



ELSEVIER

Bibliography Section

Liquid Column Chromatography

1. REVIEWS AND BOOKS

- 2612 Analytical Methods Committee: Report by the Analytical Methods Committee. Evaluation of analytical instrumentation. Part IX. Instrumentation for high-performance liquid chromatography. *Analyst (Cambridge)*, 122 (1997) 387-392.
- 2613 Brown, P. and Grushka, E. (Editors): *Advances in Chromatography*. Dekker, New York, 1997, Vol. 37, 462 pp.; C.A., 126 (1997) 206951q.
- 2614 Kohn, A.: (Standardization of chromatography data formats). *Nachr. Chem., Tech. Lab.*, 44(Suppl. 1) (1996) S32-S33; C.A., 126 (1997) 152198d - a review with 2 refs.
- 2615 Larson, J.R., Tingstad, J.E. and Swadesh, J.K.: Introduction (to HPLC). In: Swadesh, J.K. (Editor), *HPLC: Pract. Ind. Appl.*, CRC, Boca Raton, 1997, pp. 1-55; C.A., 126 (1997) 112522y - a review with 120 refs.
- 2616 Laubscher, J.C.: (HPLC Chromatograph). *Schweiz. Lab.*, 53 (1996) 327-331; C.A., 126 (1997) 112519c - a review with no refs.
- 2617 Potschka, M. and Dubin, P.L. (Editors): *Strategies in Size Exclusion Chromatography*. (Symposium at the 109th National Meeting of the American Chemical Society, Anaheim, California, April 2-6, 1995). In: *ACS Symp. Ser.*, Vol. 635, ACS, Washington, 1996, 415 p.; C.A., 125 (1996) 59682b.
- 2618 Rieutord, A., Prognon, P., Brion, F. and Mahuzier, G.: Liquid chromatographic determination using lanthanides as time-resolved luminescence probes for drugs and xenobiotics: Advantages and limitations. *Analyst (Cambridge)*, 122 (1997) 59R-66R.
- 2619 Sadek, P.C. (Editor): *The HPLC Solvent Guide*. Wiley, Chichester, 1996, 352 pp.; C.A., 126 (1997) 287369f.
- 2620 Swadesh, J.: Ion exchange chromatography. In: Swadesh, J.K. (Editor), *HPLC: Pract. Ind. Appl.*, CRC, Boca Raton, 1997, pp. 172-243; C.A., 126 (1997) 139256b - a review with 293 refs.
- 2621 Takai, N.: (Progresses in HPLC technology). *Rinsho Kensa*, 40 (1996) 1243-1246; C.A., 126 (1997) 168564f - a review with 5 refs.
- 2622 Van de Merbel, N.C.: The use of ultrafiltration and column liquid chromatography for on-line fermentation monitoring. *TrAC*, 16 (1997) 162-173.

See also 2628, 2634, 2636, 2638, 2654, 2661, 2751, 2757, 2762, 2766, 2767, 2770, 2826, 2955, 3007, 3037, 3130, 3140, 3177, 3367, 3522, 3524, 3548, 3748, 3760, 3761, 3768, 3771, 3793, 3803.

