receptor. *J. Biochem. (Tokyo)*, 117 (1995) 1228-1231.
- See also 4371.
- 19l. *Specific binding and receptor proteins*
- 4459 Andreeva, L., Tanveer, A. and Crompton, M.: Evidence for the involvement of a membrane-associated cyclosporin-A-binding protein in the Ca<sup>2+</sup>-activated inner membrane pore of heart mitochondria. *Eur. J. Biochem.*, 230 (1995) 1125-1132.
- 4460 Debanne, M.T., Pacheco-Oliver, M.C., O'Connor-McCourt, M.D.: Purification of the extracellular domain of the epidermal growth factor receptor produced by recombinant baculovirus-infected insect cells in a 10-L reactor. *Methods Mol. Biol. (Totowa)*, 39 (1995) 349-361; C.A., 122 (1995) 256494f.
- 4461 Dodds, D'Nette, Schlimgen, A.K., Lu, S.-Y. and Perin, M.S.: Novel reticular calcium binding protein is purified on taipoxin columns. *J. Neurochem.*, 64 (1995) 2339-2344; C.A., 123 (1995) 28090m.
- 4462 Hårdig, Y., Garzia de Frutos, P. and Dahlbäck, B.: Expression and characterization of a recombinant C4b-binding protein lacking the  $\beta$ -chain. *Biochem. J.*, 308 (1995) 795-800.
- 4463 Herbertsson, H. and Hammarström, S.: Subcellular localization of 12(S)-hydroxy-5,8,10,14-eicosatetraenoic acid binding sites in Lewis lung carcinoma cells. *Biochim. Biophys. Acta*, 1244 (1995) 191-197.

- 4464 Hoon, M.A., Northup, J.K., Margolskee, R.F. and Ryba, N.J.P.: Functional expression of the taste specific G-protein,  $\alpha$ -gustducin. *Biochem. J.*, 309 (1995) 629-636.
- 4465 Massotte, D., Fleig, U. and Palme, K.: Purification and characterization of an auxin-binding protein from *Arabidopsis thaliana* expressed in baculovirus-infected insect cells. *Protein Expression Purif.*, 6 (1995) 220-227; *C.A.*, 123 (1995) 28726y.
- 4466 Nirmala, P.B. and Thampan, R.V.: A 55-kDa protein (p55) of the goat uterus mediates nuclear transport of the estrogen receptor. I. Purification and characterization. *Arch. Biochem. Biophys.*, 319 (1995) 551-561.
- 4467 Swamy, N., Roy, A., Chang, R., Brisson, M. and Ray, R.: Affinity purification of human plasma vitamin D-binding protein. *Protein Expression Purif.*, 6 (1995) 185-188; *C.A.*, 122 (1995) 285776e.
- 4468 Treichel, U., Schreiter, T., Meyer zum Bueschenfelde, K.-H. and Stockert, R.J.: High-yield purification and characterization of human asialoglycoprotein receptor. *Protein Expression Purif.*, 6 (1995) 251-255; *C.A.*, 123 (1995) 28727z.
- For additional information see *C.A.*:  
122 (1995) 260202b, 286061e.
- See also 4435, 4510.
- 19m. *Urinary proteins*
- See 4370.
- 19n. *Other proteins (incl. proteinous inhibitors of enzymic activity)*
- 4469 Bryjak, M. and Bryjak, J.: Purification of soybean trypsin inhibitors by means of chromatographic methods. *Angew. Makromol. Chem.*, 226 (1995) 197-204; *C.A.*, 123 (1995) 50739b.
- 4470 Sjöberg, E.M., Blom, A., Larsson, B.S., Alston-Smith, J., Sjöquist, M. and Fries, E.: Plasma clearance of rat bikunin: evidence for receptor-mediated uptake. *Biochem. J.*, 308 (1995) 881-887.
- For additional information see *C.A.*:  
122 (1995) 285790e.
- See also 4362, 4371.
20. ENZYMES AND ENZYME ACTIVITY ESTIMATION
- 4471 Wingren, C. and Hansson, U.-B.: A new approach to examine conformational changes occurring upon binding of ligand by biomolecules. *Biochim. Biophys. Acta*, 1244 (1995) 209-215.
- 20a. *Oxidoreductases*
- 4472 Araya, Z., Hellman, U. and Hansson, R.: Characterization of taurochenodeoxycholic acid  $6\alpha$ -hydroxylase from pig liver microsomes. *Eur. J. Biochem.*, 231 (1995) 855-861.
- 4473 Berczi, A., Fredlund, K.M. and Möller, I.M.: Purification and characterization of an NADH-hexacyanoferrate(III) reductase from spinach leaf plasma membrane. *Arch. Biochem. Biophys.*, 320 (1995) 65-72.
- 4474 Boerman, M.H.E.M. and Napoli, J.L.: Characterization of a microsomal retinol dehydrogenase: a short-chain alcohol dehydrogenase with integral and peripheral membrane forms that interacts with holo-CRBP (type I). *Biochemistry*, 34 (1995) 7027-7037.
- 4475 Cunningham, M.L. and Fairlamb, A.H.: Trypanothione reductase from *Leishmania donovani*. Purification, characterisation and inhibition by trivalent antimonials. *Eur. J. Biochem.*, 230 (1995) 460-468.
- 4476 De Bolle, X., Vinals, C., Prozzi, D., Paquet, J.-Y., Leplae, R., Depicreux, E., Vandenhoute, J. and Feytmans, E.: Identification of residues potentially involved in the interactions between subunits in yeast alcohol dehydrogenases. *Eur. J. Biochem.*, 231 (1995) 214-219.
- 4477 Grimm, S.W., Bend, J.R. and Halpert, J.R.: Selectivity and kinetics of inactivation of rabbit hepatic cytochromes P450 2B4 and 2B5 of N-alkylated derivatives of 1-aminobenzotriazole. *Drug Metab. Disp.*, 23 (1995) 577-583.
- 4478 He, R.-Q., Yang, M.-D., Zheng, X. and Zhou, J.-X.: Isolation and some properties of glycated D-glyceraldehyde-3-phosphate dehydrogenase from rabbit muscle. *Biochem. J.*, 309 (1995) 133-139.
- 4479 Moeckel, G., Hallbach, J. and Guder, W.G.: Purification of human and rat kidney aldose reductase. *Enzyme Protein*, 48 (1994, Pub. 1995) 45-50; *C.A.*, 122 (1995) 285247h.
- 4480 Nanjo, H., Adachi, H., Aketa, M., Mizoguchi, T., Nishihara, T. and Terada, T.: The role of cysteine in the alteration of bovine liver dihydrodiol dehydrogenase 3 activity. *Biochem. J.*, 310 (1995) 101-107.
- 4481 Nishihara, M. and Koga, Y.: sn-Glycerol-1-phosphate dehydrogenase in *Methanobacterium thermoautotrophicum*: key enzyme in biosynthesis of the enantiomeric glycerophosphate backbone of ether phospholipids of archaeobacteria. *J. Biochem. (Tokyo)*, 117 (1995) 933-935.
- 4482 Nomura, K. and Suzuki, N.: Sea urchin ovoperoxidase: solubilization and isolation from the fertilization envelope, some structural and functional properties, and degradation by hatching enzyme. *Arch. Biochem. Biophys.*, 319 (1995) 525-534.
- 4483 Sakamoto, K., Kirita, S., Baba, T., Nakamura, Y., Yamazoe, Y., Kato, R., Takanaka, A. and Matsubara, T.: A new cytochrome P450 form belonging to the CYP2D in dog liver microsomes: purification, cDNA cloning, and enzyme characterization. *Arch. Biochem. Biophys.*, 319 (1995) 372-382.
- 4484 Schneider, K., Müller, A., Krahn, E., Hagen, W.R., Wassing, H. and Knüttel, K.-H.: The molybdenum nitrogenase from wild-type *Xanthobacter autotrophicus* exhibits properties reminiscent of alternative nitrogenase. *Eur. J. Biochem.*, 230 (1995) 666-675.
- 4485 Serebryakova, L.T., Troshina, O.Yu. and Gogotov, I.N.: (Purification and forms of reversible hydrogenase from *Anabaena variabilis* ATCC 29413). *Biokhimiya (Moscow)*, 60 (1995) 508-514.
- 4486 Tams, J.W. and Welinder, K.G.: Mild chemical deglycosylation of horseradish peroxidase yields a fully active, homogeneous enzyme. *Anal. Biochem.*, 228 (1995) 48-55.
- 4487 Yasuhara, Y., Koizumi, Y., Katagiri, C. and Ashida, M.: Reexamination of properties of prophenoloxidase isolated from larval hemolymph of the silkworm *Bombyx mori*. *Arch. Biochem. Biophys.*, 320 (1995) 14-23.



For additional information see C.A.:  
122 (1995) 259309j.

See also 4256, 4363, 4366, 4537.

20b. *Transferases (excl. E.C. 2.7.-.-)*

- 4488 Chiou, S.-H., Yu, C.-W., Lin, C.-W., Pan, F.-M., Lu, S.-F., Lee, H.-J. and Chang, G.-G.: Octopus S-crystallins with endogenous glutathione S-transferase (GST) activity: sequence comparison and evolutionary relationships with authentic GST enzymes. *Biochem. J.*, 309 (1995) 793-800.
- 4489 Goppelt-Strube, M.: Two step purification of human and murine leukotriene C<sub>4</sub> synthase. *Biochim. Biophys. Acta*, 1256 (1995) 257-261.
- 4490 Kitagawa, H., Tsuchida, K., Ujikawa, M. and Sugahara, K.: Detection and characterization of UDP-GalNAc: chondroitin N-acetylgalactosaminyltransferase in bovine serum using a simple assay method. *J. Biochem. (Tokyo)*, 117 (1995) 1083-1087.
- 4491 Sabesan, S., Paulson, J.C. and Weinstein, J.: Separation of Galβ1,4GlcNAc α-2,6- and Galβ1,3(4)GlcNAc α-2,3-sialyltransferases by affinity chromatography. *Methods Enzymol.*, 247(Neoglycoconjugates, Pt. B) (1994) 237-243; C.A., 122 (1995) 259352u.

20c. *Transferases transferring phosphorus containing groups (E.C. 2.7.-.-)*

- 4492 Borthwick, A.C., Wells, A.M., Rochford, J.J., Hurel, S.J., Turnbull, D.M. and Yeaman, S.J.: Inhibition of glycogen synthase kinase-3 by insulin in cultured human skeletal muscle myoblasts. *Biochem. Biophys. Res. Commun.*, 210 (1995) 738-745.
- 4493 Collins, R.A., McNally, T., Fothergill-Gilmore, L.A. and Muirhead, H.: A subunit interface mutant of yeast pyruvate kinase requires the allosteric activator fructose 1,6-bisphosphate for activity. *Biochem. J.*, 310 (1995) 117-123.
- 4494 Divewcha, N., Truong, O., Hsuan, J.J., Hinchliffe, K.A. and Irvine, R.F.: The cloning and sequence of the C-isoform of ptdIns4P 5-kinase. *Biochem. J.*, 309 (1995) 715-719.
- 4495 Gao, Z., Zhi, G., Herring, B.P., Moomaw, C., Deogny, L., Slaughter, C.A. and Stull, J.T.: Photoaffinity labeling of a peptide substrate to myosin light chain kinase. *J. Biol. Chem.*, 270 (1995) 10125-10135.
- 4496 Palmer, R.H. and Parker, P.J.: Expression, purification and characterization of the ubiquitous protein kinase C-related kinase 1. *Biochem. J.*, 309 (1995) 315-320.
- 4497 Uemura, A., Okazaki, K., Takesue, H., Matsubara, T. and Hidaka, H.: A novel Ca<sup>2+</sup>/calmodulin-dependent protein kinase lacking autophosphorylation activity in the rabbit heart. *Biochem. Biophys. Res. Commun.*, 211 (1995) 562-569.
- 4498 Wang, X.-L., Akhtar, R.A. and Abdel-Latif, A.A.: Purification and properties of D-myo-inositol 1,4,5-trisphosphate 3-kinase from bovine iris sphincter smooth muscle: effects of protein phosphorylation *in vitro* and in intact muscle. *Biochem. J.*, 308 (1995) 1009-1016.
- 4499 Yamaguchi, K., Ogita, K., Nakamura, S.-i. and Nishizuka, Y.: The protein kinase C leading to MAP-kinase activation in CHO cells. *Biochem. Biophys. Res. Commun.*, 210 (1995) 639-647.

- 4500 Yamamori, B., Kuroda, S., Shimizu, K., Fukui, K., Ohtsuka, T. and Takai, Y.: Purification of a Ras-dependent mitogen-activated protein kinase kinase kinase from bovine brain cytosol and its identification as a complex of B-Raf and 14-3-3 proteins. *J. Biol. Chem.*, 270 (1995) 11723-11726.

20d. *Hydrolases, acting on ester bonds (E.C. 3.1.-.-)*

- 4501 Abdullah, K.M., Perrier, H. and Leger, S.: Synthesis and preparation of an affinity chromatography column for the purification of cytosolic phospholipase A<sub>2</sub>. *Bioorg. Med. Chem. Lett.*, 5 (1995) 519-522; C.A., 123 (1995) 51600m.
- 4502 Fleming, I.N. and Yeaman, S.J.: Purification and characterization of N-ethylmaleimide-insensitive phosphatidic acid phosphohydrolase (PAP2) from rat liver. *Biochem. J.*, 308 (1995) 983-989.
- 4503 Geny, B., Paris, S., Dubois, T., Franco, M., Lukowski, S., Chardin, P. and Russo, M.F.: A soluble protein negatively regulates phospholipase D activity. Partial purification and characterization. *Eur. J. Biochem.*, 231 (1995) 31-39.
- 4504 Kim, D.K., Rordorf, G., Nemenoff, R.A., Koroshetz, W.J. and Bonventre, J.V.: Glutamate stably enhances the activity of two cytosolic forms of phospholipase A<sub>2</sub> in brain cortical cultures. *Biochem. J.*, 310 (1995) 83-90.
- 4505 Moorhead, G., MacKintosh, C., Morrice, N. and Cohen, P.: Purification of the hepatic glycogen-associated form of protein phosphatase-1 by microcystin-Sepharose affinity chromatography. *FEBS Lett.*, 362 (1995) 101-105; C.A., 122 (1995) 259441x.
- 4506 Pozidis, C. and Bouriotis, V.: Preparation of high purity alkaline phosphatase from calf intestine using dye-ligand chromatography. *Bioseparation*, 5 (1995) 89-93; C.A., 123 (1995) 4209f.
- 4507 Queiroz, J.A., Garcia, F.A.P. and Cabral, J.M.S.: Hydrophobic interaction chromatography of *Chromobacterium viscosum* lipase. *J. Chromatogr. A*, 707 (1995) 137-142.
- 4508 Solaro, P., Greger, B. and Kemper, B.: Detection and partial purification of a cruciform-resolving activity (X-solvase) from nuclear extracts of mouse B-cells. *Eur. J. Biochem.*, 230 (1995) 926-933.
- 4509 Yokoyama, K., Kudo, I. and Inoue, K.: Phospholipid degradation in rat calcium ionophore-activated platelets is catalyzed mainly by two discrete secretory phospholipase As. *J. Biochem. (Tokyo)*, 117 (1995) 1280-1287.

20e. *Hydrolases, acting on glycosyl compounds (E.C. 3.2.-.-)*

- 4510 Brun, E., Gans, P., Marion, D. and Barras, F.: Overproduction, purification and characterization of the cellulose-binding domain of the *Erwinia chrysanthemi* secreted endoglucanase EGZ. *Eur. J. Biochem.*, 231 (1995) 142-148.
- 4511 Hall, J., Black, G.W., Ferreira, L.M.A., Millward-Sadler, S.-J., Ali, B.R.S., Haclewood, G.P. and Gilbert, H.J.: The non-catalytic cellulose-binding domain of a novel cellulase from *Pseudomonas fluorescens* subsp. *cellulosa* is important for the efficient hydrolysis of Avicel. *Biochem. J.*, 309 (1995) 749-756.
- 4512 Kachurin, A.M., Golubew, A.M., Geisow, M.M., Veselkina, O.S., Isaeva-Ivanova, L.S. and Neustroev, K.N.: Role of methionine in the active site of α-galactosidase from *Trichoderma reesei*. *Biochem. J.*, 308 (1995) 955-964.

- 4513 Kitajima, K., Suzuki, T., Kouchi, Z., Inoue, S. and Inoue, Y.: Identification and distribution of peptide:N-glycanase (PNGase) in mouse organs. *Arch. Biochem. Biophys.*, 319 (1995) 393-401.
- 4514 Lee, J.K. and Pierce, M.: Purification and characterization of human serum N-acetylglucosamino-1-phosphodiester  $\alpha$ -N-acetylglucosaminidase. *Arch. Biochem. Biophys.*, 319 (1995) 413-425.
- 4515 Pitson, S.M., Swwiour, R.J., McDougall, B.M., Woodward, J.R. and Stone, B.A.: Purification and characterization of three extracellular (1 $\rightarrow$ 3)- $\beta$ -D-glucan glucohydrolases from the filamentous fungus *Acremonium persicinum*. *Biochem. J.*, 208 (1995) 733-741.
- 4516 Prieto, J.A., Bort, B.R., Martinez, J., Randez-Gil, F., Buesa, C. and Sanz, P.: Purification and characterization of a new  $\alpha$ -amylase of intermediate thermal stability from the yeast *Ipomyces kononenkoae*. *Biochem. Cell Biol.*, 73 (1995) 41-49.
- 4517 Reiser, V. and Gasparik, J.: Purification and characterization of the cell-wall-associated and extracellular  $\alpha$ -glucosidases from *Saccharomycopsis fibuligera*. *Biochem. J.*, 308 (1995) 753-760.
- 4518 Yamamoto, S., Suehisa, T. and Sano, Y.: Recovery of lysozyme and avidin from egg white by ion-exchange chromatography. In: Yano, T., Matano, R. and Nakamura, K. (Editors), *Dev. Food Eng., Proc. Int. Congr. Eng. Food, 6th 1993*, Pt. 2, Blackie, Glasgow, 1994, pp. 639-640; C.A., 122 (1995) 260169w.
- See also 4026.
- 20f. *Other hydrolases*
- 4519 Buchanan, S.K. and Walker, J.E.: Chromatographic purification of F<sub>1</sub>F<sub>0</sub>-ATPase and complex I from bovine heart mitochondria. FPLC-anion exchange and dye-ligand chromatography. In: Von Jagow, G. and Schaegger, H. (Editors), *Pract. Guide Membr. Protein Purif.*, Academic, San Diego, 1994, pp. 125-133; C.A., 123 (1995) 4112u.
- 4520 Carmona, A.K., Puccia, R., Oliveira, M.C.F., Rodrigues, E.G. and Juliano, L.: Characterization of an exocellular serine-thiol proteinase activity in *Paracoccidioides brasiliensis*. *Biochem. J.*, 309 (1995) 209-214.
- 4521 Gladysheva, I.P., Polekhina, O.V., Shen, W.C., Shevchenko, A.A., Kazanskaya, N.F. and Larionova, N.I.: (Structure and biological properties of the Bowman-Birk soybean proteinase inhibitor conjugate with the block copolymer of ethylene oxide and propylene oxide). *Biokhimiya (Moscow)*, 60 (1995) 523-532.
- 4522 Jeohn, G. and Takahashi, K.: Purification and characterization of a vasoactive intestinal polypeptide-degrading endoprotease from porcine antral mucosal membranes. *J. Biol. Chem.*, 270 (1995) 7809-7815.
- 4523 Langheinrich, U.: Plasma membrane-associated aminopeptidase activities in *Chlamydomonas reinhardtii* and their biochemical characterization. *Biochim. Biophys. Acta*, 1249 (1995) 45-57.
- 4524 McKie, N., Dando, P.M., Brown, M.A. and Barrett, A.J.: Rat thimet oligopeptidase: large-scale expression in *Escherichia coli* and characterization of the recombinant enzyme. *Biochem. J.*, 309 (1995) 203-207.
- 4525 Okamoto, T. and Minimikawa, T.: Purification of a processing enzyme (VmPE-1) that is involved in post-translational processing of a plant cysteine endopeptidase (SH-EP). *Eur. J. Biochem.*, 231 (1995) 300-305.
- 4526 Uchikoba, T., Yonezawa, H. and Kaneda, M.: Cleavage specificity of cucumisin, a plant serine protease. *J. Biochem. (Tokyo)*, 117 (1995) 1126-1130.
- 4527 Yajima, R., Chikuma, T. and Kato, T.: Highly sensitive high-performance liquid chromatography-fluorimetric assay method for carboxypeptidase H activity. *J. Chromatogr. B*, 667 (1995) 333-338.
- For additional information see C.A.: 123 (1995) 50606f.
- See also 4360, 4410, 4885.
- 20g. *Lyases*
- 4528 Kojima, H., Chiba, J., Watanabe, Y. and Numata, O.: Citrate synthase purified from *Tetrahymena* mitochondria is identical with *Tetrahymena* 14-nm filament protein. *J. Biochem. (Tokyo)*, 118 (1995) 189-195.
- 4529 Mitchell, C.G., Anderson, S.C.K. and El-Mansi, E.M.T.: Purification and characterization of citrate isozymes from *Pseudomonas aeruginosa*. *Biochem. J.*, 309 (1995) 507-511.
- 4530 Stamford, N.P.J., Capretta, A. and Battersby, A.R.: Expression, purification and characterisation of the product from the *Bacillus subtilis* hemD gene, uroporphyrinogen III synthase. *Eur. J. Biochem.*, 231 (1995) 236-241.
- 4531 Wong-Palms, S. and Plaas, A.H.K.: Glycosaminoglycan addition to proteoglycans by articular chondrocytes - evidence for core protein-specific pathways. *Arch. Biochem. Biophys.*, 319 (1995) 383-392.
- 20h. *Isomerases*
- 4532 Schmitz, W., Albers, C., Fingerhut, R. and Conzelmann, E.: Purification and characterization of an  $\alpha$ -methylacyl-CoA racemase from human liver. *Eur. J. Biochem.*, 231 (1995) 815-822.
- 20i. *Ligases*
- 4533 Bertrand, R., Beauchemin, M., Dayan, A., Ouimet, M. and Jolivet, J.: Identification and characterization of human mitochondrial methenyltetrahydrofolate synthetase activity. *Biochim. Biophys. Acta*, 1266 (1995) 245-249.
- 4534 Harris, C.L. and Kolanko, C.J.: Aminoacyl-tRNA synthetase complex in *Saccharomyces cerevisiae*. *Biochem. J.*, 309 (1995) 321-324.
- 20j. *Complex mixtures and incompletely identified enzymes*
- 4535 Fukamizo, T., Hatta, T. and Goto, S.: Hen-egg-white lysozyme modified with histamine. State of the imidazolylethyl group covalently attached to the binding site and its effect on the sugar-binding ability. *Eur. J. Biochem.*, 231 (1995) 56-64.
- 4536 Gühnemann-Schäfer, K. and Kindl, H.: Fatty acid  $\beta$ -oxidation in glyoxysomes. Characterization of a new tetrafunctional protein (MFP III). *Biochim. Biophys. Acta*, 1256 (1995) 181-186.