2. FUNDAMENTALS, THEORY AND GENERAL

- 2a. General
- 2623 Abraham, M.H., Chadha, H.S., Leitao, R.A.E., Mitchell, R.C., Lambert, W.J., Kaliszan, R., Nasal, A. and Haber, P.: Determination of solute lipophilicity, as $\log P(\text{octanol})$ and $\log P(\text{alkane})$ using poly(styrene-divinylbenzene) and immobilised artificial membrane stationary phases in reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 766 (1997) 35-47.
- 2624 Albert, K., Brindle, R., Adam, S. and Bischoff, K.: (HPLC 2000. New approaches for assessment of stationary phases). *LaborPraxis*, 21 (1997) 18-25; C.A., 126 (1997) 287331n.
- 2625 Altepeter, B.J.: (Improvement of HPLC results). *LaborPraxis*, 21 (1997) 36-42; C.A., 126 (1997) 287339w.
- 2626 Armstead, D.E.F.: Of Alexanders and chromatography. *Educ. Chem.*, 34 (1997) 45-46; C.A., 126 (1997) 224767p.
- 2627 Briese, M.A.: (Efficient method development in HPLC). *LaborPraxis*, 21 (1997) 26-32; C.A., 126 (1997) 287352v.
- 2628 Chester, T.L.: Chromatography from the mobile-phase perspective. *Anal. Chem.*, 69 (1997) 165A-169A - a review with 12 refs.
- 2629 Corradini, D.: HPLC and CE - match winners in bioseparations. *LC-GC Int.*, 10 (1997) 146-148.
- 2630 Dabas, P.C. and Carducci, C.N.: (Evaluation of the injection solvent in the validation of pharmaceutical analysis by HPLC). *Acta Farm. Bonaerense*, 15 (1996) 55-61; C.A., 126 (1997) 109018h.
- 2631 Dickson, M.L., Norton, T.T. and Fernandez, E.J.: Chemical imaging of multicomponent viscous fingering in chromatography. *AIChE J.*, 43 (1997) 409-418; C.A., 126 (1997) 201084z.
- 2632 Dolan, J.W., Marchand, D.H. and Cahill, S.A.: Air: poison for liquid chromatographs. *LC-GC Int.*, 10 (1997) 274-277.
- 2633 El'tekova, N.A. and El'tekov, Yu.A.: (Determination of the dead volume of a column in liquid chromatography). *Zh. Fiz. Khim.*, 70 (1996) 1884-1887; C.A., 126 (1997) 136107t.
- 2634 Eppert, G.J.: (HPLC troubleshooting. Part 3. Air on board). *LaborPraxis*, 20 (1996) 44-47; C.A., 126 (1997) 83805k - a review without refs.
- 2635 Eppert, G.J.: (HPLC-troubleshooting. Part 4. Again air on board). *LaborPraxis*, 20 (1996) 82-83; C.A., 126 (1997) 180582t.
- 2636 Eppert, G.J.: (HPLC-troubleshooting. Part 5. How to degas the eluent?). *LaborPraxis*, 21 (1997) 24-26; C.A., 126 (1997) 232850a - a review without refs.

- 2637 Gavini, P., Fellous, R., Angelini, E. and Dziuba, L.: Global recognition of the chromatographic profiles of complex matrixes. In: Dubois, J.-E. and Gershon, N. (Editors), *Model, Complex Data Creating Inf.*, Springer, Berlin, 1996, pp. 251-260; C.A., 126 (1997) 287347x.
- 2638 Kaiser, R.E.: (Development of HPLC over the last 20 years). *LaborPraxis*, 21 (1997) 8-16; C.A., 126 (1997) 287327r - a review with 11 refs.
- 2639 MacNair, J.E., Lewis, K.C. and Jorgenson, J.W.: Ultrahigh-pressure reversed-phase liquid chromatography in packed capillary columns. *Anal. Chem.*, 69 (1997) 983-989.
- 2640 Marchand, D.H., Zhu, P.-L. and Dolan, J.W.: When good isn't good enough. *LC-GC*, 14 (1996) 1028-1033; C.A., 126 (1997) 139268g.
- 2641 Messick, N.J. and Kalivas, J.H.: Determination of chromatographic elution profiles using non-normalized singular value evolving profiles. *Microchem. J.*, 55 (1997) 235-246; C.A., 126 (1997) 287345v.
- 2642 Meyer, V.R.: Influence of leaks in the liquid chromatographic instrument on analytical results. *J. Chromatogr. A*, 767 (1997) 25-31.
- 2643 Park, J.H., Lee, Y.K., Weon, Y.C., Tan, L.C., Li, J., Li, L., Evans, J.F. and Carr, P.W.: Revisionist look at solvophobic driving forces in reversed-phase liquid chromatography. IV. Partitioning vs. adsorption mechanism on various types of polymeric bonded phases. *J. Chromatogr. A*, 767 (1997) 1-10.
- 2644 Serkiz, B., Meunier, F., Bertin, D., Mahieu, J.-P. and Volland, J.-P.: A general approach for day-to-day analysis by HPLC. *LC-GC Int.*, 10 (1997) 310-314.
- 2645 Shao, X., Cai, W., Sun, P., Zhang, M. and Zhao, G.: Quantitative determination of the components in overlapping chromatographic peaks using wavelet transform. *Anal. Chem.*, 69 (1997) 1722-1725.
- 2646 Sjögren, A., Boring, C.B., Dasgupta, P.K. and Alexander, J.N., IV: Capillary ion chromatography with on-line high-pressure electrodialytic NaOH eluent production and gradient generation. *Anal. Chem.*, 69 (1997) 1385-1391.
- 2647 Sofer, G.K.: Designing validation into chromatography processes. *Spec. Tech. Publ.*, STP1260 (1996) 75-82; C.A., 126 (1997) 101278x.
- 2648 Zhang, Y., Hu, S. and Yu, M.: (Pattern filter applied to the noise elimination of chromatographic signals). *Sepu*, 14 (1996) 435-437; C.A., 126 (1997) 152201z.
- For additional information see C.A.:
126 (1997) 168806m, 287228j.
- See also 2615, 2620, 2684, 2705, 2741, 2796, 3850.
- 2b. *Thermodynamics and theoretical relationships*
- 2649 Cheong, W.J. and Choi, J.D.: Linear solvation energy relationships in normal phase liquid chromatography based on retention data on silica in 2-propanol/hexane eluents. *Anal. Chim. Acta*, 342 (1997) 51-57.
- 2650 Dondi, F., Pietrogrande, M.C. and Felinger, A.: Decoding complex multicomponent chromatograms by Fourier analysis. *Chromatographia*, 45 (1997) 435-440.
- 2651 Gao, Z., Cui, Z., Gan, Y. and Li, J.: Determination of vapor-liquid equilibrium at far-subatmospheric pressure by using headspace chromatography. *Fluid Phase Equilib.*, 126 (1996) 135-144; C.A., 126 (1997) 51596b.
- 2652 Glod, B.: A new concept of retention mechanisms in ion-exclusion chromatography. *Acta Chromatogr.*, 6 (1996) 101-112; C.A., 126 (1997) 51463f.
- 2653 Guillaume, Y., Peyrin, E. and Guinchard, C.: Use of desirability functions associated with a demometric method to optimize separation of a compound mixture by liquid chromatography. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 436-438.
- 2654 Helfferich, F.G.: Non-linear waves in chromatography. III. Multicomponent Langmuir and Langmuir-like systems. *J. Chromatogr. A*, 768 (1997) 169-205 - a review with 54 refs.
- 2655 Jandera, P., Kucerova, M. and Holikova, J.: Characterization and prediction of retention in gradient-elution normal phase HPLC with ternary gradients. *Chromatographia*, 45 (1997) 163-172.
- 2656 Jansen, M.L., Houwers, J., Straathof, A.J.J., van der Wielen, L.A.M., Luyben, K.C.A.M. and van den Twell, W.J.J.: Effect of dissociation equilibria on ion-exchange processes of weak electrolytes. *AIChE J.*, 43 (1997) 73-82; C.A., 126 (1997) 151969d.
- 2657 McGuffin, V.L. and Chen, S.-H.: Theoretical and experimental studies on the effect of pressure on solute retention in liquid chromatography. *Anal. Chem.*, 69 (1997) 930-943.
- 2658 Okapo, S.O. and Simpson, C.F.: Influence of temperature and mobile phase composition on retention properties of oligomeric bonded phases in reversed-phase liquid chromatography (RPLC). *Chromatographia*, 44 (1997) 135-144.
- 2659 Phillips, M.L. and White, R.L.: Dependence of chromatogram peak areas obtained by curve-fitting on the choice of peak shape function. *J. Chromatogr. Sci.*, 35 (1997) 75-81.
- 2660 Prazeres, D.M.F.: A theoretical analogy between multistage ultrafiltration and size-exclusion chromatography. *Chem. Eng. Sci.*, 52 (1997) 953-960; C.A., 126 (1997) 226960v.
- 2661 Randon, J.: (Dispersion in chromatography: a visual representation at the molecular level). *Analisis*, 24 (1996) 168-171; C.A., 126 (1997) 51301b - a review with 5 refs.
- 2662 Semenov, S.N.: (Theory of flow fraction with secondary equilibrium). *Zh. Fiz. Khim.*, 70 (1996) 1674-1679; C.A., 126 (1997) 54244w.
- 2663 Thede, R., Below, E., Haberland, D. and Langer, S.H.: Theoretical treatment of first-order-reversible reactions occurring in a chromatographic reactor, on the basis of consecutive reactions. *Chromatographia*, 45 (1997) 149-154.
- 2664 Zhong, G., Yum, T., Khattabi, S. and Guiochon, G.: Simulated moving bed chromatography under linear conditions. *Chromatographia*, 45 (1997) 109-115.
- See also 2623, 2633, 2645, 2693, 2726, 2728, 2734, 2784, 2785, 2792, 2796, 3132, 3134, 3139, 3229.
- 2c. *Relationship between structure and chromatographic behaviour*
- 2665 Barbato, F., la Rotonda, M.I. and Quaglia, F.: Interactions of nonsteroidal antiinflammatory drugs with phospholipids: comparison between octanol/buffer partition coefficients and chromatographic indexes on immobilized artificial membranes. *J. Pharm. Sci.*, 86 (1997) 225-229.