4537 Iwakura, M. and Kokubu, T.: Production of hetero-dimeric dihydrofolate reductase-thymidylate synthase bifunctional enzyme. *J. Biochem. (Tokyo)*, 118 (1995) 67-74.

See also 4365.

## 21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

See 4101.

### 21a. Purines, pyrimidines, nucleosides, nucleotides

4538 Agarwal, R.P., He, J., Bansal, M. and Gupta, V.: Effect of long-term zidovudine exposure on salvage and de novo purine and pyrimidine nucleotide syntheses. *Biochim. Biophys. Acta*, 1266 (1995) 223-228.

4539 Conti, P.S., Hilton, J., Wong, D.F., Alauddin, M.M., Dannals, R.F., Revert, H.T., Wilson, A.A. and Anderson, J.H.: High performance liquid chromatography of carbon-11 labeled thymidine and its major catabolites for clinical PET studies. *Nucl. Med. Biol.*, 21 (1994) 1045-1051; C.A., 122 (1995) 285641g.

4540 Földes-Papp, Z., Birch-Hirschfeld, E., Rösch, R., Hartmann, M., Kleinschmidt, A.K. and Seliger, H.: Efficiency of chemical oligonucleotide synthesis evaluated by ion-exchange high-performance liquid chromatography. *J. Chromatogr. A*, 706 (1995) 405-419.

4541 Iwata, K., Haruki, S. and Kimura, T.: High-performance liquid chromatographic determination of diadenosine 5',5''-p',p<sup>4</sup>-tetrphosphate with precolumn fluorescence derivatization and its application to metabolism study in whole blood. *J. Chromatogr. B*, 667 (1995) 339-343.

4542 Klaidman, L.K., Leung, A.C. and Adams, J.D., Jr.: High-performance liquid chromatography of oxidized and reduced pyridine dinucleotides in specific brain regions. *Anal. Biochem.*, 228 (1995) 312-317.

4543 Lagendijk, J., Ubbink, J.B. and Vermaak, W.J.H.: The determination of allantoin, a possible indicator of oxidant status, in human plasma. *J. Chromatogr. Sci.*, 33 (1995) 186-193.

4544 Ryabchuk, V.A.: (Nucleotide composition of vilozen). *Farmat-siya (Moscow)*, 43 (1994) 44-48; C.A., 122 (1995) 322601s.

4545 Sugie, H., Nishikawa, T. and Funao, T.: Quantitation of nucleotides, nucleosides and bases in antemortem and postmortem bloodstains by high-performance liquid chromatography. *Forensic Sci. Int.*, 71 (1995) 123-130; C.A., 123 (1995) 2873u.

4546 Todd, B., Zhao, J. and Fleet, G.: HPLC measurement of guanine for the determination of nucleic acids (RNA) in yeasts. *J. Microbiol. Methods*, 22 (1995) 1-10; C.A., 123 (1995) 4825d.

4547 White, F.H., Jr. and McKenzie, H.A.: Application of high-performance liquid chromatography to determination of modifier activity in  $\alpha$ -lactalbumin and other proteins. *Anal. Biochem.*, 228 (1995) 202-207.

4548 Yin, B., Whyatt, R.M., Perera, F.P., Randall, M.C., Cooper, T.B. and Santella, R.M.: Determination of 8-hydroxydeoxyguanosine by an immunoaffinity chromatography-monoclonal antibody-based ELISA. *Free Radical Biol. Med.*, 18 (1995) 1023-1032; C.A., 123 (1995) 28900a.

4549 Zhang, R., Lu, Z., Zhang, X., Zhao, H., Diasio, R.B., Liu, T., Jiang, Z. and Agarwal, S.: *In vivo* stability and disposition of a self-stabilized oligodeoxynucleotide phosphorothioate in rats. *Clin. Chem. (Washington)*, 41 (1995) 836-843.

For additional information see C.A.:

122 (1995) 210267z, 260200z;

123 (1995) 18035h.

See also 4055, 4832, 4834.

### 21b. Nucleic acids, RNA

4550 Kato, Y.: Size exclusion chromatography of nucleic acids. *Chromatogr. Sci. Ser.*, 69 (1995) 429-445; C.A., 123 (1995) 51379w.

4551 Ribeiro, S., Nock, S. and Sprinzl, M.: Purification of aminoacyl-tRNA by affinity chromatography on immobilized *Thermus thermophilus* EF-Tu.GTP. *Anal. Biochem.*, 228 (1995) 330-335.

For additional information see C.A.:

123 (1995) 2745d.

See also 3992.

### 21c. Nucleic acids, DNA

4552 Challen, M.P., Moore, A.J. and Martinez-Carrera, D.: Facile extraction and purification of filamentous fungal DNA. *BioTechniques*, 18 (1995) 975-978; C.A., 123 (1995) 4854n.

For additional information see C.A.:

123 (1995) 49236d.

See also 4550.

## 22. ALKALOIDS

4553 Bushway, R.J. and Perkins, L.B.: Identification of an impurity in commercial sources of the tomato glycoalkaloid tomatine. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 691-693.

4554 Chrzanoska, M.: Synthesis of isoquinoline alkaloids. Total synthesis of ( $\pm$ )-stylopine. *J. Natural Prod.*, 58 (1995) 401-407.

4555 Cieri, U.R.: Determination of ajmaline in reserpine raw materials by liquid chromatography with fluorescence detection. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 944-945.

4556 Hieda, Y., Kashimura, S., Hara, K. and Kageura, M.: Highly sensitive and rapid determination of theophylline, theobromine and caffeine in human plasma and urine by gradient capillary high-performance liquid chromatography-frit-fast atom bombardment mass spectrometry. *J. Chromatogr. B*, 667 (1995) 241-246.

4557 Kato, A., Moriyasu, M., Ichimaru, M., Nishiyama, Y., Juma, F.D., Nganga, J.N., Mathenge, S.G. and Ogeto, J.O.: Examination of alkaloidal constituents of *Zanthoxylum usambarense* by a combination of ion-pair extraction and ion-pair chromatography using sodium perchlorate. *Phytochem. Anal.*, 6 (1995) 89-95; C.A., 122 (1995) 298790e.

- 4558 Keller, A., Fuhr, U., Sauter, R., Steinijs, V.W. and Staib, A.A.: Pharmakokinetik einer Theophyllin Brausetablette. *Pharmazie*, 50 (1995) 356-358.
- 4559 Klyushnichenko, V.E., Yakimov, S.A., Tuzova, T.P., Syagailo, Y.V., Kuzovkina, I.N., Wulfson, A.N. and Miroshnikov, A.I.: Determination of indole alkaloids from *R. serpentina* and *R. vomitoria* by high-performance liquid chromatography and high-performance thin-layer chromatography. *J. Chromatogr. A*, 704 (1995) 357-362.
- 4560 Moriyasu, M., Ichimaru, M., Nishiyama, Y. and Kato, A.: Isolation of alkaloids from plant materials by the combination of ion-pair extraction and preparative ion-pair chromatography using sodium perchlorate. II. *Sinomeni Caulis et Rhizoma*. *Nat. Med.*, 48 (1994) 287-290; *C.A.*, 122 (1995) 299183w.
- 4561 Moriyasu, M., Ichimaru, M., Nishiyama, Y. and Kato, A.: Isolation of alkaloids from plant materials by the combination of ion-pair extraction and preparative ion-pair HPLC using sodium perchlorate. I. *Magnoliae Cortex*. *Nat. Med.*, 48 (1994) 282-286; *C.A.*, 122 (1995) 274192k.
- 4562 Ondra, P., Valka, I., Vicar, J., Sutlupinar, N. and Simanek, V.: Chromatographic determination of constituents of the genus *Colchicum* (Liliaceae). *J. Chromatogr. A*, 704 (1995) 351-356.
- 4563 Stammel, W., Woesle, B. and Thomas, H.: Enantiomeric separation of tetrahydroisoquinoline alkaloids by high-performance liquid chromatography with  $\beta$ -cyclodextrin as chiral selector. *Chirality*, 7 (1995) 10-19; *C.A.*, 122 (1995) 314891w.
- 4564 Ushiyama, H., Oguri, A., Totsuka, Y., Itoh, H., Sugimura, T. and Wakabayashi, K.: Norharman and harman in human urine. *Proc. Jpn. Acad., Ser. B*, 71 (1995) 57-60; *C.A.*, 122 (1995) 283995b.
- 4565 Van Rensen, I. and Veit, M.: Simultaneous determination of phenolics and alkaloids using ion exchange chromatography for sample preparation. *Phytochem. Anal.*, 6 (1995) 121-124; *C.A.*, 123 (1995) 51402y.
- For additional information see C.A.:  
122 (1995) 282210e;  
123 (1995) 18023c, 49351n.
- See also 4094, 4745, 4865, 4873, 4876, 4878, 4880, 4887.
23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN
- 23a. *Porphyrins and other pyrroles*
- 4566 Beukeveld, G.J.J., Bijleveld, C.M.A., Kuipers, F., Kreeftenberg, H.G., Huizenga, J.R., te Velde, K. and Wolthers, B.G.: Evaluation and clinical application of the Enterotest® for the determination of human biliar porphyrin composition. *Eur. J. Clin. Chem. Clin. Biochem.*, 33 (1995) 453-462.
- 4567 Chamberland, G., Lariviere, N., Belanger, D., Leclair, D., Vermette, L. and Blais, J.S.: Improved method for the quantitative determination of porphyrins in urine of semi-domesticated mink. *Toxicol. Environ. Chem.*, 48 (1995) 183-194; *C.A.*, 123 (1995) 4849q.
- 4568 Luo, J. and Lim, C.K.: Isolation and characterization of new porphyrin metabolites in human porphyria cutanea tarda and in rats treated with hexachlorobenzene by HPTLC, HPLC and liquid secondary ion mass spectrometry. *Biomed. Chromatogr.*, 9 (1995) 113-122; *C.A.*, 123 (1995) 4847n.
- 4569 Owens, J.W., Yang, L., Adeola, G., Robins, M., Smith, R., Robinson, R., Elayan, N. and McMahon, L.: Isolation and photodynamic effects of hematoporphyrin derivative components: a chromatographic analysis of the starting materials. *J. Chromatogr. B*, 669 (1995) 295-309.
- 4570 Terry, M.J., McDowell, M.T. and Lagarias, J.C.: (3Z)- And (3E)-phytychromobilin are intermediates in the biosynthesis of the phytochrome chromophore. *J. Biol. Chem.*, 270 (1995) 11111-11118.
- 23b. *Bile pigments*
- 4571 Lin, M., Wu, N. and Aiken, J.H.: Micellar high-performance liquid chromatographic separation of serum bilirubin species with direct sample injection. *J. Liq. Chromatogr.*, 18 (1995) 1219-1229.
- 4572 Mizobe, M., Kumamoto, K., Kawabata, Y., Nasu, H. and Kondo, F.: (High-performance liquid chromatographic analysis of serum bilirubin and different types of jaundices in domestic animals). *Nippon Juishikai Zasshi*, 48 (1995) 215-219; *C.A.*, 122 (1995) 309991z.
- 23c. *Indole derivatives and plant hormones (gibberelins)*
- 4573 Eriksson, B.-M. and Wallin, A.: Evaluation of the liquid-chromatographic resolution of indenoindolic racemic compounds on three protein-based chiral stationary phases. *J. Pharm. Biomed. Anal.*, 13 (1995) 551-561.
- 4574 Helander, A., Löwenmo, C. and Beck, O.: Determination of 5-hydroxytryptophol in urine by high-performance liquid chromatography: application of a new post-column derivatization method with fluorometric detection. *J. Pharm. Biomed. Anal.*, 13 (1995) 651-654.
- 4575 Pullen, R.H., Brennan, J.J., Lammers, R. and Patonay, G.: Direct determination of substituted azepinoindole enantiomers in rat plasma using silica stationary phase and  $\beta$ -cyclodextrin as a mobile phase additive. *Anal. Chem.*, 67 (1995) 1903-1906.
- 4576 Tsai, T.-H., Tsai, W.-J. and Chen, C.-F.: Aspirin inhibits collagen-induced platelet serotonin release, as measured by microbore high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 669 (1995) 404-407.
- See also 4241.
- 23d. *Pyridine derivatives*
- 4577 Chen, S., Liu, Y., Armstrong, D.W., Borrell, J.I., Martinez-Teipel, B. and Matallana, J.L.: Enantioresolution of substituted 2-methoxy-6-oxo-1,4,5,6-tetrahydropyridine-3-carbonitriles on macrocyclic antibiotic and cyclodextrin stationary phases. *J. Liq. Chromatogr.*, 18 (1995) 1495-1507.
- See also 3932.

## 23e. Other N-heterocyclic compounds

- 4578 Guillaume, Y. and Guinard, C.: Thermodynamic behavior of mixed benzodiazepines by a new liquid chromatographic method. *Chromatographia*, 40 (1995) 193-196.
- 4579 Imai, J. and Yoshida, I.: (Determination of urinary creatinine by high-performance liquid chromatography). *Gifu-ken Hoken Kankyo Kenkyushoho*, 2 (1994) 28-30; *C.A.*, 122 (1995) 260168v.
- 4580 Rose, M.D., Bygrave, J. and Tarbin, J.A.: Determination of quinoxaline carboxylic acid (metabolite or carbadox) in animal tissue by HPLC. *Food Addit. Contam.*, 12 (1995) 177-183; *C.A.*, 122 (1995) 263782b.
- 4581 Sessler, J.L., Iverson, B.L., Kral, V., Shreder, K., Furuta, H. and Thomas, R.E.: Preparation of sapphyrin derivatives, conjugates, polymers, and chromatographic supports. *PCT Int. Appl. WO 94 09,003 (Cl. CO7D487/22)*, 28 Apr. 1994, US Appl. 964,607, 21 Oct. 1992; 201 pp.; *C.A.*, 123 (1995) 32862g.
- 4582 Thienpont, L.M., van Landuyt, K.G., Stöckl, D. and de Leenheer, A.P.: Candidate reference method for determining serum creatinine by isocratic HPLC: validation and isotope dilution gas chromatography-mass spectrometry and application for accuracy assessment of routine test kits. *Clin. Chem. (Washington)*, 41 (1995) 995-1003.
- 4583 Thomas, J., Adetchessi, O. and Jarry, C.: High performance liquid chromatography of new 5-aryloxymethyl-2-amino-2-oxazolines: a comparative study of their lipophilicity. *J. Liq. Chromatogr.*, 18 (1995) 1429-1436.

See also 4009, 4319, 4817, 4880.

## 24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)

- 4584 Euerby, M.R., Johnson, C.M., Rushin, I.D. and Tennekoon, D.A.S.S.: Investigations into the epimerisation of tipredane ethylsulphoxide diastereoisomers during chromatographic analysis on reversed-phase silica. I. Investigations into the reaction mechanism. *J. Chromatogr. A*, 705 (1995) 219-227.
- 4585 Euerby, M.R., Johnson, C.M., Rushin, I.D. and Tennekoon, D.A.S.S.: Investigations into the epimerisation of tipredane ethylsulphoxide diastereoisomers during chromatographic analysis on reversed-phase silica. II. The involvement of metals in commercially available C<sub>18</sub> silicas. *J. Chromatogr. A*, 705 (1995) 229-245.
- 4586 Furuta, R. and Doi, T.: Enantiomeric separation of a thiazole derivative by high-performance liquid chromatography and micellar electrokinetic chromatography. *J. Chromatogr. A*, 708 (1995) 245-251.
- 4587 Lange, F.T., Wenz, M. and Brauch, H.-J.: Trace-level determination of aromatic sulfonates in water by on-line ion-pair extraction/ion-pair chromatography and their behavior in the aquatic environment. *J. High Resolut. Chromatogr.*, 18 (1995) 243-252.
- 4588 Lundquist, P., Kagedal, B., Nilsson, L. and Rosling, H.: Analysis of the cyanide metabolite 2-aminothiazoline 4-carboxylic acid in urine by high-performance liquid chromatography. *Anal. Biochem.*, 228 (1995) 27-34.

- 4589 Pfeifer, J.H. and Briggs, D.E.: The estimation of thiols and disulfides in barley. *J. Inst. Brew.*, 101 (1995) 5-10; *C.A.*, 123 (1995) 31471s.
- 4590 Suzuki, T., Tsunoda, K.-i. and Akaiwa, H.: Distribution behavior of metal 4-(2-thienyl)-4-thioxo-1,1,1-trifluoro-2-butanonates in reversed-phase high-performance liquid chromatography. *Anal. Sci.*, 11 (1995) 39-43; *C.A.*, 122 (1995) 299686n.
- 4591 Vogt, C., Heinig, K., Langer, B., Mattusch, J. and Werner, G.: Determination of linear alkylbenzenesulfonates by high-performance liquid chromatography and capillary zone electrophoresis. *Fresenius J. Anal. Chem.*, 352 (1995) 508-514.

See also 3989, 4235, 4260, 4272, 4855, 4869, 4885.

## 25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)

- 4592 Diomina, G.R., Pleshakova, O.V., Sibeldina, L.A., Kharatian, E.F., Shipanova, I.N. and Ostrovsky, D.N.: (Stability of a new product of oxidative stress in bacterial cells). *Biokhimiya (Moscow)*, 60 (1995) 644-651.
- 4593 Matthäus, B., Lösing, R. and Fiebig, H.-J.: Determination of phytic acid and its degradation products in extracts of rape seeds and rapeseed meal. *J. High Resolut. Chromatogr.*, 18 (1995) 267-268.
- 4594 Swezey, R.R.: High-performance liquid chromatographic system for separating sugar phosphates and other intermediary metabolites. *J. Chromatogr. B*, 669 (1995) 171-176.

For additional information see *C.A.*:  
122 (1995) 310019v.

See also 4251, 4272, 4541, 4860.

## 26. ORGANOMETALLIC AND RELATED COMPOUNDS

## 26a. Organometallic compounds

- 4595 Chawla, S., Mutenda, E.K., Dixon, H.B.F., Freeman, S. and Smith, A.W.: Synthesis of 3-arsenopyruvate and its interaction with phosphoenolpyruvate mutase. *Biochem. J.*, 308 (1995) 931-935.
- 4596 Rivaro, P., Zaratin, L., Frache, R. and Mazzucotelli, A.: Determination of organotin compounds in marine mussel samples by using high-performance liquid chromatography - hydride generation inductively coupled plasma atomic emission spectrometry. *Analyst (Cambridge)*, 120 (1995) 1937-1939.

For additional information see *C.A.*:  
122 (1995) 305397n.

See also 4162.

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

- 4597 Rubio, R., Alberti, J., Padro, A. and Rauret, G.: On-line photolytic decomposition for the determination of organoarsenic compounds. *TrAC*, 14 (1995) 274-278.

## 26c. Coordination compounds

- 4598 Sarzanini, C., Sacchero, G., Mentasti, E. and Hájós, P.: Studies on the retention behaviour of metal-EDTA complexes in cation chromatography. *J. Chromatogr. A*, 706 (1995) 141-147.

See also 4894.

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

- 4599 Astier, A. and Baud, F.J.: Simultaneous determination of hydroxocobalamin and its cyanide complex cyanocobalamin in human plasma by high-performance liquid chromatography. Application to pharmacokinetic studies after high-dose hydroxocobalamin as an antidote for severe cyanide poisoning. *J. Chromatogr. B*, 667 (1995) 129-135.
- 4600 Barua, A.B., Kostic, D., Barua, M. and Olson, J.A.: Determination of retinol and retinoic acid in capillary blood by high performance liquid chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1459-1471.
- 4601 Caimi, R.J. and Brenna, J.T.: High-sensitive liquid chromatography-combustion isotope ratio mass spectrometry of fat-soluble vitamins. *J. Mass Spectrom.*, 30 (1995) 466-472; *C.A.*, 122 (1995) 223000p.
- 4602 Carl, G.F. and Smith, M.L.: Simultaneous measurement of one-carbon and polyglutamate derivatives of folic acid in rat liver using enzymic interconversions of folates followed by ternary complex formation with thymidylate synthetase and 5-fluorodeoxyuridylic acid: standardization of the method. *J. Nutr.*, 125 (1995) 1245-1257; *C.A.*, 122 (1995) 289576n.
- 4603 Decker, M.A. and Zimmerman, C.L.: Simultaneous determination of etretinate, acitretin and their metabolites in perfusate, perfusate plasma, bile or hepatic tissue with reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 105-113.
- 4604 Demoz, A., Garras, A., Asiedu, D.K., Netteland, B. and Berge, R.K.: Rapid method for the separation and detection of tissue short-chain coenzyme A esters by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 148-152.
- 4605 Felton, S.P. and Grace, R.: Authentication of L-ascorbyl-2-sulfate in salmonid gastric tissue: HPLC/electrospray ionization mass spectroscopic verification. *J. Liq. Chromatogr.*, 18 (1995) 1563-1581.
- 4606 Gao, Z.H. and Ackman, R.G.: Determination of vitamin K<sub>1</sub> in canola oils by high performance liquid chromatography with menaquinone-4 as an internal standard. *Food Res. Int.*, 28 (1995) 61-69; *C.A.*, 122 (1995) 263763w.
- 4607 Genestar, C. and Grases, F.: Determination of vitamin A in pharmaceutical preparations by high-performance liquid chromatography with diode-array detection. *Chromatographia*, 40 (1995) 143-146.
- 4608 Ham, A.-J.L. and Liebler, D.C.: Vitamin E oxidation in rat liver mitochondria. *Biochemistry*, 34 (1995) 5754-5761.
- 4609 Han-Xi, S., Guo-Sheng, Y., Ru-Yu, G. and Qin-Sun, W.: Optimized separation of pesticide enantiomers by chiral high-performance liquid chromatography. *Chromatographia*, 40 (1995) 303-306.
- 4610 Indyk, H.E., Littlejohn, V.C., Lawrence, R.J. and Woollard, D.C.: Liquid chromatographic determination of vitamin K<sub>1</sub> in infant formulas and milk. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 719-723.
- 4611 Ito, T., Murata, H., Yasui, Y., Matsui, M., Sakai, T. and Yamauchi, K.: Simultaneous determination of ascorbic acid and dehydroascorbic acid in fish tissues by high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 355-357.
- 4612 Jakob, E. and Elmadfa, I.: Rapid HPLC assay for the assessment of vitamin K<sub>1</sub>, A, E and beta-carotene status in children (7-19 years). *Int. J. Vitam. Nutr. Res.*, 65 (1995) 31-35; *C.A.*, 122 (1995) 289572h.
- 4613 Lu, K.V., Rohde, M.F., Thomason, A.R., Kenney, W.C. and Lu, H.S.: Mistranslation of a TGA termination codon as tryptophan in recombinant platelet-derived growth factor expressed in *Escherichia coli*. *Biochem. J.*, 309 (1995) 411-417.
- 4614 Lucy, C.A., Glavina, L.L.M. and Cantwell, F.F.: A laboratory experiment on extracolumn band broadening in liquid chromatography. *J. Chem. Educ.*, 72 (1995) 367-374; *C.A.*, 123 (1995) 8740v.
- 4615 Maeda, Y. and Yamamoto, M.: (Analysis of food components/physiologically active substances. Analysis of vitamin). *Gekkan Fudo Kemikaru*, 11 (1995) 104-116; *C.A.*, 123 (1995) 54331k - a review with 38 refs.
- 4616 Ohashi, Y., Masada, M., Shimamune, K. and Naruse, H.: (Measurements of neopterin and tetrahydrobiopterin levels in plasma from hepatitis C patients). *Rinsho Kagaku (Nippon Rinsho Kagakkai)*, 24 (1995) 7-11; *C.A.*, 123 (1995) 28711q.
- 4617 Schierle, J., Haerdi, W., Faccin, N., Buehler, I. and Schueep, W.: Example 8: Geometrical isomers of  $\beta,\beta$ -carotene. A rapid routine method for quantitative determination. In: Britton, G., Liaaen-Jensen, S. and Pfander, H. (Editors), *Carotenoids*, Birkhaeuser, Basel, 1995, pp. 265-272; *C.A.*, 123 (1995) 4821z.
- 4618 Schmitz, H.H.: Development of high-performance liquid chromatography and mass spectrometry methods for the identification of carotenoids and cis carotenoids in foods and human serum. *Avail. Univ. Microfilms Int.*, Order No. DA9417651, 1994, 211 pp.; *C.A.*, 123 (1995) 31467v.
- 4619 Schmitz, H.H., Emenhiser, C. and Schwartz, S.J.: HPLC separation of geometric carotene isomers using a calcium hydroxide stationary phase. *J. Agric. Food Chem.*, 43 (1995) 1212-1218; *C.A.*, 122 (1995) 285774c.
- 4620 Shimada, K., Mitamura, K., Mukouyama, M., Okumura, T. and Sugaya, K.: Separation and characterization of 25-hydroxyvitamin D<sub>3</sub> 3-sulfate in human plasma by high-performance liquid chromatography. *J. Chromatogr. Sci.*, 33 (1995) 82-85.
- 4621 Silveira, A., Jr. and Evans, J.M.: Flash chromatographic separation and electronic absorption spectra of carotenoids: a project for a problem-oriented laboratory course. *J. Chem. Educ.*, 72 (1995) 374-375; *C.A.*, 123 (1995) 8741w.
- 4622 Strugnell, S., Byford, V., Makin, H.L.J., Moriarty, R.M., Gilardi, R., LeVan, L.W., Knutson, J.C., Bishop, C.W. and Jones, G.: 1 $\alpha$ ,24(S)-Dihydroxyvitamin D<sub>2</sub>: a biologically active product of 1 $\alpha$ -hydroxyvitamin D<sub>2</sub> made in the human hepatoma, Hep3B. *Biochem. J.*, 310 (1995) 233-241.
- 4623 Suzuki, T., Hashimoto, H. and Ichinose, N.: Microanalysis of methotrexate by high-performance liquid chromatography using a fluorescence detector. *Fresenius J. Anal. Chem.*, 351 (1995) 806-807.

- 4624 Torrado, S.D., Caballero, E.J., Cadorniga, R. and Torrado, J.D.: A selective liquid chromatography assay for the determination of d1- $\alpha$ -tocopherol acetate in plasma samples. *J. Liq. Chromatogr.*, 18 (1995) 1251-1264.
- 4625 Yakushina, L. and Tarnaova, A.: Rapid HPLC simultaneous determination of fat-soluble vitamins, including carotenoids, in human serum. *J. Pharm. Biomed. Anal.*, 13 (1995) 715-718.
- For additional information see C.A.:
- 122 (1995) 260162p;  
123 (1995) 18026f.
- See also 4682, 4689.
- ## 28. ANTIBIOTICS
- 4626 Akeda, Y., Shibata, K., Ping, X., Tanaka, T. and Taniguchi, M.: AKD-2A, B, C and D, new antibiotics from *Streptomyces* sp. OCU-42815. Taxonomy, fermentation, isolation, structure elucidation and biological activity. *J. Antibiot.*, 48 (1995) 363-368.
- 4627 Bompadre, S., Ferrante, L., Alò, F.P. and Leone, L.: On-line solid-phase extraction of ceftazidime in serum and determination by high-performance liquid chromatography. *J. Chromatogr. B*, 669 (1995) 265-269.
- 4628 Breda, M., Pianezzola, E. and Benedetti, M.S.: Stretching HPLC sensitivity to measure subnanogram levels of FCE 23762, a novel anthracycline, and its 13-dihydro metabolite in human plasma. *Methodol. Surv. Bioanal. Drugs*, 23(Biofluid and Tissue Analysis for Drugs, Including Hypolipidaemics) (1994) 263-268; C.A., 122 (1995) 255325q.
- 4629 Brereton, P., Farrington, W.H.H., Shearer, G., Thomas, H.D. and Wood, R.: Determination of tetracyclines in milk: collaborative trial. *J. Assoc. Public Anal.*, 30 (1994) 55-78; C.A., 122 (1995) 263762v.
- 4630 Careri, M., Lugari, M.T., Mangia, A., Manini, P. and Spagnoli, S.: Identification of vitamins A, D and E particle beam liquid chromatography-mass spectrometry. *Fresenius J. Anal. Chem.*, 351 (1995) 768-776.
- 4631 Chevalier, M., Pochard, M.F. and Bel, B.: Determination of chloramphenicol residues by reverse-phase high-performance liquid chromatography in foies gras. *Food Addit. Contam.*, 12 (1995) 101-106; C.A., 122 (1995) 263779f.
- 4632 Fouda, H.G. and Schneider, R.P.: Quantitative determination of the antibiotic azithromycin in human serum by high-performance liquid chromatography (HPLC)-atmospheric pressure chemical ionization mass spectrometry: correlation with a standard HPLC-electrochemical method. *Ther. Drug Monit.*, 17 (1995) 179-183; C.A., 123 (1995) 25083a.
- 4633 Fraier, D., Frigerio, E., Pianezzola, E., Strolin Benedetti, M., Cassidy, J. and Vasey, P.: A sensitive procedure for the quantitation of free and N-(2-hydroxypropyl)methacrylamide polymer-bound doxorubicin (PK1) and some of its metabolites, 13-dihydrodoxorubicin, 13-dihydrodoxorubicinone and doxorubicinone, in human plasma and urine by reversed-phase HPLC with fluorimetric detection. *J. Pharm. Biomed. Anal.*, 13 (1995) 625-633.
- 4634 Harik-Khan, R. and Moats, W.A.: Identification and measurement of  $\beta$ -lactam antibiotic residues in milk: integration of screening kits with liquid chromatography. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 978-986.
- 4635 Hong, C.-C., Lin, C.-L., Tsai, C.-E. and Kondo, F.: Simultaneous identification and determination of residual penicillins by use of high-performance liquid chromatography with spectrophotometric or fluorometric detectors. *Am. J. Vet. Res.*, 56 (1995) 297-303; C.A., 122 (1995) 255331p.
- 4636 Horie, M., Saito, K., Nose, N. and Nakazawa, H.: (Simultaneous determination of carbadox and oxytetracycline in swine tissues by high performance liquid chromatography). *Shokuhin Eiseigaku Zasshi*, 36 (1995) 293-297; C.A., 123 (1995) 31484y.
- 4637 Hucker, R.S., McMeekin, J. and Fowles, S.: The determination of amoxicillin and clavulanic acid in human plasma by use of the ASTED coupled to HPLC with UV detection. *Methodol. Surv. Bioanal. Drugs*, 23(Biofluid and Tissue Analysis for Drugs, Including Hypolipidaemics) (1994) 269-271; C.A., 122 (1995) 255326r.
- 4638 Hummert, C., Luckas, B. and Siebenlist, H.: Determination of chloramphenicol in animal tissue using high-performance liquid chromatography with a column-switching system and ultraviolet detection. *J. Chromatogr. B*, 668 (1995) 53-58.
- 4639 Husain, S., Khalid, S., Nagaraju, V. and Rao, R.N.: High-performance liquid chromatographic separation and determination of small amounts of process impurities of ciprofloxacin in bulk drugs and formulations. *J. Chromatogr. A*, 705 (1995) 380-384.
- 4640 Iosifidou, E.G. and Psomas, J.E.: Liquid chromatographic analysis of thiamphenicol residues in milk. *J. Liq. Chromatogr.*, 18 (1995) 1863-1870.
- 4641 Luksa, J. and Marusic, A.: Rapid high-performance liquid chromatographic determination of vancomycin in human plasma. *J. Chromatogr. B*, 667 (1995) 277-281.
- 4642 Mandala, S.M., Thornton, R.A., Frommer, B.R., Curotto, J.E., Rozdilsky, W., Kurtz, M.B., Giacobbe, R.A., Bills, G.F., Cabello, M.A., Martin, I. et al.: The discovery of australfungin, a novel inhibitor of sphinganine N-acyltransferase from *Sporomiella australis*. Producing organism, fermentation, isolation, and biological activity. *J. Antibiot.*, 48 (1995) 349-356.
- 4643 Matsumoto, K., Nagshima, K., Kamigauchi, T., Kawamura, Y., Yasuda, Y., Ishii, K., Uotani, N., Sato, T., Nakai, H., Terui, Y., Kuruchi, J., Ikenishi, Y. et al.: Salfredins, new aldose reductase inhibitors produced by *Crucibulum* sp. RF-3817. I. Fermentation, isolation and structures of salfredins. *J. Antibiot.*, 48 (1995) 439-446.
- 4644 McCracken, R.J., Blanchflower, W.J., Haggan, S.A. and Kennedy, D.G.: Simultaneous determination of oxytetracycline, tetracycline and chlortetracycline in animal tissues using liquid chromatography post column derivatization with aluminium and fluorescence detection. *Analyst (Cambridge)*, 120 (1995) 1763-1766.
- 4645 Middleton, R.F., Foster, G., Cannell, R.J.P., Sidebottom, P.J., Taylor, N.L., Noble, D., Todd, M., Dawson, M.J. and Lawrence, G.C.: Novel squalenolactams produced by biotransformation. *J. Antibiot.*, 48 (1995) 311-316.
- 4646 Moran, J.W., Turner, J.M. and Coleman, M.R.: Determination of monensin in edible bovine tissues and milk by liquid chromatography. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 668-673.

- 4647 Nakashima, K., Ishimaru, T., Kuroda, M. and Akiyama, S.: High-performance liquid chromatographic separation of penicillamine enantiomers labeled with N-(4-(6-dimethylamino-2-benzofuranyl)phenyl)maleimide on a chiral stationary phase. *Biomed. Chromatogr.*, 9 (1995) 90-93; *C.A.*, 122 (1995) 274193m.
- 4648 Paesen, J., Crommen, J., de Beer, J., Shaohong, J., Porqueras, E., van Overbeke, A., Violon, C. and Hoogmartens, J.: Collaborative study of the analysis of tylosin by liquid chromatography on wide-pore poly(styrene-divinylbenzene). *J. Liq. Chromatogr.*, 18 (1995) 1195-1205.
- 4649 Sakai, K., Watanabe, K., Masuda, K., Tsuji, M., Hasumi, K. and Endo, A.: Isolation, characterization and biological activities of novel triprenyl phenols as pancreatic cholesterol esterase inhibitors produced by *Stachybotrys* sp. F-1839. *J. Antibiot.*, 48 (1995) 447-456.
- 4650 Stefanelli, S., Cavaletti, L., Sarubbi, E., Rag, E., Colombo, L. and Selva, E.: GE20372 Factor A and B. New HIV-1 protease inhibitors, produced by *Streptomyces* sp. ATCC 55925. *J. Antibiot.*, 48 (1995) 332-334.
- 4651 Ui, H., Imoto, M. and Umezawa, K.: Inhibition of phosphatidylinositol-specific phospholipase C activity by fluovirucin B<sub>2</sub>. *J. Antibiot.*, 48 (1995) 387-390.
- 4652 Wang, C.P., Scatina, J. and Sisenwine, S.F.: A high performance liquid chromatographic method for the determination of rapamycin (Sirolimus) in rat serum, plasma, and blood and in monkey serum. *J. Liq. Chromatogr.*, 18 (1995) 1801-1808.
- 4653 Wenzel, T.J., Zomlefer, K., Rapkin, S.B. and Keith, R.H.: Lanthanide luminescence detection of bleomycins and nalidixic acid. *J. Liq. Chromatogr.*, 18 (1995) 1473-1486.

For additional information see C.A.:

122 (1995) 255324p, 255387m, 255389p;  
123 (1995) 29131n.

See also 4027, 4730, 4857.

## 29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

### 29a. General techniques

- 4654 Crescenzi, C., Di Corcia, A., Marchese, S. and Samperi, R.: Determination of acidic pesticides in water by a benchtop electrospray liquid chromatography mass spectrometer. *Anal. Chem.*, 67 (1995) 1968-1975.
- 4655 Forgács, E. and Tibor, C.: Retention behaviour of some commercial pesticides on porous graphitized carbon column. *Analyst (Cambridge)*, 120 (1995) 1941-1944.
- 4656 Lucas, A.D., Gee, S.J., Hammock, B.D. and Seiber, J.N.: Integration of immunochemical methods for pesticide residue determination. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 585-591 - a review in part on CC.
- 4657 Schulein, J., Martens, D., Spitzauer, P. and Kettrup, A.: Comparison of different solid phase extraction materials and techniques by application of multiresidue methods for determination of pesticides in water by high-performance liquid chromatography (HPLC). *Fresenius J. Anal. Chem.*, 352 (1995) 565-571.

- 4658 Wong, R.B., Pont, J.L., Johnson, D.H., Zulalian, J., Chin, T. and Karu, A.E.: Immunoaffinity chromatography applications in pesticide metabolism and residue analysis. *ACS Symp. Ser.*, 586(Immunoanalysis of Agrochemicals) (1995) 235-247; *C.A.*, 122 (1995) 308163u.

For additional information see C.A.:

123 (1995) 54358z.

See also 4895, 4902.