2666 Sun, Z.L., Song, L.J., Zhang, X.T., Huang, J., Li, M.L., Bai, J.E. and Hu, Z.D.: Relationship between retention behavior of substituted benzene derivatives and properties of the mobile phase in RPLC. *J. Chromatogr. Sci.*, 35 (1997) 105-116.

See also 3385, 3478, 3521.

2d. Measurement of physico-chemical and related values

2667 Fredriksson, H., Andersson, R., Koch, K. and Åman, P.: Calibration of a size-exclusion chromatography system using fractions with defined amylopectin unit chains. *J. Chromatogr. A*, 768 (1997) 325-328.

2668 Mrkvickova, L.: Size-exclusion chromatography of low molecular weight polymers. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 403-411.

See also 2877, 3075, 3385, 3526, 3541.

3. GENERAL TECHNIQUES

3a. Apparatus and accessories

2669 Bauer, J., Goetze, H.J., Kiffmeyer, T. and Jursch, M.: (Continuous local resolved HPLC based on a multifunction valve. Principle and applications). *GIT Labor-Fachz.*, 41 (1997) 6-9; C.A., 126 (1997) 232871h.

2670 Dhillon, H.S., Heckenberg, A., Heckenberg, A. and Jekot, J.: Development of a new, dedicated ion chromatograph. *Int. Lab.*, 27, No. 3(March) (1997) 11F-11J.

2671 Dolan, J.W.: Pump preventive maintenance. *LC-GC Int.*, 10 (1997) 150-156.

2672 Jia, C., Wang, X. and Ou, Q.: Microwave-induced plasma atomic emission spectrometer used as the detector for online coupled high-performance liquid chromatography-gas chromatography. *Anal. Commun.*, 34 (1997) 53-56; C.A., 126 (1997) 287335s.

2673 Sturaro, A., Parvoli, G. and Doretti, L.: HPLC sample preparation using the thermal desorption unit. *LC-GC Int.*, 10 (1997) 316-318.

For additional information see C.A.:

126 (1997) 72302t, 83851x, 105861e, 139235u, 165898g, 165906h, 258178n.

See also 2682, 2685, 2700, 3025.

3b. Detectors and detection reagents

2674 Boring, C.B. and Dasgupta, P.K.: An affordable high-performance optical absorbance detector for capillary systems. *Anal. Chim. Acta*, 342 (1997) 123-132.

2675 Cooper, S.D., Robson, M.M., Batchelder, D.N. and Bartle, K.D.: Development of a universal Raman detector for microchromatography. *Chromatographia*, 44 (1997) 257-262.

2676 Gohda, R., Komoto, K., Santa, T., Fukushima, T., Homma, H. and Imai, K.: Optimization of the reaction conditions for the peroxyoxalate chemiluminescence detection system of fluorescent compounds in a high-performance liquid chromatography. *Anal. Sci.*, 12 (1996) 713-719; C.A., 126 (1997) 26189p.

2677 Gui, M., Nagaraj, S., Rahavendran, S.V. and Karnes, H.T.: Diode laser induced near infra-red fluorescence detection for high-performance liquid chromatography analysis of indocyanine green in plasma. *Anal. Chim. Acta*, 342 (1997) 145-149.