### 29b. Chlorinated insecticides

- 4659 Barinova, E.S., Brodskii, E.S., Koverzanova, E.V. and Usachev, S.V.: Determination of residual quantities of chlorinated pesticides in potatoes by chromatography-mass spectrometry. *J. Anal. Chem. (Transl. of Zh. Anal. Khim.)*, 50 (1995) 294-297; *C.A.*, 122 (1995) 263790c.
- 4660 Letcher, R.J., Norstrom, R.J. and Bergman, A.: A column chromatography approach to PCB and DDT methyl sulfone metabolite isolation from biological matrices. *Organohalogen Compd.*, 20(Dioxin '94) (1994) 441-446; *C.A.*, 122 (1995) 308135m.
- 4661 Nakagawa, R., Hirakawa, H. and Hori, T.: Estimation of 1992-1993 dietary intake of organochlorine and organophosphorus pesticides in Fukuoka, Japan. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 921-929.
- 4662 Nerin, C., Tornés, A.R., Domeno, C. and Cacho, J.: Determination of organochlorine pesticides in animal diet: A comparative study of clean-up procedures. *Fresenius J. Anal. Chem.*, 352 (1995) 364-371.
- 4663 Nichols, W.K., Terry, C.M., Cutler, N.S., Appleton, M.L., Jesthi, P.K. and Yost, G.S.: Oxidation at C-1 controls the cytotoxicity of 1,1-dichloro-2,2-bis(p-chlorophenyl)thane by rabbit and human lung cells. *Drug Metab. Disp.*, 23 (1995) 595-599.
- 4664 Paasivirta, J., Koistinen, J. and Ray, S.: Extraction, cleanup, and separation of organochlorines. In: Kiceniuk, J.W. and Ray, S. (Editors), *Anal. Contam. Edible Aquat. Resour.*, VCH, New York, 1994, pp. 287-303; *C.A.*, 122 (1995) 313093a - a review with 118 refs.

For additional information see C.A.:

123 (1995) 8136c.

See also 4115, 4655.

### 29c. Phosphorus insecticides

See 4661.

### 29d. Carbamates

- 4665 Tsumura, Y., Ujita, K., Nakamura, Y., Tonogai, Y. and Ito, Y.: Simultaneous determination of aldicarb, ethiofencarb, methio-carb and their oxidized metabolites in grains, fruits and vegetables by high-performance liquid chromatography. *J. Food Prot.*, 58 (1995) 217-222; *C.A.*, 122 (1995) 313130k.

See also 4609, 4636.



## 29e. Herbicides

- 4666 Berg, M., Müller, S.R. and Schwarzenbach, R.P.: Simultaneous determination of triazines including atrazine and their major metabolites hydroxyatrazine, desethylatrazine, and deisopropylatrazine in natural waters. *Anal. Chem.*, 67 (1995) 1860-1865.
- 4667 Fischer, J.B. and Michael, J.L.: Thermospray ionization liquid chromatography-mass spectrometry and chemical ionization gas chromatography-mass spectrometry of hexazinone metabolites in soil and vegetation extracts. *J. Chromatogr. A*, 704 (1995) 131-139.
- 4668 Holland, D.C., Munns, R.K., Roybal, J.E., Hurlbut, J.A. and Long, A.R.: Liquid chromatographic determination of simazine, atrazine, and propazine residues in catfish. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 1067-1071.
- 4669 Kraeutler, O. and Dorn, E.: (HPLC-determination of amitrol in water). *Ernaehrung (Vienna)*, 19 (1995) 64-66; *C.A.*, 123 (1995) 17275z.
- 4670 Majerus, P. and Puetz, A.: (Determination of the germination inhibitors propham and chloroprotham in potatoes by HPLC with a diode array detector (DAD)). *Dtsch. Lebensm.-Rundsch.*, 91 (1995) 1-3; *C.A.*, 123 (1995) 54378f.
- 4671 Prosen, H., Zupancic-Krajc, L. and Marsel, J.: Optimization of an analytical procedure for the determination of triazine herbicides in environmental samples. *J. Chromatogr. A*, 704 (1995) 121-130.

See also 4182, 4912.

## 29g. Other types of pesticides and various agrochemicals

- 4672 Buser, H.-R. and Mueller, M.D.: Environmental behavior of acetamide pesticide stereoisomers. 1. Stereo- and enantioselective determination using chiral high-resolution gas chromatography and chiral HPLC. *Environ. Sci. Technol.*, 29 (1995) 2023-2030; *C.A.*, 123 (1995) 27662n.
- 4673 E Azam, M., Rengasamy, S. and Parmar, B.S.: Estimation of azadirachtin-A content of emulsifiable and solution concentrates of neem. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 893-896.
- 4674 Guan, F., Liu, L. and Luo, Y.: (High-performance liquid chromatographic determination of seven anticoagulant rodenticides in plasma). *Fenxi Huaxue*, 23 (1995) 159-162; *C.A.*, 122 (1995) 284028a.
- 4675 Regner-Joosten, K., Manderscheid, R., Bergmann, E., Bahadir, M. and Weigel, H.J.: An HPLC method to study the uptake and partitioning of the antiozonant EDU in bean plants. *Angew. Bot.*, 68 (1994) 151-155; *C.A.*, 122 (1995) 258558d.
- 4676 Stout, S.J., Peterson, R.P., DaCunha, A.R. and Picard, G.L.: Determination of hydramethylnon residues in grass by liquid chromatography with confirmation by liquid chromatography/mass spectrometry. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 862-867.
- 4677 Sundaram, K.M.S. and Nott, R.: Simultaneous determination of tebufenozide and five of its intact metabolites from forestry matrices by high-performance liquid chromatography. *J. Chromatogr. A*, 708 (1995) 71-81.
- 4678 Tomsej, T. and Hajslova, J.: Determination of benzoylurea insecticides in apples by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 513-517.

## 30. SYNTHETIC AND NATURAL DYES

## 30a. Synthetic dyes

- 4679 Dafflon, O., Gobet, H. and Koch, H.: (Quantification of gentian violet in chicken tissue using high performance liquid chromatography). *Mitt. Geb. Lebensmittelunters. Hyg.*, 85 (1994) 523-531; *C.A.*, 123 (1995) 8087n.
- 4680 Hajee, C.A.J. and Haagsma, N.: Simultaneous determination of malachite green and its metabolite leucomalachite green in eel plasma using post-column oxidation. *J. Chromatogr. B*, 669 (1995) 219-227.
- 4681 Rizova, V. and Stafilov, T.: XAD-2 HPTLC method of identification and determination of some synthetic food colourings. *Anal. Lett.*, 28 (1995) 1305-1316.

## 30b. Chloroplast and other natural pigments

- 4682 Emenhiser, C., Sander, L.C. and Schwartz, S.J.: Capability of a polymeric C<sub>30</sub> stationary phase to resolve *cis-trans* carotenoid isomers in reversed-phase liquid chromatography. *J. Chromatogr. A*, 707 (1995) 205-216.
- 4683 Got, L., Gousson, T. and Delacoux, E.: Simultaneous determination of retinyl esters and retinol in human livers by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 668 (1995) 233-239.
- 4684 Kawahigashi, M., Fujitake, N., Azuma, J. and Takahashi, T.: Preparation of humic acid fractions with a definite range of particle sizes by gel permeation chromatography (GPC). *Soil Sci. Plant Nutr. (Tokyo)*, 41 (1995) 147-150; *C.A.*, 122 (1995) 289738s.
- 4685 Martinson, T.A. and Plumley, F.G.: One-step extraction and concentration of pigments and acyl lipids by *sec*-butanol from *in vitro* and *in vivo* samples. *Anal. Biochem.*, 228 (1995) 123-130.
- 4686 Minguez-Mosquera, M.I. and Hornero-Méndez, D.: Formation and transformation of pigments during the fruit ripening of *Capsicum annum* cv. *bola* and *agridulce*. *J. Agric. Food Chem.*, 42 (1994) 38-44.
- 4687 Renault, J.H., Thepenier, P., Zeches-Hanrot, M. and Foucault, A.P.: Separation of the two major anthocyanins from Champagne vintage by-products by gradient elution centrifugal partition chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1663-1670.
- 4688 Schuep, W. and Schierle, J.: Example 9: astaxanthin. Determination of stabilized added astaxanthin in fish feeds and premixes. In: Britton, G., Liaaen-Jensen, S and Pfander, H. (Editors), *Carotenoids*, 1A, Birkhaeuser, Basel, 1995, pp. 273-276; *C.A.*, 122 (1995) 289176g.
- 4689 Van Breemen, R.B.: Electrospray liquid chromatography-mass spectrometry of carotenoids. *Anal. Chem.*, 67 (1995) 2004-2009.

See also 4127, 4614, 4617, 4619, 4621, 4879.

## 31. PLASTICS AND THEIR INTERMEDIATES

- 4690 Damant, A.P., Jickells, S.M. and Castle, L.: Liquid chromatographic determination of residual isocyanate monomers in plastics intended for food contact use. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 711-719.
- 4691 Jiang, C.: Retention behavior of poly(methyl methacrylate), poly(ethylene glycol) and poly(tryptophan) in reversed-phase liquid chromatography. Avail. *Univ. Microfilms Int.*, Order No. DA9510842, 1994, 240 p.; C.A., 123 (1995) 34074a.
- 4692 Konas, M., Moy, T.M., Rogers, M.E., Shultz, A.R., Ward, T.C. and McGrath, J.E.: Molecular weight characterization of soluble high performance polyimides. 1. Polymer-solvent-stationary phase interactions in size exclusion chromatography. *J. Polym. Sci., Part B: Polym. Phys.*, 3 (1995) 1429-1439; C.A., 123 (1995) 34049w.
- 4693 Konas, M., Moy, T.M., Rogers, M.E., Shultz, A.R., Ward, T.C. and McGrath, J.M.: Molecular weight characterization of soluble high performance polyimides. 2. Validity of universal SEC calibration and absolute molecular weight calculation. *J. Polym. Sci., Part B: Polym. Phys.*, 33 (1995) 1441-1448; C.A., 123 (1995) 34050q.
- 4694 Lee, H.C., Ree, M. and Chang, T.: Characterization of binary polymer mixtures by size exclusion chromatography with multiple detection. *Polymer*, 36 (1995) 2215-2218; C.A., 123 (1995) 10419r.
- 4695 Leibowitz, J.N., Sarmiento, R., Dugar, S.M. and Ethridge, M.W.: Determination of six common phthalate plasticizers in grain neutral spirits and vodka. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 730-735.
- 4696 Leister, W.H., Weaner, L.E. and Walker, D.G.: Analysis and purification of modified methoxy(polyethylene glycol) compounds of similar molecular mass by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 369-376.
- 4697 Moldovan, Z., Lebrato Martinez, J., Delgado Luque, M.V. and Otal Salaverri, E.: HPLC method for the study of anaerobic degradation of polyethylene glycols. *J. Liq. Chromatogr.*, 18 (1995) 1633-1646.
- 4698 Segudovic, N., Sertic, S., Kovac-Filipovic, M. and Jarm, V.: Salt effect on size-exclusion chromatography of partially sulfonated alternating copolymers of maleic acid and styrene in a polar solvent. *J. Chromatogr. A*, 704 (1995) 149-156.
- 4699 Sysel, P. and Kralicek, J.: Gel-permeation chromatography of *n*-trifluoroacetylated polyamide 6. *Pr. Nauk. Politech. Szczecin*, 513 (1994) 45-52; C.A., 123 (1995) 34046t.
- 4700 Van Asten, A.C., van Dam, R.J., Kok, W.T., Tijssen, R. and Poppe, H.: Determination of the compositional heterogeneity of poly-disperse polymer samples by the coupling of size-exclusion chromatography and thermal field-flow fractionation. *J. Chromatogr. A*, 703 (1995) 245-263.

See also 4013.

## 32. DRUG ANALYSIS

## 32a. Drug analysis, general techniques

- 4701 Aerts, M.M.L., Hogenboom, A.C. and Brinkman, U.A.T.: Analytical strategies for the screening of veterinary drugs and their residues in edible products. *J. Chromatogr. B*, 667 (1995) 1-40 - a review with 260 refs.
- 4702 Ayrton, J., Evans, M.B., Harris, A.J. and Plumb, R.S.: Porous graphitic carbon shows promise for the rapid chromatographic analysis of polar drug metabolites. *J. Chromatogr. B*, 667 (1995) 173-178.
- 4703 Bogusz, M.: Reproducibility of HPLC-retention index values of selected acidic and basic drugs measured in 1-nitroalkane scale in various elution conditions. In: Oliver, J.S. (Editor), *Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol., 26th 1992*, Scott. Acad. Press, Edinburgh, 1992, pp. 96-102; C.A., 122 (1995) 258092x.
- 4704 Bogusz, M., Aderjan, R., Franke, J.P., Wijsbeek, J. and de Zeeuw, R.A.: Inter-laboratory comparison of HPLC retention index values of selected acidic and basic drugs. In: Oliver, J.S. (Editor), *Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol., 26th 1992*, Scott. Acad. Press, Edinburgh, 1992, pp. 90-95; C.A., 122 (1995) 258091w.
- 4705 Bopp, R.J., Wozniak, T.J., Anliker, S.L. and Palmer, J.: Development and validation of liquid chromatographic assay for the regulatory control of pharmaceuticals. *Prog. Pharm. Biomed. Anal.*, 1 (1994) 315-344; C.A., 122 (1995) 248445a - a review discussion with 12 refs.
- 4706 Brehmer, C. and Iten, P.X.: HPLC separation of enantiomeric drugs in body fluids. In: Mueller, R.K. (Editor), *Contrib. Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol., 31st 1993*, MOLINApress, Leipzig, 1994, pp. 113-117; C.A., 123 (1995) 27338m.
- 4707 Bringmann, G., Hesselmann, C. and Feineis, D.: Endogenous alkaloids in man. XXI. Analysis of glyoxylate-derived 1,3-thiazolidines and their precursors after trimethylsilylation by gas chromatography-mass spectrometry. *J. Chromatogr. A*, 707 (1995) 267-281.
- 4708 Broek, A.P., Teunis, H.A., Bargeman, D., Sprengers, E.D., Strathmann, H. and Smolders, C.A.: Characterization of hemodialysis membranes by inverse size exclusion chromatography. *J. Membr. Sci.*, 99 (1995) 217-228; C.A., 122 (1995) 222759f.
- 4709 Brown, J.R.: Regulatory implications and chiral separations. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, 1994, pp. 57-68; C.A., 122 (1995) 299172s - a review with 46 refs.
- 4710 Buszewski, B.: Chemically bonded phase with specific interaction site for RP HPLC separation of basic drugs. *Acta Pol. Pharm.*, 51 (1994) 285-289; C.A., 122 (1995) 309996e.
- 4711 Clarke, G.S.: The use of temperature to empirically determine system suitability validation parameters for liquid chromatography. *J. Pharm. Biomed. Anal.*, 13 (1995) 705-709.
- 4712 Cosbey, S.H., Craig, I. and Gill, R.: Novel solid-phase extraction strategy for the isolation of basic drugs from whole blood. Preliminary study using commercially available extraction cartridges. *J. Chromatogr. B*, 669 (1995) 229-235.

- 4713 Das Gupta, V. and Mathew, M.: Effect of mobile phase pH on the separation of drugs using high-performance liquid chromatography. *Drug Dev. Ind. Pharm.*, 21 (1995) 833-837; C.A., 122 (1995) 223040b.
- 4714 Eaton, L.C.: Host cell contaminant protein assay development for recombinant biopharmaceuticals. *J. Chromatogr. A*, 705 (1995) 105-114 - a review with 79 refs.
- 4715 Gorog, S.: Problem solving in the pharmaceutical industry by the combined application of chromatographic and spectroscopic methods. *Egypt. J. Anal. Chem.*, 3 (1994) 31-33; C.A., 122 (1995) 222976z.
- 4716 Henion, J.: Coupled techniques for problem solving in pharmaceutical analysis: Liquid chromatography/mass spectrometry and capillary electrophoresis/mass spectrometry using atmospheric pressure ionization. In: Crommelin, D.J.A., Midha, K.K. and Nagi, T. (Editors), *Top. Pharm. Sci. 1993, Proc. Int. Congr. Pharm. Sci. F.I.P., 53rd 1993*, Medpharm Sci. Pub., Stuttgart, 1994, pp. 297-313; C.A., 122 (1995) 222975y.
- 4717 Huynh, N.-H., Karlsson, A. and Pettersson, C.: Enantiomeric separation of basic drugs using N-benzyloxycarbonylglycyl-L-proline as counter ion in methanol. *J. Chromatogr. A*, 705 (1995) 275-287.
- 4718 Iwabuchi, H., Kitazawa, E., Nakagawa, A. and Nakamura, K.: (Studies on drug metabolism using LC/atmospheric pressure chemical ionization-MS). *Bunseki Kagaku*, 44 (1995) 181-188; C.A., 123 (1995) 130a.
- 4719 Muller, M.C., Caude, M., Dauphin, J.F., Lecointre, L. and Saint-Germain, J.: Use of high speed liquid chromatography (HSLC) in the pharmaceutical industry. Practical aspects and limitations. *Chromatographia*, 40 (1995) 394-398.
- 4720 Mutton, I.M.: Chiral HPLC in the pharmaceutical industry. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, pp. 329-355; C.A., 122 (1995) 299174u - a review with 161 refs.
- 4721 Pettersson, C. and Heldin, E.: Ion-pair chromatography in enantiomer separations. In: Subramanian, G. (Editor), *Pract. Approach Chiral Sep. Liq. Chromatogr.*, VCH, Weinheim, 1994, pp. 279-310; C.A., 122 (1995) 299173t - a review with 38 refs.
- 4722 Reid, E.: Compendium. Recent papers on drug assay or metabolite delineation mostly using HPLC or GC; listed in therapeutic groups. *Methodol. Surv. Bioanal. Drugs*, 23(Biofluid and Tissue Analysis for Drugs, Including Hypolipidaemics) (1994) 287-312; C.A., 122 (1995) 255136d - a review with many refs.
- 4723 Segarra-Taus, I., Merino, V., Fabra-Campos, S., Garrigues, T.M. and Martin-Villodre, A.: (Alternative chromatographic parameters: use as lipophilicity indexes). *Cienc. Pharm.*, 5 (1995) 19-26; C.A., 123 (1995) 298m.
- 4724 Tarjanyi, Z., Kalasz, H., Darvas, F., Kerecsen, L., Valko, K. and Pucso, J.: Chromatographic investigation and computer simulation of (-)deprenyl metabolism. In: Kalasz, H., Ettre, L.S. and Pick, J. (Editors), *New Approaches Chromatogr. '93, [Pap. Budapest Chromatogr. Conf.]*, 1990, Fekete Sas Kiado, Budapest, 1993, pp. 243-260; C.A., 122 (1995) 281318j.
- 4725 Tedeschi, L., Frison, G., Bernardelli, B., Brusini, G., Castagna, F., Soregaroli, D. and Ferrara, S.D.: Comparison of immunoassay and chromatographic techniques for urine drug testing. In: Mueller, R.K. (Editor), *Contrib. Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 31st 1993, MOLINApress, Leipzig, 1994, pp. 464-468; C.A., 123 (1995) 2879a.
- 4726 Tiller, P.R., Mutton, I.M., Lane, S.J. and Bevan, C.D.: Immobilized human serum albumin: liquid chromatography/mass spectrometry as a method of determining drug-protein binding. *Rapid Commun. Mass Spectrom.*, 9 (1995) 261-263; C.A., 122 (1995) 255355z.
- 4727 Weiss, J., Statler, J. and Heckenberg, A.: Suppressed ion chromatography and its application to pharmaceutical analysis. *S.T.P. Pharma Prat.*, 4 (1994) 372-378; C.A., 122 (1995) 274185k - a review with 17 refs.
- 4728 Wiley, S.P. and Leazenbee, L.: Autofiltration of pharmaceutical HPLC samples. *Am. Lab. (Shelton)*, 27 (1995) 33C-33F; C.A., 122 (1995) 274020c.
- 4729 Wintersteiger, R. and Macher, M.: Improvement of selectivity of electrochemical detection for the determination of compounds with chloro aromatic ring. *Chromatographia*, 40 (1995) 247-252.
- 4730 Zhai, S., Korrapati, M.R., Wei, X., Muppalla, S. and Vestal, R.E.: Simultaneous determination of theophylline, enoxacin and ciprofloxacin in human plasma and saliva by high-performance liquid chromatography. *J. Chromatogr. B*, 669 (1995) 372-376.

For additional information see C.A.:

122 (1995) 222567s, 299208h.

See also 4020, 4030, 4033, 4072, 4075, 4078, 4084, 4086, 4087, 4089, 4870, 4872, 4889, 4902.