2678 Hara, S., Aoki, J., Yoshikumi, K., Tatsuguchi, Y. and Yamaguchi, M.: 4-(5,6-Dimethoxybezothiazolyl)benzoyl fluoride and 2-(5,6-dimethoxybezothiazolyl)benzenesulfonyl chloride as sensitive fluorescence derivatization reagents for amines in high-performance liquid chromatography. *Analyst (Cambridge)*, 122 (1997) 475-479.

2679 Iwata, T., Senda, M., Kurosu, Y., Tsuji, A. and Maeda, M.: Construction of time-resolved fluorescence detector for amino compounds after high-performance liquid chromatography using europium chelate. *Anal. Chem.*, 69 (1997) 1861-1865.

2680 Kan, H., Berniolles, S., Nunes, J. and Tong, W.G.: Sensitive wave-mixing detectors for capillary electrophoresis and liquid chromatography. *Proc. SPIE-Int. Soc. Opt. Eng.*, 2835 (1996) 135-142; C.A., 126 (1997) 112535e.

2681 Krull, I.S., Cho, B.-Y., Strong, R. and Vanderlaan, M.: Principles and practice of immunodetection in FIA and HPLC. *LC-GC Int.*, 10 (1997) 278-292.

2682 Netopilik, M.: Combined effect of interdetector volume and peak spreading in size exclusion chromatography with dual detection. *Polymer*, 38 (1997) 127-130; C.A., 126 (1997) 104644z.

2683 Smalley, M.B. and McGown, L.B.: Fluorescence detectors in HPLC. *Adv. Chromatogr. (N.Y.)*, 37 (1997) 29-71; C.A., 126 (1997) 258194q.

For additional information see C.A.:

126 (1997) 141758k, 165911f.

See also 2700, 2719, 2807, 2813, 2835, 2849, 2850, 2859, 2879, 2887, 2899, 2912, 2954, 2977, 2980, 2993, 3003, 3033, 3089, 3352, 3366, 3381, 3423, 3427, 3486, 3493, 3495, 3550, 3557, 3666, 3669, 3671, 3796, 3827.

3c. Sorbents and columns, packing procedures

2684 Balcan, M., Cserhati, T. and Forgács, E.: Influence of organic modifiers on the retention characteristics of graphitized carbon column. *Anal. Lett.*, 30 (1997) 883-893.

2685 Baru, M., Danilov, A., Vaginina, I., Gorbunova, E., Moshnikov, S., Mustaeva, L. and Cherskii, V.: New dynamic axial compression columns with means for monitoring floating adapter position. Column design and utilisation in low pressure LC on soft packings. *Chromatography*, 45 (1997) 351-354.

2686 Batista-Viera, F., Manta, C. and Carlsson, J.: Covalent binding of thiols to thiosulphinate-containing supports. *Biotechnol. Appl. Biochem.*, 24 (1996) 231-239; C.A., 126 (1997) 128845s.