### 32b. Antirheumatics and antiinflammatory drugs

- 4731 Atay, O. and Dincol, F.: Quantitative determination of aspirin and paracetamol in tablets. *FABAD Farm. Bilimler Derg.*, 20 (1995) 13-19; C.A., 123 (1995) 18039n.
- 4732 Baker, P.R., Gardner, J.J. and Wilkinson, D.: Automated high-performance liquid chromatographic method for the determination of nedocromil sodium in human urine using bimodal column switching. *J. Chromatogr. B*, 668 (1995) 59-65.
- 4733 Carr, R.A., Caillé, G., Ngoc, A.H. and Foster, R.T.: Stereospecific high-performance liquid chromatographic assay of ketoprofen in human plasma and urine. *J. Chromatogr. B*, 668 (1995) 175-181.
- 4734 Carretero, I., Vadillo, J.M. and Laserna, J.J.: Determination of antipyrene metabolites in human plasma by solid phase extraction and micellar liquid chromatography. *Analyst (Cambridge)*, 120 (1995) 1729-1732.
- 4735 Edno, L., Bressolle, F., Combe, B. and Galtier, M.: A reproducible and rapid HPLC assay for quantitation of piroxicam in plasma. *J. Pharm. Biomed. Anal.*, 13 (1995) 785-789.
- 4736 Ferretti, R., Gallinella, B., la Torre, F. and Villani, C.: Direct high-performance liquid chromatography resolution on chiral columns of tiaprofenic acid and related compounds in bulk powder and pharmaceutical formulations. *J. Chromatogr. A*, 704 (1995) 217-223.
- 4737 Lee, H.G., Huffmon, G.V., III, Becklin, R.R., Tseng, J.-L., Soble-Smith, J., Robertson, J.T. and Desiderio, D.M.: Capillary reversed-phase high-performance liquid chromatographic determination of acetyl-methylprednisolone in feline spinal cord. *J. Chromatogr. B*, 667 (1995) 259-267.

- 4738 Li, H. and Wang, E.: Determination of aminopyrine and its metabolite in biological fluid by liquid chromatography/electrochemistry with a glassy carbon electrode dispersed with  $\alpha$ -alumina particles. *Electroanalysis*, 7 (1995) 280-182; C.A., 122 (1995) 255379k.
- 4739 Logan, B.K., Friel, P.N., Peterson, K.L. and Predmore, D.B.: Analysis of ketorolac in postmortem blood. *J. Anal. Toxicol.*, 19 (1995) 61-64.
- 4740 Marwah, A.K., Marwah, P., Rao, G.S., Drinivas, J.S., Rao, B.E. and Raghuvver, S.: Purity assay and resolution from impurities of IDPH-8261, a new non-steroidal antiinflammatory agent, using normal phase high performance liquid chromatography. *Indian J. Chem., Sect. B: Org. Chem. Incl. Med. Chem.*, 34B (1995) 557-559; C.A., 122 (1995) 322644h.
- 4741 Rupp, H.S., Holland, D.C., Munns, R.K., Turnipseed, S.B. and Long, A.R.: Determination of flunixin in milk by liquid chromatography with confirmation by gas chromatography/mass spectrometry and selected ion monitoring. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 959-970.
- 4742 Stanley, S.M.R., Owens, N.A. and Rodgers, J.P.: Detection of flunixin in equine urine using high-performance liquid chromatography with particle beam and atmospheric pressure ionization mass spectrometry after solid-phase extraction. *J. Chromatogr. B*, 667 (1995) 95-103.
- 4743 Unglaub, W. and Weber, U.: (Determination of phenylbutazone residues in bovine blood serum). *Fleischwirtschaft*, 74 (1994) 430-432; C.A., 122 (1995) 258086y.
- 4744 Wu, S.-M., Wu, H.-L., Chen, S.-H. and Kou, H.-S.: Determination of betamethasone and dexamethasone by fluorogenic derivatization and high-performance liquid chromatography. *Chin. J. (Taipei)*, 46 (1994) 393-400; C.A., 122 (1995) 223008x.
- For additional information see C.A.:  
122 (1995) 299240n.
- See also 4259, 4859.
- 32c. *Autonomic and cardiovascular drugs*
- 4745 Agostini, O., Bonacchi, G., Coppini, G., Di Marco, G., Paoli, P. and Toja, E.: Synthesis and analytical profile of the new potent antibronchospastic agent 7-[(2,2-dimethylpropyl)-1-methylxanthine]. *Arzneim.-Forsch.*, 45 (1995) 684-688.
- 4746 Baker, P.R., Gardner, J.J., Lockley, W.J.S. and Wilkinson, D.: Determination of dexamphetamine hydrochloride in human blood by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 667 (1995) 283-290.
- 4747 Braggio, S., Sartori, S., Angeri, F. and Pellegatti, M.: Automation and validation of the high-performance liquid chromatographic-radioimmunoassay method for the determination of lacidipine in plasma. *J. Chromatogr. B*, 669 (1995) 383-389.
- 4748 Chen, C.L., Sangiah, S., Roder, J.D., Chen, H., Berlin, K.D., Garrison, G.L., Scherlag, B.J. and Lazzara, R.: Pharmacokinetics and plasma protein binding of the new potent class III antiarrhythmic agent 3-[4-(1H-imidazol-1-yl)benzoyl]-7-isopropyl-3,7-diazabicyclo[3.3.1]nonane dihydroperchlorate. *Arzneim.-Forsch.*, 45 (1995) 670-675.
- 4749 Chen, L.-S., Fujitaki, J.M. and Dixon, R.: An improved assay for acadesine (AICA-riboside) in human plasma using liquid chromatography with amperometric electrochemical detection. *J. Liq. Chromatogr.*, 18 (1995) 1451-1457.
- 4750 Ekelund, J., van Arkens, A., Brønnum-Hansen, K., Fich, K., Olsen, L. and Petersen, P.V.: Chiral separations of  $\beta$ -blocking drug substances using chiral stationary phases. *J. Chromatogr. A*, 708 (1995) 253-261.
- 4751 Erickson, M., Karlsson, K.-E., Lamm, B., Larsson, S., Svensson, L.A. and Vessman, J.: Identification of a new by-product detected in metoprolol tartrate. *J. Pharm. Biomed. Anal.*, 13 (1995) 567-574.
- 4752 Gumieniczek, A., Misztal, G. and Przyborowski, L.: Determination of amiodarone in tablets and plasma by high-performance liquid chromatography. *Acta Pol. Pharm.*, 51 (1994) 325-328; C.A., 122 (1995) 299215h.
- 4753 Henczi, M., Nagy, J. and Weaver, D.F.: Determination of octanol-water partition coefficients by an HPLC method for anti-convulsant structure-activity studies. *J. Pharm. Pharmacol.*, 47 (1995) 345-347; C.A., 122 (1995) 281310a.
- 4754 Hsu, C.-y.L. and Walters, R.R.: Assay of the enantiomers of ibutilide and artilide using solid-phase extraction, derivatization, and achiral-chiral column-switching high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 115-128.
- 4755 Jankowski, A., Skorek, A., Krzysko, K., Zarzycki, P.K., Ochocka, R.J. and Lamparczyk, H.: Captopril: determination in blood and pharmacokinetics after single oral dose. *J. Pharm. Biomed. Anal.*, 13 (1995) 655-660.
- 4756 Karlsson, A., Pettersson, K. and Hernqvist, K.: Resolution and determination of enantiomeric purity of the enantiomers of felodipine using Chiral-AGP as stationary phase. *Chirality*, 7 (1995) 147-153; C.A., 123 (1995) 18059u.
- 4757 Kasper, S.C., Bonate, P.L. and DeLong, A.F.: High-performance liquid chromatographic assay for xanomeline, a specific M-1 agonist, and its metabolite in human plasma. *J. Chromatogr. B*, 669 (1995) 397-403.
- 4758 Li, F., Cooper, S.F. and Côté, M.: Determination of the enantiomers of metoprolol and its major acidic metabolite in human urine by high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 668 (1995) 67-75.
- 4759 Qin, X.-Z., DeMarco, J. and Ip, D.P.: Simultaneous determination of enalapril, felodipine and their degradation products in the dosage formulation by reversed-phase high-performance liquid chromatography using a Spherisorb C<sub>8</sub> column. *J. Chromatogr. A*, 707 (1995) 245-254.
- 4760 Skerjanec, A. and Tam, Y.K.: High-performance liquid chromatographic analysis of mibefradil in dog plasma and urine. *J. Chromatogr. B*, 669 (1995) 377-382.
- 4761 Stagni, G. and Gillespie, W.R.: Simultaneous analysis of verapamil and norverapamil enantiomers in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 349-354.
- 4762 Tsai, F.-Y., Chen, S.-J. and Chien, C.S.: Determination of isosorbide nitrate and its analogs in pharmaceuticals by high-performance liquid chromatography. *Yaowu Shipin Fenxi*, 2 (1994) 271-280; C.A., 122 (1995) 223048k.
- 4763 Wahbi, A.-A.M., El-Walily, A.-F.M., Hassan, E.M., Saliman, F.G. and El-Gendi, A.: Liquid chromatographic determination of flunarizine dihydrochloride in the presence of its degradation product. *J. Pharm. Biomed. Anal.*, 13 (1995) 777-784.

- 4764 Zhang, H., Stewart, J.T. and Ujhelyi, M.: High-performance liquid chromatographic analysis of pindolol enantiomers in human serum and urine using a reversed-phase cellulose-based chiral column. *J. Chromatogr. B*, 668 (1995) 309-313.
- 4765 Zhang, S., Zhen, Y., Zhang, L. and Li, S.: (Simultaneous determination of 6 different dihydropyridine calcium antagonists in human plasma by high performance liquid chromatography). *Sepu*, 13 (1995) 132-135; *C.A.*, 122 (1995) 255372c.
- For additional information see *C.A.*:  
122 (1995) 223036e, 248509z, 248513w.
- See also 3971, 4575, 4719, 4784, 4859.
- 32d. *Central nervous system drugs*
- 4766 Altieri, I., Pichini, S., Racifici, R. and Zuccaro, P.: Improved clean-up procedure for the high-performance liquid chromatographic assay of clomipramine and its demethylated metabolite in human plasma. *J. Chromatogr. B*, 669 (1995) 416-417.
- 4767 Bamio-Nuez, A., Artalejo-Ortega, B., del Pozo Carrascosa, A. and Fauli Trillo, C.: (Analytical validation: application of a high-resolution liquid chromatographic method to the analysis of benzodiazepines). *Ars Pharm.*, 33 (1992) 295-310; *C.A.*, 122 (1995) 322624b.
- 4768 Belmadani, A., Combourieu, I., Bonini, M. and Creppy, E.E.: High performance liquid chromatography with ultraviolet detection used for laboratory routine determination of fluvoxamine in human plasma. *Hum. Exp. Toxicol.*, 14 (1995) 34-37; *C.A.*, 122 (1995) 281263n.
- 4769 Caccamese, S., Principato, G., Viaud, M.-C. and Guillaumet, G.: Direct high-performance liquid chromatographic separation of the enantiomers of methoxy and hydroxy derivatives of 3,4-dihydro-3-(dipropylamino)-2H-1-benzopyrans with dopaminergic activity. *J. Chromatogr. A*, 704 (1995) 83-87.
- 4770 Catlow, J.T., Barton, R.D., Clemens, M., Gillespie, T.A., Goodwin, M. and Swanson, S.P.: Analysis of olanzapine in human plasma utilizing reversed-phase high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 668 (1995) 85-90.
- 4771 Chacia, T.: Analysis of benzodiazepines by high performance liquid chromatography. In: Mueller, R.K. (Editor), *Contrib. Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 31st 1993, MOLINApress, Leipzig, 1994, pp. 133-137; *C.A.*, 123 (1995) 2890x.
- 4772 Chiba, K., Horii, H., Chiba, T., Kato, Y., Hirano, T. and Ishizaki, T.: Development and preliminary application of high-performance liquid chromatographic assay of urinary metabolites of diazepam in humans. *J. Chromatogr. B*, 668 (1995) 77-84.
- 4773 Eap, C.B., Koeb, L., Powell, K. and Baumann, P.: Determination of the enantiomers of thioridazine, thioridazine 2-sulfone, and of the isomeric pairs of thioridazine 2-sulfoxide and thioridazine 5-sulfoxide in human plasma. *J. Chromatogr. B*, 669 (1995) 271-279.
- 4774 Eckstein, J.A. and Swanson, S.P.: Determination of a novel  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionate receptor antagonist (LY300164) and its N-acetyl metabolite in mouse, rat, dog, and monkey plasma using high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 668 (1995) 153-158.
- 4775 Foda, N.H.: Quantitative analysis of fluvoxamine maleate in tablet formulations by HPLC. *J. Liq. Chromatogr.*, 18 (1995) 1591-1601.
- 4776 Foglia, J.P., Sorisio, D., Kirshner, M.A., Mulsant, B.H. and Perel, J.M.: Quantitative determination of perphenazine and its metabolites in plasma by high-performance liquid chromatography and coulometric detection. *J. Chromatogr. B*, 668 (1995) 291-297.
- 4777 Forgács, E.: Use of principal component analysis for the evaluation of the retention behaviour of monoamine oxidase inhibitory drugs on  $\beta$ -cyclodextrin column. *J. Pharm. Biomed. Anal.*, 13 (1995) 525-532.
- 4778 Fraser, A.D., MacNeil, W., Isner, A.F. and Camfield, P.R.: Lamotrigine analysis in serum by high-performance liquid chromatography. *Ther. Drug Monit.*, 17 (1995) 174-178; *C.A.*, 122 (1995) 281255m.
- 4779 Hoyer, G.L., LeDoux, J. and Nolan, P.E., Jr.: A sensitive stability indicating assay for the H<sub>2</sub> blocker ranitidine. *J. Liq. Chromatogr.*, 18 (1995) 1239-1249.
- 4780 Ishida, J., Horike, N. and Yamaguchi, M.: Determination of maprotiline in plasma by high-performance liquid chromatography with chemiluminescence detection. *J. Chromatogr. B*, 669 (1995) 390-396.
- 4781 Janiszewski, J.S., Fouda, H.G. and Cole, R.O.: Development and validation of a high-sensitivity assay for an antipsychotic agent, CP-88,059, with solid-phase extraction and narrow-bore high-performance liquid chromatography. *J. Chromatogr. B*, 668 (1995) 133-139.
- 4782 Jennison, T.A., Brown, P., Crossett, J. and Urry, F.M.: A high-performance liquid chromatographic method for quantitating bupropion in human plasma or serum. *J. Anal. Toxicol.*, 19 (1995) 69-72.
- 4783 Johansen, K., Krogh, M., Andresen, A.T., Christophersen, A.S., Lehne, G. and Rasmussen, K.E.: Automated analysis of free and total concentrations of three antiepileptic drugs in plasma with on-line dialysis and high-performance liquid chromatography. *J. Chromatogr. B*, 669 (1995) 281-288.
- 4784 Jonczyk, A. and Wikczynska-Wojtulewicz, I.: Determination of chlorpheniramine and phenylpropanolamine in pharmaceutical mixtures by high-performance liquid chromatography. *Acta Pol. Pharm.*, 51 (1994) 297-300; *C.A.*, 122 (1995) 322617b.
- 4785 Kaefenstein, H. and Sticht, G.: Quantitative determination of methadone in urine with FPIA and HPLC. In: Mueller, R.K. (Editor), *Contrib. Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 31st 1993, MOLINApress, Leipzig, 1994, pp. 304-308; *C.A.*, 123 (1995) 2882w.
- 4786 Kamali, F. and Nicholson, E.: Determination of 3,4-diaminopyridine in human plasma by high-performance liquid chromatography. *J. Pharm. Biomed. Anal.*, 113 (1995) 791-794.
- 4787 Knoeller, J., Vogt-Schenkel, R. and Brett, M.A.: A simple and robust HPLC method for the determination of paroxetine in human plasma. *J. Pharm. Biomed. Anal.*, 13 (1995) 635-638.
- 4788 Küsters, E. and Dosenbach, C.: HPLC separation of the enantiomers of racemic benzergoline derivatives on a chiral binaphthalene covalently bonded to silica gel. *J. High Resolut. Chromatogr.*, 18 (1995) 217-220.

- 4789 Lehotay, J. and Cizmarik, J.: Correlation between capacity factor and relative step height of zones H from isotachopheresis and local anaesthetic activity in the series of piperidinoethyl esters of 2-, 3-alkoxyphenylcarbamic acids. *Pharmazie*, 50 (1995) 433-434.
- 4790 Matsui, E., Hoshino, M., Matsui, A. and Okahira, A.: Simultaneous determination of citalopram and its metabolites by high-performance liquid chromatography with column switching and fluorescence detection by direct plasma injection. *J. Chromatogr. B*, 668 (1995) 299-307.
- 4791 Mawa, R.V., Vallon, J.J., Gagnieu, M.C., Petit-Ramel, M. and Grancher, D.: Simultaneous HPLC separation of diastereomers of the oxazepam glucuronide and oxazepam. Application to the study of urinary excretion. *Anal. Lett.*, 28 (1995) 1387-1404.
- 4792 Murphy, A.T., Kasper, S.C., Gillespie, T.A. and Delong, A.F.: Determination of xanomeline and active metabolite, N-desmethylxanomeline, in human plasma by liquid chromatography-atmospheric pressure chemical ionization mass spectrometry. *J. Chromatogr. B*, 668 (1995) 273-280.
- 4793 Mutlib, A.E. and Strupczewski, J.T.: Picogram determination of iloperidone in human plasma by solid-phase extraction and by high-performance liquid chromatography-selected-ion monitoring electrospray mass spectrometry. *J. Chromatogr. B*, 669 (1995) 237-246.
- 4794 Neighbors, S.M. and Soine, W.H.: Identification of phenobarbital N-glucuronides as urinary metabolites of phenobarbital in mice. *Drug Metab. Disp.*, 23 (1995) 548-552.
- 4795 Ohkubo, T., Osanai, T., Sugawara, K., Ishida, M., Otani, K., Mihara, K. and Yasui, N.: High-performance liquid chromatographic determination of trazodone and 1-m-chlorophenylpiperazine with ultraviolet and electrochemical detector. *J. Pharm. Pharmacol.*, 47 (1995) 340-344; C.A., 122 (1995) 281309g.
- 4796 Pichini, S., Altieri, I., Passa, A.R., Zuccaro, P. and Pacifici, R.: Stereoselective bioanalysis of oxcarbazepine and the enantiomers of its metabolites by high-performance liquid chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1533-1541.
- 4797 Piperaki, S., Penn, S.G. and Goodall, D.M.: Systematic approach to treatment of enantiomeric separations in capillary electrophoresis and liquid chromatography. II. A study of the enantiomeric separation of fluoxetine and norfluoxetine. *J. Chromatogr. A*, 700 (1995) 59-67.
- 4798 Quaglia, M.G., Farina, A., Bossu, E. and Dell'Aquila, C.: Analysis of non-benzodiazepinic anxiolytic agents by capillary zone electrophoresis. *J. Pharm. Biomed. Anal.*, 13 (1995) 505-509.
- 4799 Robertson, M.D. and Drummer, O.H.: High-performance liquid chromatographic procedure for the measurement of nitrobenzodiazepines and their 7-amino metabolites in blood. *J. Chromatogr. B*, 667 (1995) 179-184.
- 4800 Rouan, M.C., Souppart, C., Alif, L., Moes, D., Lecaillon, J.B. and Godbillon, J.: Automated analysis of a novel anti-epileptic compound, CGP 33 101, and its metabolite, CGP 47 292, in body fluids by high-performance liquid chromatography and liquid-solid extraction. *J. Chromatogr. B*, 667 (1995) 307-313.
- 4801 Soentjens-Werts, V., Dubois, J.G., Atassi, G. and Hanocq, M.: Chlordiazepoxide photoisomerization kinetics into oxaziridine. A HPLC study. *Talanta*, 42 (1995) 581-589; C.A., 122 (1995) 273933r.
- 4802 Spraul, M., Hofmann, M., Lindon, J.C., Farrant, R.D., Seddon, M.J., Nicholson, J.K. and Wilson, I.D.: Evaluation of liquid chromatography coupled with high-field <sup>1</sup>H NMR spectroscopy for drug metabolite detection and characterization: the identification of paracetamol metabolites in urine and bile. *NMR Biomed.*, 7 (1994) 295-303; C.A., 122 (1995) 255313j.
- 4803 Stemm, N.L., Skoug, J.W. and Robins, R.H.: Gradient high-performance liquid chromatographic assay for degradation products of adinazolam mesylate in a sustained-release tablet formulation. *Pharm. Res.*, 12 (1995) 738-745; C.A., 122 (1995) 299242q.
- 4804 Tenjarla, S.N., Allen, R. and Mitchell, B.: High performance liquid chromatographic assay of terbutaline for preformulation studies. *J. Liq. Chromatogr.*, 18 (1995) 1603-1615.
- 4805 Xie, H.-G., Huang, S.-L. and Zhou, H.-H.: High-performance liquid chromatographic determination of urinary 4'-hydroxymephenytoin, a metabolic marker for the hepatic enzyme CYP2C19, in humans. *J. Chromatogr. B*, 668 (1995) 125-131.
- 4806 Yoo, S.D., Holladay, J.W., Fincher, T.K. and Dewey, M.J.: Rapid microsample analysis of imipramine and desipramine by reversed-phase high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 668 (1995) 338-342.
- 4807 Zweipfenning, P.G.M., Kruseman, K.S. and Vermaase, C.J.: Determination of benzodiazepines in full-blood after quantitative extraction with Extrelut and high performance liquid chromatography with a scanning ultraviolet detector. In: Oliver, J.S. (Editor), *Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 26th 1992, Scott. Acad. Press, Edinburgh, 1992, pp. 327-336; C.A., 122 (1995) 258097c.
- For additional information see C.A.:  
122 (1995) 281380y, 284051c, 284058k.
- See also 4073, 4730, 4732, 4734, 4738, 4741, 4864, 4872, 4877, 4925.
- 32e. *Chemotherapeutics (exc. cytostatics and antibiotics)*
- 4808 Arenas, R.V. and Johnson, N.A.: Liquid chromatographic fluorescence method for multiresidue determination of thiabendazole and 5-hydroxythiabendazole in milk. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 642-646.
- 4809 Boison, J.O. and Keng, L.J.-T.: Determination of sulfadimethoxine and sulfamethazine residues in animal tissues by liquid chromatography and thermospray mass spectrometry. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 651-658.
- 4810 Bushway, R.J., Li, L., Paradis, L.R. and Perkins, L.B.: Determination of thiabendazole in potatoes, fruits, and their processed products by liquid chromatography. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 815-820.
- 4811 Cinquina, A.L., di Lullo, A., Fiorucci, F., Calderini, P. and Cozzani, R.: (Simultaneous determination of benzoimidazoles in sheep and goat milk by HPLC with a diode array detector). *Ind. Aliment. (Pinerolo)*, 34 (1995) 117-122; C.A., 123 (1995) 156p.
- 4812 Dash, A.K. and Harrison, J.S.: Ion-pair chromatographic method for the analysis of mafenide acetate. *J. Chromatogr. A*, 708 (1995) 83-88.

- 4813 Defilipi, A., Piancone, G., Costa Lavi, R. and Tibaldi, G.P.: An HPLC screening method for the detection of isonicotinic acid hydrazide in cattle milk. *Chromatographia*, 40 (1995) 170-174.
- 4814 Emara, K.M., Refaat, I.H. and Abdelmageed, O.H.: HPLC and spectrophotometric determination of nifuroxazide and its pharmaceutical formulations. *J. Pharm. Sci.*, 35 (1994) 313-324; C.A., 123 (1995) 18045m.
- 4815 Gaillard, Y., Prévosto, J.-M., Cheminel, V., Soares, O. and Chaulet, J.-F.: New solid-phase extraction for an improved high-performance liquid chromatographic procedure for the quantitation of halofantrine and monodesbutylhalofantrine in blood or plasma. *J. Chromatogr. B*, 668 (1995) 315-321.
- 4816 Hormazabal, V. and Yndestad, M.: Determination of praziquantel in medicated fish feed and sediment by HPLC. *J. Liq. Chromatogr.*, 18 (1995) 1231-1238.
- 4817 Hormazabal, V. and Yndestad, M.: Simple and rapid method of analysis for furazolidone in meat tissues by high-performance liquid chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1871-1877.
- 4818 Hsu, L.C., Constable, D.J.C., Orvos, D.R. and Hannah, R.E.: Comparison of high-performance liquid chromatography and capillary zone electrophoresis in penciclovir biodegradation kinetic studies. *J. Chromatogr. B*, 669 (1995) 85-92.
- 4819 Iavarone, L., Scandola, M., Pugnaghi, F. and Vrossi, P.: Qualitative analysis of potential metabolites and degradation products of a new anti-infective drug in rat urine, using HPLC with radiochemical detection and HPLC-mass spectrometry. *J. Pharm. Biomed. Anal.*, 13 (1995) 607-614.
- 4820 Mayrhofer, A., Wieser, M. and Wollein, G.: (Chorhexidine. Development of a solid phase extraction method for high-performance liquid chromatography). *Sci. Pharm.*, 62 (1994) 405-407; C.A., 122 (1995) 298454y.
- 4821 Nakagawa, T., Ishigai, M., Hiramatsu, Y., Kinoshita, H., Ishitani, Y., Ohkubo, K. and Okazaki, A.: Determination of the new fluoroquinolone balofloxacin and its metabolites in biological fluids by high performance liquid chromatography. *Arzneim.-Forsch.*, 45 (1995) 716-718.
- 4822 Nakagawa, T., Ishigai, M., Kato, M., Hayakawa, N., Kinoshita, H., Okutomi, T., Ohkubo, K. and Okazaki, A.: Pharmacokinetics of the new fluoroquinolone balofloxacin in mice, rats and dogs. *Arzneim.-Forsch.*, 45 (1995) 719-722.
- 4823 Ohlemeir, L.A. and Gavlick, W.K.: Liquid chromatographic determination of phenolic compounds in hospital disinfectant products. *J. Liq. Chromatogr.*, 18 (1995) 1833-1849.
- 4824 Schwartz, D.P. and Lightfield, A.R.: Practical screening procedures for sulfamethazine and N<sup>4</sup>-acetylsulfamethazine in milk at low parts-per-billion levels. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 967-970.
- 4825 Tsai, C.-E. and Kondo, E.: Liquid chromatographic determination of fluorescent derivatives of six sulfonamides in bovine serum and milk. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 674-685.
- 4826 Vinas, P., López Erroz, C., Hernández Canals, A. and Hernández Córdoba, M.: Liquid chromatographic analysis of sulfonamides in foods. *Chromatographia*, 40 (1995) 382-386.
- 4827 Yoshida, K. and Kondo, F.: Liquid chromatographic determination of furazolidone in swine serum and avian egg. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 1126-1129.
- For additional information see C.A.:  
122 (1995) 223020v, 223022x, 248502s, 281293x, 299235q, 299247v.
- See also 4045, 4230, 4653, 4680, 4707.
- 32f. Cytostatics
- 4828 Bastos, J.K., Kopycki, W.J., Burandt, C.L., Nanayakkara, N.P.D. and McChesney, J.D.: Quantitative determination of podophylotoxin and related compounds in *Podophyllum* species by reversed-phase high-performance liquid chromatography. *Phytochem. Anal.*, 6 (1995) 101-105; C.A., 122 (1995) 222992b.
- 4829 Bernareggi, A., Torti, L., Facino, R.M., Carini, M., Depta, G., Casetta, B., Farrell, N., Spadacini, S., Ceserani, R. and Tognella, S.: Characterization of cisplatin-glutathione adducts by liquid chromatography-mass spectrometry. Evidence for their formation *in vitro* but not *in vivo* after concomitant administration of cisplatin and glutathione to rats and cancer patients. *J. Chromatogr. B*, 669 (1995) 247-263.
- 4830 Bullen, W.W., Whitfield, L.R., Walter, G.A. and Brodfuehrer, J.I.: High-performance liquid chromatographic assay for CI-980, a novel 1-deaza-7,8-dihydropteridine anticancer agent, in human plasma and urine. *J. Chromatogr. B*, 668 (1995) 141-151.
- 4831 Dimitrova, B., Caccia, S., Garattini, E. and Guiso, G.: Determination of the retinobenzoic acid derivative Am580 in rat plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 301-306.
- 4832 Fadl, T.A., Hasegawa, T., Youssef, A.F., Farag, H.H., Omar, F.A. and Kawaguchi, T.: Synthesis and investigation of N<sup>4</sup>-substituted cytarabine derivatives as prodrugs. *Pharmazie*, 50 (1995) 382-387.
- 4833 Liliemark, E., Pettersson, B., Peterson, C. and Liliemark, J.: High-performance liquid chromatography with fluorometric detection for monitoring of etoposide and its *cis*-isomer in plasma and leukaemic cells. *J. Chromatogr. B*, 669 (1995) 311-317.
- 4834 Reichelova, V., Liliemark, J. and Albertioni, F.: Liquid chromatographic study of acid stability of 2-chloro-2'-arabino-fluoro-2'-deoxyadenosine, 2-chloro-2'-deoxyadenosine and related analogues. *J. Pharm. Biomed. Anal.*, 13 (1995) 711-714.
- 4835 Richards, L.E. and Sun, J.-H.: Identification of two regioisomeric monocarboxylic acid metabolites of losoxantrone (DuP 941; biantazole) excreted in human urine. *Drug Metab. Disp.*, 23 (1995) 600-602.
- 4836 Rosing, H., Doyle, E., Davies, B.E. and Beijnen, J.H.: High-performance liquid chromatographic determination of the novel antitumour drug topotecan and topotecan as the total of the lactone plus carboxylate forms, in human plasma. *J. Chromatogr. B*, 668 (1995) 107-115.
- 4837 Rudolphi, A., Vielhauer, S., Boos, K.-S., Seidel, D., Bähge, I.-M. and Berger, H.: Coupled-column liquid chromatographic analysis of epirubicin and metabolites in biological material and its application to optimization of liver cancer therapy. *J. Pharm. Biomed. Anal.*, 13 (1995) 615-623.
- 4838 Schleyer, E., Reinhardt, J., Unterhalt, M. and Hiddemann, W.: Highly sensitive coupled-column high-performance liquid chromatographic method for the separation and quantitation of the diastereomers of leucovorin and 5-methyltetrahydrofolate in serum and urine. *J. Chromatogr. B*, 669 (1995) 319-330.

- 4839 Shen, F., Decosterd, L.A., Gander, M., Leyvraz, S., Biollaz, J. and Lejeune, F.: Determination of temozolomide in human plasma and urine by high-performance liquid chromatography after solid-phase extraction. *J. Chromatogr. B*, 667 (1995) 291-300.
- 4840 Van Gijn, R., van Tellingen, O., de Clippeleir, J.J.M., Hillebrand, M.J.X., Boven, E., Vermorcken, J.B., ten Bokkel Huinink, W.W., Schwertz, S., Graf, P. and Beijnen, J.H.: Analytical procedure for the determination of the new antitumour drug N-benzoylstaurosporine and three potential metabolites in human plasma by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 667 (1995) 269-276.
- 4841 Vasey, P.A., Bissett, D., Strolin-Benedetti, M., Poggesi, I., Breda, M., Adams, L., Wilson, P., Pacciarini, M.A., Kaye, S.B. and Cassidy, J.: Phase I clinical and pharmacokinetic study of 3'-deamino-3'-(2-methoxy-4-morpholinyl)doxorubicin (FCE 23762). *Cancer Res.*, 55 (1995) 2090-2096.
- 4842 Wu, D.-R., Lohse, K. and Greenblatt, H.C.: Preparative separation of taxol in normal- and reversed-phase operations. *J. Chromatogr. A*, 702 (1995) 233-241.
- For additional information see C.A.:  
122 (1995) 322627e;  
123 (1995) 18075w.
- See also 3955, 4633, 4882
- 32g. *Other drug categories*
- 4843 Aboul-Enein, H.Y. and Serignese, V.: Direct separation of albuterol enantiomers in biological fluids and pharmaceutical formulations using  $\alpha_1$ -acid glycoprotein and pirle urea type columns. *Chirality*, 7 (1995) 158-162; C.A., 123 (1995) 18060n.
- 4844 Abushoffa, A.M. and Clark, B.J.: Resolution of the enantiomers of oxamniquine by capillary electrophoresis and high-performance liquid chromatography with cyclodextrins and heparin as chiral selectors. *J. Chromatogr. A*, 700 (1995) 51-58.
- 4845 Arvidsson, T. and Eklund, E.: Determination of free concentration of ropivacaine and bupivacaine in blood plasma by ultrafiltration and coupled-column liquid chromatography. *J. Chromatogr. B*, 668 (1995) 91-98.
- 4846 Beaulieu, N., Lacroix, P.M., Sears, R.W. and Lovering, E.G.: Liquid chromatographic determination of tobrestat and related compounds in raw materials. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 647-650.
- 4847 Courant, C., Thoret-Bauchet, I. and Woodget, B.: High-performance liquid chromatographic method for the determination of bromochlorophene in tooth paste. *Anal. Proc.*, 32 (1995) 111-113; C.A., 122 (1995) 222449e.
- 4848 Heinig, R.: Determination of BAY x 7195, a novel leukotriene D<sub>4</sub> antagonist, in human plasma by high-performance liquid chromatography with post-column photo derivatisation and fluorescence detection. *J. Chromatogr. B*, 667 (1995) 137-147.
- 4849 Karol, M.D., Granneman, G.R. and Alexander, K.: Determination of lansoprazole and five metabolites in plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 668 (1995) 182-186.
- 4850 Kelly, M.T., McGuirk, D. and Bloomfield, F.J.: Determination of cimetidine in human plasma by high-performance liquid chromatography following liquid-liquid extraction. *J. Chromatogr. B*, 668 (1995) 117-123.
- 4851 Luksa, J. and Josic, Dj.: Determination of cimetidine in human plasma by free capillary zone electrophoresis. *J. Chromatogr. B*, 667 (1995) 321-327.
- 4852 Mathew, M., Das Gupta, V. and Bailey, R.E.: Stability of omeprazole solutions at various pH values as determined by high-performance liquid chromatography. *Drug Dev. Ind. Pharm.*, 21 (1995) 965-971; C.A., 122 (1995) 222697j.
- 4853 Meijer, J. and Loden, M.: Stability analysis of three UV-filters using HPLC. *J. Liq. Chromatogr.*, 18 (1995) 1821-1832.
- 4854 Mestdagh, O. and Torck, M.: (Quality study of Harpagophyton capsules). *Ann. Pharm. Fr.*, 53 (1995) 135-137; C.A., 123 (1995) 18020z.
- 4855 Moro, E., de Angelis, M. and Fugazza, B.: Plasma level determination of 1,4-butanedisulphonate by ion chromatography and conductimetric detection. *J. Chromatogr. A*, 706 (1995) 451-457.
- 4856 Nakamura, M.: (Methods for analysis of cosmetics. Mainly shampoos). *Kagaku to Kogyo (Osaka)*, 69 (1995) 183-193; C.A., 123 (1995) 50670h - a review with 8 refs.
- 4857 Namiki, Y., Fujiwara, A., Kihara, N., Koda, S., Hane, K. and Yasuda, T.: Determination of the immunosuppressive drug tacrolimus in its dosage forms by high-performance liquid chromatography. *Chromatographia*, 40 (1995) 253-258.
- 4858 Nicolescu, D.: (HPLC chromatographic analysis of two pharmaceutical products. Ovulostop 1 and Ovulostop 2). *Farmacia (Bucharest)*, 42 (1994) 24-26; C.A., 122 (1995) 299201a.
- 4859 Pruñonosa, J., Parera, L., Peraire, C., Pla, F., Laverne, O. and Obach, R.: Determination of the anti-platelet-activating factor BN-50727 and its metabolites in human plasma by high-performance liquid chromatography-solid-phase extraction. *J. Chromatogr. B*, 668 (1995) 281-290.
- 4860 Semenzato, A., Austria, R., Dall'Aglio, C. and Bettero, A.: High-performance liquid chromatographic determination of ionic compounds in cosmetic emulsions: application to magnesium ascorbyl phosphate. *J. Chromatogr. A*, 705 (1995) 385-389.
- 4861 Staton, B.A., Johnson, M.G., Friis, J.M. and Adams, W.J.: Simple, rapid and sensitive high-performance liquid chromatographic determination of delavirdine and its N-desisopropyl metabolite in human plasma. *J. Chromatogr. B*, 668 (1995) 99-106.
- 4862 Vaspiyarov, G.G., Malakhov, V.Yu. and Livshits, I.V.: (HPLC for quality control of oral contraceptives). *Farmatsiya (Moscow)*, 43 (1994) 66-68; C.A., 123 (1995) 41028s.
- 4863 Wang-Iverson, D. and Cohen, A.I.: HPLC with API-MS in bioanalysis of drugs including some hypolipidemics. *Methodol. Surv. Bioanal. Drugs*, 23(Biofluid and Tissue Analysis of Drugs, Including Hypolipidaemics) (1994) 177-190; C.A., 122 (1995) 255133a - a review with 6 refs.
- 4864 Wu, J.-K., Chen, S.-H., Kou, H.-S., Wu, S.-M. and Wu, H.-L.: Derivatization and high performance liquid chromatographic determination of ethosuximide. *Chin. Pharm. J. (Taipei)*, 46 (1994) 413-421; C.A., 122 (1995) 223009y.

For additional information see C.A.:

122 (1995) 223017z, 322596u, 322657q.



See also 4258, 4270, 4599, 4603, 4886.

32h. *Toxicological and forensic applications*

- 4865 Browne, S., Moore, C., Negrusz, A., Tebbett, I., Covert, R. and Dusick, A.: Detection of cocaine, norcocaine, and cocaethylene in the meconium of premature neonates. *J. Forensic Sci.*, 39 (1994) 1515-1519; *C.A.*, 122 (1995) 284043b.
- 4866 Chasin, A.A.M., Chasin, M. and Salvadori, M.C.: (Validation of chromatographic methods in toxicological analyses). *Rev. Farm. Bioquim. Univ. Sao Paulo*, 30 (1994) 49-53; *C.A.*, 122 (1995) 308133j.
- 4867 Christensen, L.P. and Kristiansen, K.: A simple HPLC method for the isolation and quantification of the allergens tuliposide A and tulipalin A in *Alstroemeria*. *Contact Dermatitis*, 32 (1995) 199-203; *C.A.*, 122 (1995) 285769e.
- 4868 Lambert, W.E., Meyer, E. and de Leenheer, A.P.: Systematic toxicological analysis of basic drugs by gradient elution of an alumina-based HPLC packing material under alkaline conditions. *J. Anal. Toxicol.*, 19 (1995) 73-78.
- 4869 Lee, B.L., Yang, X.F., New, A.L. and Ong, C.N.: Liquid chromatographic determination of urinary 2-thiothiazolidine-4-carboxylic acid, a biomarker of carbon disulphide exposure. *J. Chromatogr. B*, 668 (1995) 265-272.
- 4870 Li, H. and Yan, X.: (Simultaneous rapid determination of some kinds of drugs and poisons in human body fluids by HPLC and its clinical application). *Zhongguo Yaoxue Zazhi*, 30 (1995) 156-160; *C.A.*, 122 (1995) 255369g.
- 4871 Maier, R.D. and Bogusz, M.: Identification power of a standardized HPLC-DAD system for systematic toxicological analysis. *J. Anal. Toxicol.*, 19 (1995) 79-83.
- 4872 Moore, C.M. and Oliver, J.S.: Comparison of three solid-phase adsorbents and subsequent development of a drug screening method for the isolation of common benzodiazepines from Greyhound urine. In: Oliver, J.S. (Editor), *Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 26th 1992, Scott. Acad. Press, Edinburgh, 1992, pp. 295-302; *C.A.*, 122 (1995) 258096b.
- 4873 Rop, P.P., Grimaldi, F., Lamothe, V., Antoine, J., Samat, J., Quicke, J. and Viala, A.: (Application of HPLC to the analysis of illicit cocaine samples). *Ars. Pharm.*, 33 (1992) 1049-1058; *C.A.*, 122 (1995) 308170u.
- 4874 Sheu, S.-J. and Chen, H.-R.: Simultaneous determination of twelve constituents of I-tzu-tang, a Chinese herbal preparation, by high-performance liquid chromatography and capillary electrophoresis. *J. Chromatogr. A*, 704 (1995) 141-148.
- 4875 Theodoridis, G., Papadoyannis, I., Vasilikiotis, G. and Tsoukali-Papadopoulou, H.: Reversed-phase high-performance liquid chromatography-photodiode-array analysis of alkaloid drugs of forensic interest. *J. Chromatogr. B*, 668 (1995) 253-263.
- 4876 Van den Merwe, P.J.: Chromatographic separation and confirmation of ephedrine derivatives as their carbon disulfide derivatives. In: Oliver, J.S. (Editor), *Forensic Toxicol., Proc. Int. Meet. Int. Assoc. Forensic Toxicol.*, 26th, Scott. Acad. Press, Edinburgh, 1992, pp. 211-215; *C.A.*, 122 (1995) 308184b.
- 4877 Verweij, A.M.A., Hordijk, M.L. and Lipman, P.J.L.: Quantitative liquid chromatographic thermospray-tandem mass spectrometric analysis of some analgesics and tranquilizers of the methadone, butyrophenone, or diphenylbutylpiperidine groups in whole blood. *J. Anal. Toxicol.*, 19 (1995) 65-68.

- 4878 Zuccaro, P., Altieri, I., Rosa, M., Passa, A.R., Pichini, S. and Pacifici, R.: Solid-phase extraction of nicotine and its metabolites for high-performance liquid chromatographic determination in urine. *J. Chromatogr. B*, 668 (1995) 187-188.

See also 4114, 4228, 4290, 4545, 4564, 4674, 4706, 4739, 4743, 4785, 4807.

32i. *Plant extracts*

- 4879 Chaisuksant, R., Niopas, I., Voulgaropoulos, A., Mellidis, A.S. and Papageorgiou, V.P.: Analysis of some isoheptylnaphthazarins by reversed phase HPLC. *Pharmazie*, 50 (1995) 363.
- 4880 Dayrit, F.M., Guidotes, A., Generalao, M.L. and Serna, C.: Determination of the quinine content in the bark of the cinchona tree grown in Mt. Kitanglad, Bukidnon. *Philipp. J. Sci.*, 123 (1994) 215-227; *C.A.*, 123 (1995) 51382s.
- 4881 Jeng, K.-F., Lin, Y.-H., Lin, L.-C., Chou, C.-J., Tsai, T.-H. and Chen, C.-F.: High-performance liquid chromatographic determination of evodiamine in rat plasma: application to pharmacokinetic studies. *J. Chromatogr. B*, 668 (1995) 343-345.
- 4882 Ketchum, R.E.B. and Gibson, D.M.: A novel method of isolating taxanes from cell suspension cultures of yew (*Taxus* spp.). *J. Liq. Chromatogr.*, 18 (1995) 1093-1111.
- 4883 Le Men-Olivier, L., Renault, J.H., Thepenier, P., Jacquier, M.J., Zeches-Hanrot, M. and Foucault, A.P.: Purification of the main ginsenosides from a French crop of *Panax quinquefolium* L. *J. Liq. Chromatogr.*, 18 (1995) 1655-1662.
- 4884 Lin, Y.T., Wu, P.P., Hsiu, S.L., Kuo, S.C. and Chao, P.D.: HPLC assay of scopolamine in serum and its application to pharmacokinetics in rabbits. *Chin. Pharm. J. (Taipei)*, 46 (1994) 559-564; *C.A.*, 122 (1995) 255337v.
- 4885 Melzig, M.F., Krause, E. and Franke, S.: Inhibition of adenosine deaminase activity of aortic endothelial cells by extracts of garlic (*Allium sativum* L.). *Pharmazie*, 50 (1995) 359-361.
- 4886 Navaratnam, V., Mansor, S.M., Chin, L.K., Mordi, M.N., Asokan, M. and Nair, N.K.: Determination of artemether and dihydroartemisinin in blood plasma by high-performance liquid chromatography for application in clinical pharmacological studies. *J. Chromatogr. B*, 669 (1995) 289-294.
- 4887 Sheu, S.-J. and Lu, C.-F.: Determination of eight constituents of Hsiao-cheng-chi-tang by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 518-523.
- 4888 Thejavathi, R., Yakkundi, S.R. and Ravindranath, B.: Determination of azadirachtin by reversed-phase high-performance liquid chromatography using anisole as internal standard. *J. Chromatogr. A*, 705 (1995) 374-379.

For additional information see *C.A.*:

122 (1995) 248461c, 248503t, 285772a, 299184x, 299185y, 309904y.

See also 4094, 4136, 4185, 4276, 4561, 4562, 4565, 4842, 4867.

33. CLINICO-CHEMICAL APPLICATIONS
- See also 4346, 4681.
- 33a. *General papers and reviews*
- See 4055, 4268.
- 33b. *Complex mixtures and profiling (single compounds by cross-reference only)*
- See 4139, 4141, 4222, 4232, 4292, 4306, 4307, 4308, 4310, 4314, 4327, 4370, 4433, 4436, 4440, 4543, 4566, 4571, 4574, 4582, 4616, 4973, 4989.
34. FOOD ANALYSIS
- 34a. *General papers and reviews*
- 4889 Cooper, A.D., Creaser, C.S., Farrington, W.H.H., Tarbin, J.A. and Shearer, G.: Development of multi-residue methodology for the HPLC determination of veterinary drugs in animal tissues. *Food Addit. Contam.*, 12 (1995) 167-176; *C.A.*, 122 (1995) 263781a.
- See also 4286.
- 34b. *Complex mixtures (single compounds by cross-reference only)*
- 4890 Buetikofer, U. and Bosset, J.O.: (HPLC methods for quality assurance of milk and dairy products). *Mitt. Geb. Lebensmit-telunters. Hyg.*, 85 (1994) 594-607; *C.A.*, 123 (1995) 54316j - a review with 10 refs.
- 4891 Moersel, J.T.: (Detection of food irradiation by fat analysis). *Lebensmittelchemie*, 48 (1994) 97-100; *C.A.*, 123 (1995) 31463r.
- For additional information see *C.A.*:  
122 (1995) 313120g;  
123 (1995) 31480u, 31482w, 31483x.
- See also 4124, 4125, 4133, 4134, 4137, 4143, 4154, 4155, 4156, 4163, 4167, 4169, 4170, 4174, 4177, 4223, 4233, 4237, 4246, 4250, 4252, 4264, 4267, 4284, 4295, 4300, 4302, 4312, 4315, 4341, 4346, 4350, 4404, 4408, 4450, 4580, 4589, 4593, 4606, 4615, 4618, 4619, 4629, 4631, 4634, 4636, 4640, 4646, 4659, 4664, 4665, 4670, 4679, 4687, 4741, 4808, 4810, 4811, 4813, 4817, 4824, 4826, 4941, 4945, 4977, 4994, 5005, 5010.
- 34c. *Organoleptically important compounds (flavors, odors, volatiles)*
- 4892 Langourieux, S. and Crouzet, J.: Study of aroma compound-natural polymer interactions by dynamic coupled column liquid chromatography. *J. Chromatogr. A*, 707 (1995) 181-187.
- 4893 Liu, J. and Li, S.F.Y.: Separation and determination of Stevia sweeteners by capillary electrophoresis and high performance liquid chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1703-1719.
35. ENVIRONMENTAL ANALYSIS
- 35a. *General papers and reviews*
- 4894 Barisci, J.N. and Wallace, G.G.: Development of an improved on-line chromatographic monitor with new methods for environmental and process control. *Anal. Chim. Acta*, 310 (1995) 79-92.
- 4895 Brouwer, E.R., Kofman, S. and Brinkman, U.A.T.: Selected procedures for the monitoring of polar pesticides and related microcontaminants in aquatic samples. *J. Chromatogr. A*, 703 (1995) 167-190 - a review with 67 refs.
- 4896 Hogendoorn, E.A. and van Zoonen, P.: Coupled-column reversed-phase liquid chromatography in environmental analysis. *J. Chromatogr. A*, 703 (1995) 149-166 - a review with 45 refs.
- 4897 Rowland, A.P., Woods, C. and Kennedy, V.H.: Control of errors in anion chromatography applied to environmental research. *J. Chromatogr. A*, 706 (1995) 229-239.
- For additional information see *C.A.*:  
122 (1995) 221255b.
- See also 3984, 4002, 4053, 4062, 4115.
- 35b. *Air pollution (complex mixtures; single compounds by cross-reference only)*
- 4898 Kayali, M.N., Rubio-Barroso, S. and Polo-Diez, L.M.: Rapid PAH determination in urban particulate air samples by HPLC with fluorometric detection and programmed excitation and emission wavelength pairs. *J. Chromatogr. Sci.*, 33 (1995) 181-185.
- See also 4106, 4144, 4145, 4982, 5014.
- 35c. *Water pollution (complex mixtures; single compounds by cross-reference only)*
- 4899 Ammann, A.A. and Rüttimann, T.B.: Simultaneous determination of small organic and inorganic anions in environmental water samples by ion-exchange chromatography. *J. Chromatogr. A*, 706 (1995) 259-269.
- 4900 Brandão, A.C.M., Buchberger, W.W., Butler, E.C.V., Fagan, P.A. and Haddad, P.R.: Matrix-elimination ion chromatography with post-column reaction detection for the determination of iodide in saline waters. *J. Chromatogr. A*, 706 (1995) 271-275.
- 4901 Carozzino, S. and Righini, F.: Ion chromatographic determination of nutrients in sea water. *J. Chromatogr. A*, 706 (1995) 277-280.
- 4902 Gladtko, D., Werner, P. and Heyer, P.: (Chemical analysis for approval and control of the discharge of waste water from the chemical industry). *Vom Wasser*, 83 (1994) 213-225; *C.A.*, 123 (1995) 17254s.
- 4903 Kadnar, R. and Rieder, J.: Determination of anions in oilfield waters by ion chromatography. *J. Chromatogr. A*, 706 (1995) 301-305.

- 4904 Lange, F.T., Meier, U., Wenz, M. and Brauch, H.J.: Automated ion-pair extraction and ion-pair chromatography. A versatile method in water analysis for the determination of highly polar micropollutants. *Acta Hydrochim. Hydrobiol.*, 23 (1995) 6-12; C.A., 123 (1995) 40527s.
- 4905 Litvina, M.L., Voloschik, I.N. and Rudenko, B.A.: Determination of aluminium in natural waters by single-column ion chromatography with indirect UV detection. *J. Chromatogr. A*, 706 (1995) 307-313.
- 4906 Musmeci, L., Beccaloni, E. and Chirico, M.: Determination of chloride in the leachates of stabilised waste by ion chromatography and by a volumetric method. Analysis and comparison. *J. Chromatogr. A*, 706 (1995) 321-325.
- 4907 Scheuer, C., Wimmer, B., Bischof, H., Nguyen, L., Maguhn, J., Spitzauer, P., Kettrup, A. and Wabner, D.: Oxidative decomposition of organic water pollutants with UV-activated hydrogen peroxide. Determination of anionic products by ion chromatography. *J. Chromatogr. A*, 706 (1995) 253-258.
- 4908 Steinmann, P. and Shoty, W.: Ion chromatography of organic-rich natural waters from peatlands. III. Improvements for measuring anions and cations. *J. Chromatogr. A*, 706 (1995) 281-286.
- 4909 Steinmann, P. and Shoty, W.: Ion chromatography of organic-rich natural waters from peatlands. IV. Dissolved free sulfide and acid-volatile sulfur. *J. Chromatogr. A*, 706 (1995) 287-292.
- 4910 Steinmann, P. and Shoty, W.: Ion chromatography of organic-rich natural waters from peatlands. V.  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$ . *J. Chromatogr. A*, 706 (1995) 293-299.
- 4911 Voloschik, I.N., Litvina, M.L. and Rudenko, B.A.: Ion chromatographic determination of beryllium in rock and waste waters with a chelating sorbent and conductimetric detection. *J. Chromatogr. A*, 706 (1995) 315-319.
- 4912 Walravens, E.: (Round-robin tests of the determination of herbicides in water). *Trib. Eau*, 47 (1994) 55-59; C.A., 122 (1995) 222240e.
- See also 4123, 4281, 4288, 4587, 4654, 4657, 4666, 4669, 4671, 4677, 4820, 4895, 4916, 4977, 4985, 5001, 5003.
- 35d. *Soil pollution (complex mixtures; single compounds by cross-reference only)*
- 4913 Benz, N.J.: Liquid chromatographic method for determination of water in soils and the optimization of anion separators by capillary zone electrophoresis. Avail. *Univ. Microfilms Int.*, Order No. DA9503530, 1994, 125 p.; C.A., 122 (1995) 329330m.
- See also 4149, 4667, 4911, 4980.
36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES
- 36a. *Surfactants*
- 4914 Baudrand, V., Mouloungui, Z. and Gaset, A.: Separation and quantification of tetraethylene glycol monoheptanoate and diheptanoate by high-performance liquid chromatography. *J. Chromatogr. A*, 704 (1995) 524-529.
- 4915 Colaiocco, S. and Lattanzio, M.: Determination of additives in gasoline by SEC coupled to a light-scattering detector-chemometrics application. *J. High Resolut. Chromatogr.*, 18 (1995) 387-388.
- 4916 Crescenzi, C., di Corcia, A., Samperi, R. and Marcomini, A.: Determination of nonionic polyethoxylate surfactants in environmental waters by liquid chromatography/electrospray mass spectrometry. *Anal. Chem.*, 67 (1995) 1797-1804.
- 4917 Martin, N.: Analysis of non-ionic surfactants by HPLC using evaporative light-scattering detector. *J. Liq. Chromatogr.*, 18 (1995) 1173-1194.
- 4918 Pan, N. and Pietrzyk, D.J.: Separation of anionic surfactants on anion exchangers. *J. Chromatogr. A*, 706 (1995) 327-337.
- 4919 Pottie, M., Bossányi, F., Perreault, F. and Jolicoeur, C.: Characterization of poly(naphthalenesulfonate) salts by ion-pair chromatography and ultrafiltration. *J. Chromatogr. A*, 704 (1995) 377-385.
- 4920 Shamsi, S.A. and Danielson, N.D.: Mixed-mode liquid chromatography of aliphatic anionic surfactants with a naphthalene-trisulfonate mobile phase. *Chromatographia*, 40 (1995) 237-246.
- 4921 Sundaram, K.M.S.: Liquid chromatographic method for the determination of nonyl phenol surfactant present in the commercial and spray formulations of aminocarb (Matacil®) insecticide. *J. Liq. Chromatogr.*, 18 (1995) 1787-1799.
- 4922 Ysambert, F., Cabrera, W., Marquez, N. and Salager, J.L.: Analysis of ethoxylated nonylphenol surfactants by high performance size exclusion chromatography (HPSEC). *J. Liq. Chromatogr.*, 18 (1995) 1157-1171.
- See also 4856.
- 36b. *Antioxidants and preservatives*
- 4923 Kord, A.S., Tumanova, I. and Matier, W.L.: A novel HPLC method for determination of EDTA in a cataract inhibiting ophthalmic drug. *J. Pharm. Biomed. Anal.*, 13 (1995) 575-580.
- 4924 Miszkiewicz, W., Woszczyński, P. and Poskrobko, J.: RP-HPLC method for the assay of 2-methyl-4,5-trimethylene-4-isothiazolin-3-one in water-oil emulsions. *J. Liq. Chromatogr.*, 18 (1995) 1583-1589.
- 4925 Parhizkari, G., Delker, G., Miller, R.B. and Chen, C.: A stability-indicating HPLC method for the determination of benzalkonium chloride in 0.5% tramadol ophthalmic solution. *Chromatographia*, 40 (1995) 155-158.
- 36c. *Complex mixtures, technical products and unidentified compounds*
- 4926 Chen, Y.H., Hill, H.H., Jr. and Wittmer, D.P.: Analytical merit of electrospray ion mobility spectrometry as a chromatographic detector. *J. Microcolumn Sep.*, 6 (1994) 515-524; C.A., 122 (1995) 255007n.
- 4927 Lynch, K., Tanke, C., Menzel, F., Brockner, W., Scharff, P. and Stumpp, E.: FT-Raman spectroscopic studies of  $\text{C}_{60}$  and  $\text{C}_{70}$  subsequent to chromatographic separation including solvent effects. *J. Phys. Chem.*, 99 (1995) 7985-7992; C.A., 122 (1995) 305427x.

- 4928 Meng, H. and Caddy, B.: Detection of N,N'-diphenyl-N,N'-diethylurea (ethyl centralite) in gunshot residues using high-performance liquid chromatography with fluorescence detection. *Analyst (Cambridge)*, 120 (1995) 1759-1762.
- 4929 Takanohashi, T., Kaneko, H., Morino, M. and Iino, M.: Study on crosslink structure of coals using inverse liquid chromatography. In: Michaelian, K.H. (Editor), *Conf. Proc.-Int. Conf. Coal Sci., 7th*, Vol. 1, Can. Natl. Organ. Comm., Devon, 1993, pp. 419-422; C.A., 123 (1995) 36841x.
- 4930 Taylor, C.D., Anderson, H.A. and Brydon, D.L.: Characterization of textile lubricants by HPLC. Part I.: Investigation of individual components. *J. Text. Inst.*, 85 (1994) 35-43; C.A., 122 (1995) 216410u.
- For additional information see C.A.:  
122 (1995) 310648z;  
123 (1995) 24893c.
- See also 4108, 4122, 4158, 4902, 4950, 5005.
37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES
- 4931 Beigi, F., Yang, Q. and Lundahl, P.: Immobilized-liposome chromatographic analysis of drug partitioning into lipid bilayers. *J. Chromatogr. A*, 704 (1995) 315-321.
- 4932 Bernard, A., Paulet, B., Colin, V. and Cardot, J.P.: Red blood cell separations by gravitational field-flow fractionation: instrumentation and applications. *TrAC*, 14 (1995) 266-273.
- 4933 Lawrence, J.F. and Wong, B.: Evaluation of a postcolumn electrochemical reactor for oxidation of paralytic shellfish poison toxins. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 698-704.
- 4934 Yang, J.-M., Chen, P.-M., Lin, P.-C. and Chu, I.-M.: Fractionation of leukemic cells in aqueous two-phase systems using countercurrent chromatographic technique. *J. Liq. Chromatogr.*, 18 (1995) 1757-1766.
38. INORGANIC COMPOUNDS
- 38a. Cations
- 4935 Al-Shawi, A.W. and Dahl, R.: Determination of thorium and uranium in nitrophosphate fertilizer solution by ion chromatography. *J. Chromatogr. A*, 706 (1995) 175-181.
- 4936 Andrie, C. and Broekaert, J.A.C.: Comparison of different silica gel columns for the speciation of chromium(III) and chromium(VI) by reversed-phase HPLC. *Kontakte (Darmstadt)*, (1994) 26-29; C.A., 122 (1995) 254858d.
- 4937 Anticó, E., Masana, A., Salvadó, V., Hidalgo, M. and Valiente, M.: Separation of Pd(II) and Cu(II) in chloride solutions on a glycol methacrylate gel derivatized with 8-hydroxyquinoline. *J. Chromatogr. A*, 706 (1995) 159-166.
- 4938 Bagur, G., Sánchez-Viñas, M. and Gázquez, D.: Determination of molybdenum in various materials by normal-phase liquid chromatography using N-benzoyl-N-phenylhydroxylamine. *Anal. Chim. Acta*, 309 (1995) 157-162.
- 4939 Baluev, A.V., Suglobova, I.G., Maslennitskij, S.N., Krasnikov, L.V. and Silin, A.Yu.: Method for extractive-chromatographic separation of metal ions. *U.S.S.R. SU 1,457,202 (Cl. B01D15/08)*, 30 Jun. 1994, Appl. 4,177,123, 07 Jan. 1987; C.A., 123 (1995) 46972e.
- 4940 Betti, M.: Determination of trace elements. *Lab. 2000*, 7 (1993) 52-55; C.A., 122 (1995) 280733d - a review with 23 refs.
- 4941 Caroli, S., la Torre, F., Petrucci, F. and Violante, N.: On-line speciation of arsenical compounds in fish and mussel extracts by HPLC-ICP-MS. *Environ. Sci. Pollut. Res. Int.*, 1 (1994) 205-208; C.A., 122 (1995) 258052j.
- 4942 Chmutova, M.K., Ivanova, L.A., Bodrin, G.B., Poikarpov, Yu.M. and Myasoedov, B.F.: (Group separation of transplutonium and rare-earth elements by a liquid-chromatography method with a free stationary phase using the extraction agent 2,6,6-tris(diethylphosphoryl)-1,3,5-triazine). *Radiokhimiya*, 36 (1994) 320-324; C.A., 122 (1995) 329301c.
- 4943 Chuveleva, E.A., Peshkov, A.S., Kharitonov, O.V. and Firsova, L.A.: (Separation of indicator amounts of yttrium and europium by a chromatographic method with introduction of cadmium as an additional ion). *Zh. Fiz. Khim.*, 69 (1995) 949-951; C.A., 123 (1995) 46806d.
- 4944 Cotrim, M.B. and Matsuda, H.T.: (Neptunium separation at trace levels from uranium solutions by extraction chromatography). *Publ. ACIESP*, 89 (1994) 87-97; C.A., 122 (1995) 276176g.
- 4945 Ding, M.Y., Suzuki, Y. and Koizumi, H.: Simultaneous determination of organic acids, inorganic anions and cations in beverages by ion chromatography with mixed-bed stationary phase by anion and cation exchangers. *Analyst (Cambridge)*, 120 (1995) 1773-1777.
- 4946 Döscher, A., Schwikowski, M. and Gäggeler, H.W.: Cation trace analysis of snow and firn samples from high-alpine sites by ion chromatography. *J. Chromatogr. A*, 706 (1995) 249-252.
- 4947 Dresow, B., Fischer, R., Janka, G.E. and Gabbe, E.E.: HPLC-based measurement of the chelator 1,2-dimethyl-3-hydroxypyrid-4-one and its iron complex for pharmacokinetic studies in humans. *Fresenius J. Anal. Chem.*, 352 (1995) 562-564.
- 4948 Dumont, P.J. and Fritz, J.S.: Ion chromatographic separation of alkali metals in organic solvents. *J. Chromatogr. A*, 706 (1995) 149-158.
- 4949 Edwards, B.R., Giauque, A.P. and Lamb, J.D.: Macrocyclic-based column for the separation of inorganic cations by ion chromatography. *J. Chromatogr. A*, 706 (1995) 69-79.
- 4950 Fischer, C.-H. and Siebrands, T.: Analysis of colloids. VIII. Concentration- and memory effects in size exclusion chromatography of colloidal inorganic nanometer-particles. *J. Chromatogr. A*, 707 (1995) 189-197.
- 4951 Gopalakrishnan, V., Dhama, P.S., Ramanujam, A., Krishna, M.V.B., Murali, M.S., Mathur, J.N., Iyer, R.H., Bauri, A.K. and Banerji, A.: Extraction and extraction chromatographic separation of minor actinides from sulphate bearing high level waste solutions using CMPO. *J. Radioanal. Nucl. Chem.*, 191 (1995) 279-289; C.A., 123 (1995) 20203e.
- 4952 Göttlicher, U., Siegfried, R. and Birke, H.: HPLC analysis of metal chelating agents in micronutrients. *Fresenius J. Anal. Chem.*, 352 (1995) 398-400.

- 4953 Horwitz, E.P., Dietz, M.L., Chiarizia, R., Diamond, H., Maxwell, S.L., III and Nelson, M.R.: Separation and preconcentration of actinides by extraction chromatography using a supported liquid anion exchanger: application to the characterization of high-level nuclear waste solutions. *Anal. Chim. Acta*, 310 (1995) 63-78.
- 4954 Inoue, Y., Sakai, T. and Kumagai, H.: Simultaneous determination of chromium(III) and chromium(VI) by ion chromatography with inductively coupled plasma mass spectrometry. *J. Chromatogr. A*, 706 (1995) 127-136.
- 4955 Kharitonov, O.V., Chuveleva, E.A. and Firsova, L.A.: (Effect of cationic forms of KU-2 resin on the separation of rare-earth elements by chromatography in the presence of additional zinc ion). *Zh. Fiz. Khim.*, 69 (1995) 952-953; *C.A.*, 123 (1995) 46807e.
- 4956 Le Roex, A.P. and Watkins, R.T.: A rapid ion chromatographic method for the determination of the  $Fe^{3+}/Fe^{2+}$  ratio in silicate rocks and minerals. *Geochem. J.*, 29 (1995) 85-89; *C.A.*, 123 (1995) 46919t.
- 4957 Li, D., Wang, Z., Song, W., Meng, S. and Ma, G.: Recommended separation processes for ion-absorbed rare earth minerals. In: *Hydrometall 94, Pap. Int. Symp.*, Chapman and Hall, London, 1994, pp 629-634; *C.A.*, 123 (1995) 14165c.
- 4958 Limoni-Relis, B. and Schmuckler, G.: Interseparation of platinum metals in concentrated solution by gel permeation chromatography. *Sep. Sci. Technol.*, 30 (1995) 337-346; *C.A.*, 122 (1995) 323163n.
- 4959 Mehra, M.C., Pelletier, C. and Ayikoe, K.: Ion chromatographic determination of  $CrO_4^{2-}$ ,  $MoO_4^{2-}$ ,  $WO_4^{2-}$ ,  $AsO_4^{3-}$  and  $SeO_4^{2-}$  ions in aqueous samples. *Orient. J. Chem.*, 9 (1993) 176-181; *C.A.*, 123 (1995) 24797z.
- 4960 Messerschmidt, J., Alt, F. and Tolg, G.: Detection of platinum species in plant material. *Electrophoresis (Weinheim)*, 16 (1995) 800-803.
- 4961 Nikitenko, S.I. and Dzyubenko, V.I.: (Study of isotope effect in isotope exchange reaction between Pu(IV) and Pu(III) by extraction redox chromatography). *Izv. Akad. Nauk, Ser. Khim.*, (1994) 1557-1558; *C.A.*, 122 (1995) 250230v.
- 4962 Obrezkov, O.N., Krokhin, O.V., Pirogov, A.V., Semenova, S.N. and Shpigun, O.A.: (Determination of transition metals by using dynamically modified cation exchangers). *Zh. Fiz. Khim.*, 68 (1994) 1880-1883; *C.A.*, 122 (1995) 229505d.
- 4963 Oszwaldowski, S.: Reversed-phase high-performance liquid chromatographic separation and determination of titanium, vanadium, niobium and tantalum ternary complexes with hydrogen peroxide and 2-(5-bromo-2-pyridylazo)-5-diethylaminophenol. *Analyst (Cambridge)*, 120 (1995) 1751-1758.
- 4964 Padaruskas, A. and Schwedt, G.: Simultaneous ion-pair chromatography of inorganic anions and cations using on-column derivatization with chelating agents and UV-detection. *Fresenius J. Anal. Chem.*, 351 (1995) 708-713.
- 4965 Papoff, P., Ceccarini, A. and Carnevali, P.: Preliminary tests to select operating conditions for the accurate determination of stability constants by cation-exchange chromatography: the  $Cd^{2+}-Cl$  and  $Cd^{2+}-NO_3$  systems. *J. Chromatogr. A*, 706 (1995) 43-54.
- 4966 Saadi, A., Garnier, J. and Flaugnatti, R.: (Demonstration of a method for cadmium measurement using high-performance liquid chromatography: application to plant extracts). *Acta Bot. Gallica*, 141 (1994) 319-326; *C.A.*, 122 (1995) 308144p.
- 4967 Shoty, W. and Immenhauser-Potthast, I.: Determination of Cd, Co, Cu, Fe, Mn, Ni and Zn in coral skeletons by chelation ion chromatography. *J. Chromatogr. A*, 706 (1995) 167-173.
- 4968 Shpigun, O.A. and Obrezkov, O.N.: (Modern ion chromatography). *Russ. Khim. Zh.*, 38 (1994) 16-20; *C.A.*, 123 (1995) 24659f - a review with 33 refs.
- 4969 Sikovec, M., Novic, M., Hudnik, V. and Franko, M.: On-line thermal lens spectrometric detection of Cr(III) and Cr(VI) after separation by ion chromatography. *J. Chromatogr. A*, 706 (1995) 121-126.
- 4970 Suleimanov, R.I., Khanlarov, T.G. and Gambarov, D.G.: (Separation and determination of simple and hydroxy beryllium cations ( $Be^{2+}$  and  $BeOH^+$ ) by ion chromatography). *Zh. Anal. Khim.*, 49 (1994) 836-838; *C.A.*, 122 (1995) 229500y.
- 4971 Sun, Q., Wang, H. and Mou, S.: Rapid determination of germanium and tin by ion chromatography. *J. Chromatogr. A*, 708 (1995) 99-104.
- 4972 Tananaev, I.G., Shilov, V.P., Matyukha, V.A., Dzyubenko, V.I. and Krot, N.N.: (Sorption separation of neptunium and plutonium using anion-exchanger catalysts). *Radiokhimiya*, 36 (1994) 329-332; *C.A.*, 123 (1995) 24719a.
- 4973 Thienpont, L.M., van Nuwenborg, J.E. and Stöckl, D.: Ion chromatography as potential reference methodology for the determination of total sodium and potassium in human serum. *J. Chromatogr. A*, 706 (1995) 443-450.
- 4974 Voloshchik, I.N., Rudenko, B.A. and Litvina, M.L.: (Use of complexing and dynamically coated sorbents for the ion-chromatographic determination of alkaline-earth metal cations). *Zh. Anal. Khim.*, 49 (1994) 1290-1294; *C.A.*, 123 (1995) 24747h.
- 4975 Zheng, Z., Ling, D. and Sun, Y.: Production of rare-earth oxides of high purity. *J. Chromatogr. A*, 707 (1995) 131-135.

For additional information see C.A.:

122 (1995) 219138x, 229655c, 254835u, 254945e, 260195b; 123 (1995) 5123k, 24901d, 24995b, 46800x, 46826k.

See also 3908, 3997, 3998, 4006, 4034, 4051, 4064, 4067, 4894, 4905, 4908, 4910, 4911, 4976, 4983, 4986.

### 38b. Anions

- 4976 Achilli, M., Romeo, L., Martinotti, W. and Sommariva, G.: Ion chromatographic determination of major ions in fog samples. *J. Chromatogr. A*, 706 (1995) 241-247.
- 4977 Beitler, M.K. and Chin, H.B.: Improved determination of chloride and chlorate in rinse water from carrots and green beans by liquid chromatography and amperometric and conductometric detection. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 878-883.
- 4978 Biesaga, M. and Tojanowicz, M.: Phosphorus speciation in nickel plating baths by ion chromatography. *J. Chromatogr. A*, 705 (1995) 390-395.
- 4979 Bosch, N.B., Mata, M.G., Peñuela, M.J., Galán, T.R. and Ruiz, B.L.: Determination of nitrite levels in refrigerated and frozen spinach by ion chromatography. *J. Chromatogr. A*, 706 (1995) 221-228.
- 4980 Chalukova, M. and Lekova, K.: Ion chromatographic determination of inorganic anions in aqueous soil extracts. *Anal. Lab.*, 3 (1994) 152-156; *C.A.*, 122 (1995) 229569c.

- 4981 Chu, J., Hu, R., Miwa, T. and Takeuchi, T.: Indirect photometric detection of inorganic anions by microcolumn liquid chromatography using anthraquinone-disulfonate as visualization agent. *Chromatographia*, 40 (1995) 379-381.
- 4982 Dabek-Zlotorzynska, E., Dlouhy, J.F., Houle, N., Piechowski, M. and Ritchie, S.: Comparison of capillary zone electrophoresis with ion chromatography and standard photometric methods for the determination of inorganic anions in atmospheric aerosols. *J. Chromatogr. A*, 706 (1995) 469-478.
- 4983 Ding, M.-Y., Suzuki, Y. and Koizumi, H.: Elution behaviour of anions and cations on a mixed-bed stationary phase of anion and cation exchange resins. *Chromatographia*, 40 (1995) 539-544.
- 4984 Everett, S.A., Dennis, M.F., Tozer, G.M., Prise, V.E., Wardman, P. and Stratford, R.L.: Nitric oxide in biological fluids: analysis of nitrite and nitrate by high-performance ion chromatography. *J. Chromatogr. A*, 706 (1995) 437-442.
- 4985 Fung, Y.S. and Dao, K.L.: Trace enrichment and ion chromatographic determination of metal oxoanions in environmental water samples. *Anal. Chim. Acta*, 309 (1995) 173-179.
- 4986 Gautier, E.A., Gettar, R.T., Servant, R.E. and Batistoni, D.A.: Evaluation of 1,2-diaminocyclohexanetetraacetic acid as eluent in the determination of inorganic anions and cations by ion chromatography. *J. Chromatogr. A*, 706 (1995) 115-119.
- 4987 Hettiarachchi, K., Ha, Y., Tran, T. and Cheung, A.P.: Application of HPLC and CZE to the analysis of polyoxometalates. *J. Pharm. Biomed. Anal.*, 13 (1995) 515-523.
- 4988 Hirayama, N., Maruo, M., Shiota, A. and Kuwamoto, T.: Use of  $\beta$ -diketonate anions as eluent in non-suppressed ion chromatography: 1,3-cyclohexanedionate as acidic eluent. *J. Chromatogr. A*, 707 (1995) 384-389.
- 4989 Ji, A.J., Savon, S.R. and Jacobsen, D.W.: Determination of total serum sulfite by HPLC with fluorescence detection. *Clin. Chem. (Washington)*, 41 (1995) 897-903.
- 4990 Kadnar, R. and Rieder, J.: Determination of anions in amine solutions for sour gas treatment. *J. Chromatogr. A*, 706 (1995) 339-343.
- 4991 Karpyuk, A.D. and Poletaeva, I.L.: (Application of pentafluorophenol as a modifier of the mobile phase in two-column anion chromatography). *Zavod. Lab.*, 60 (1994) 4-6, 62; C.A., 122 (1995) 229467t.
- 4992 Karpyuk, A.D., Vakhrusheva, M.V. and Sazhina, N.K.: (Ion-chromatographic determination of chloride ion in the presence of excess boric acid). *Zh. Fiz. Khim.*, 68 (1994) 1884-1885; C.A., 122 (1995) 229506e.
- 4993 Kerth, J. and Jensen, D.: Determinations of trace anions in hydrogen peroxide. *J. Chromatogr. A*, 706 (1995) 191-198.
- 4994 Lindgren, B., Berglöf, T., Ramberg, A., Stepinska, A. and Akerblom, M.: Liquid chromatographic determination of bromide ion in cereals, fruit, vegetables, and blood with a silver electrode in an electrochemical detector system. *J. Assoc. Off. Anal. Chem.*, 78 (1995) 841-845.
- 4995 Loconto, P.R. and Hussain, N.: Automated coupled ion exclusion-ion chromatography for the determination of trace anions in fermentation broth. *J. Chromatogr. Sci.*, 33 (1995) 75-81.
- 4996 Moran, J.E., Teng, R.T.D., Rao, U. and Fehn, U.: Detection of iodide in geologic materials by high-performance liquid chromatography. *J. Chromatogr. A*, 706 (1995) 215-220.
- 4997 Moussa, F., Raux-Demay, M.-C., Veinberg, F., Depasse, F., Gharbi, R., Hautem, J.-Y. and Aymard, P.: Determination of iodide in serum and urine by ion-pair reversed-phase high-performance liquid chromatography with coulometric detection. *J. Chromatogr. B*, 667 (1995) 69-74.
- 4998 Novic, M., Dovzan, A., Pihlar, B. and Hudnik, V.: Determination of chlorine, sulphur and phosphorus in organic materials by ion chromatography using electro dialysis sample pretreatment. *J. Chromatogr. A*, 704 (1995) 530-534.
- 4999 Okada, T. and Shimizu, H.: Retention mechanism of anions in micellar chromatography: Interpretation of retention data on the basis of an ion-exchange model. *J. Chromatogr. A*, 706 (1995) 37-42.
- 5000 Pace, G., Berton, A., Calligaro, L., Mantovani, A. and Uguagliati, P.: Elucidation of the degradation mechanism of 2-chloroethanol by hydrogen peroxide under ultraviolet irradiation. *J. Chromatogr. A*, 706 (1995) 345-351.
- 5001 Papadoyannis, I., Samanidou, V. and Zotou, A.: Highly selective simultaneous determination of eight inorganic anions in drinking water by single column high pressure anion chromatography. *J. Liq. Chromatogr.*, 18 (1995) 1383-1403.
- 5002 Poletaeva, I.L., Ignatova, Z.N. and Karpyuk, A.D.: (Use of two-column anion chromatography with a variable-length separating column for monitoring the content of anion in a aqueous heat-transfer agent). *Zh. Fiz. Khim.*, 68 (1994) 1886-1888; C.A., 122 (1995) 229507f.
- 5003 Sacher, F., Matschi, A. and Brauch, H.J.: Analysis and occurrence of bromate in raw water and drinking water. *Acta Hydrochim. Hydrobiol.*, 23 (1995) 26-30; C.A., 123 (1995) 17274y.
- 5004 Salas-Auvert, R., Colmenarez, J., de Ledo M, H., Colina, M., Gutierrez, E., Bravo, A., Soto, L. and Azuero, S.: Determination of anions in human and animal tear fluid and blood serum by ion chromatography. *J. Chromatogr. A*, 706 (1995) 183-189.
- 5005 Sarudi, C.J.: Determination of iodine content by using ion exchange chromatography. In: Kalasz, H., Ettre, L.S. and Pick, J. (Editors), *New Approaches Chromatogr. 93 (Pap. Budapest Chromatogr. Conf.) 1990*, Fekete Sas Kiado, Budapest, 1993, pp. 125-129; C.A., 122 (1995) 229410u.
- 5006 Shao, D. and Pan, W.-P.: Behavior of chlorine and sulphur during coal combustion. In: Michaelian, K.H. (Editor), *Conf. Proc. Int. Conf. Coal Sci., 7th*, Vol. 1, Can. Natl. Organ. Comm., Devon, 1993, pp. 656-659; C.A., 123 (1995) 13404t.
- 5007 Shoty, W., Immenhauser-Potthast, I. and Vogel, H.A.: Determination of nitrate, phosphate and organically bound phosphorus in coral skeletons by ion chromatography. *J. Chromatogr. A*, 706 (1995) 209-213.
- 5008 Tartari, G.A., Marchetto, A. and Mosello, R.: Precision and linearity of inorganic analyses by ion chromatography. *J. Chromatogr. A*, 706 (1995) 21-29.
- 5009 Umali, J.C., Moran, G.M. and Haddad, P.R.: Determination of phosphorus by sample combustion followed by non-suppressed ion chromatography. *J. Chromatogr. A*, 706 (1995) 199-207.
- 5010 Wagner, H.P.: Stabilization of sulfite for automated analysis using ion exclusion chromatography combined with pulsed amperometric detection. *J. Am. Soc. Brew. Chem.*, 53 (1995) 82-84; C.A., 122 (1995) 263812m.
- 5011 Watanabe, H. and Sato, H.: Colour-indication suppressor for anion chromatography. *J. Chromatogr. A*, 706 (1995) 55-57

5012 Weiss, J., Reinhard, S., Pohl, C., Saini, C. and Narayanan, L.: Stationary phase for the determination of fluoride and other inorganic anions. *J. Chromatogr. A*, 706 (1995) 81-92.

5013 Zerbinati, O.: Clean-up procedure for the determination of inorganic anions by ion chromatography. *J. Chromatogr. A*, 706 (1995) 137-140.

For additional information see C.A.:

122 (1995) 260171r, 280931s, 329359c, 329369f;

123 (1995) 24896f, 24897g, 46923q;

1122 (1995) 280832k.

See also 3927, 3931, 3935, 3995, 4235, 4690, 4897, 4899, 4900, 4901, 4903, 4906, 4907, 4908, 4909, 4945, 4959, 4964, 4968.

38c. *Permanent and rare gases*

5014 Kuroda, D.: (Simultaneous determination of hydrogen chloride, nitrogen oxides, and sulphur oxides in combustion gas by ion chromatography). *Bunseki Kagaku*, 44 (1995) 313-318; C.A., 122 (1995) 320988z.

38d. *Volatile inorganic compounds*

See 4984.

39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS

See 4301, 4819, 4944, 4953, 4961.