- 2687 Bouvier, E.S.P., Martin, D.M., Iraneta, P.C., Capparella, M., Cheng, Y.-F. and Philips, D.J.: A novel polymeric reversed-phase sorbent for solid-phase extraction. *LC-GC*, 15 (1997) 152-158; *C.A.*, 126 (1997) 126458u.
- 2688 Breitkopf, K.: (Good laboratory produce-related working with column identification). *LaborPraxis*, 20 (1996) 54-55; *C.A.*, 126 (1997) 112534d.
- 2689 Cocker, T.M., Fee, C.J. and Evans, R.A.: Preparation of magnetically susceptible polyacrylamide-magnetite beds for use in magnetically stabilized fluidized bed chromatography. *Biotechnol. Bioeng.*, 53 (1997) 79-87; *C.A.*, 126 (1997) 154617p.
- 2690 Collins, K.E., Granja, M.L.M.M., Pereira Filho, R.G., Anazawa, T.A. and Jardim, I.C.S.F.: The spatial distribution of poly(methyloctylsiloxane) deposits by solvent evaporation in the pores of HPLC silica particles. *Chromatographia*, 45 (1997) 99-103.
- 2691 Crini, G. and Morcellet, M.: HPLC of structural isomers using cyclodextrin-poly(vinylamine)-coated silica columns, Part II: Retention behavior and separation. *J. Chromatogr. Sci.*, 34 (1996) 485-494.
- 2692 Crini, G., Morcellet, M. and Torri, G.: HPLC of structural isomers with cyclodextrin-poly(vinylamine)-coated silica columns, Part I: Synthesis and characterization of cyclodextrin-bonded stationary phases by NMR solid state. *J. Chromatogr. Sci.*, 34 (1996) 477-484.
- 2693 Cruz, E., Euerby, M.R., Johnson, C.M. and Hackett, C.A.: Chromatographic classification of commercially available reverse-phase HPLC column. *Chromatographia*, 44 (1997) 151-161.
- 2694 Dawidowicz, A.L., Wasilewska, D. and Rogalski, J.: The activation of rigid materials with a surface polymer layer composed of a dextranpolyimine mixture and their application as supports for bioselective adsorption centers. *Adsorpt. Sci. Technol.*, 14 (1996) 101-111; *C.A.*, 126 (1997) 101268u.
- 2695 Delaurent, C., Toamo, V. and Siouffi, A.M.: Synthesis and characterization of a chemically-bonded cholesteric stationary phase for high-performance liquid chromatography. *Chromatographia*, 45 (1997) 355-363.
- 2696 Donnecke, J., Paul, C., Koenig, W.A., Svensson, L.A., Gyllenhaal, O. and Vessman, J.: Immobilization of heptakis(6-*tert*-butyldimethylsilyl-2,3-di-O-methyl)- β -cyclodextrin for capillary gas chromatography supercritical fluid chromatography and microliquid chromatography. *J. Microcolumn Sep.*, 8 (1996) 495-505; *C.A.*, 126 (1997) 206935n.
- 2697 Dumont, P.J. and Fritz, J.S.: Silicalite as a stationary phase for HPLC. *J. High Resolut. Chromatogr.*, 19 (1996) 691-695.
- 2698 Elefterov, A.I., Kolpachnikova, M.G., Nesterenko, P.N. and Shpigun, O.A.: Ion-exchange properties of glutamic acid-bonded silica. *J. Chromatogr. A*, 769 (1997) 179-188.
- 2699 Ellwanger, A., Brindle, R. and Albert, K.: New stationary phases of conjugated pi-electron systems for HPLC. Characterization of structure and dynamics by solid state NMR spectroscopy. *J. High Resolut. Chromatogr.*, 20 (1997) 39-45.
- 2700 Engelhardt, H. and Siffrin, C.: Means of validation of HPLC systems and components. *Chromatographia*, 45 (1997) 35-43.
- 2701 Ericson, C., Liao, J.-L., Nakazato, K. and Hjertén, S.: Preparation of continuous beds for electrochromatography and reversed-phase liquid chromatography of low-molecular-mass compounds. *J. Chromatogr. A*, 767 (1997) 33-41.
- 2702 Eymann, W.: HPLC in industry - a well established procedure for characterizing RP-stationary phases. *Chromatographia*, 45 (1997) 235-242.
- 2703 Gao, H. and Gilpin, R.K.: Studies of the influence of hydrogen chloride on the liquid chromatographic properties of silica-immobilized bovine serum albumin under normal-phase conditions. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 21-29.
- 2704 Hiang, S.X., Yang, R.Q. and Chen, L.R.: Polysiloxane-encapsulated stationary phase for reversed-phase high-performance liquid chromatography. *Chromatographia*, 44 (1997) 263-266.
- 2705 Kanazawa, H., Kashiwase, Y., Yamamoto, K., Matsushima, Y., Kikuchi, A., Sakurai, Y. and Okano, T.: Temperature-responsive liquid chromatography. 2. Effects of hydrophobic groups in N-isopropylacrylamide copolymer-modified silica. *Anal. Chem.*, 69 (1997) 823-830.
- 2706 Lavine, B.K., Hendayana, S., Cooper, W.T. and He, Y.: Selectivity in micellar liquid chromatography: surfactant bonded phase interactions. I. C-18. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 351-376.
- 2707 Lavine, B.K., Hendayana, S., Cooper, W.T. and He, Y.: Selectivity in micellar liquid chromatography: surfactant bonded phase interactions. II. C-8 and cyanopropyl. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 377-402.
- 2708 Lewandowski, K., Svec, F. and Fréchet, J.M.J.: A novel polar separation medium for the size exclusion chromatography of small molecules: uniformly sized, porous poly(vinylphenol-co-divinylbenzene) beads. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 227-243.
- 2709 Li, J. and Carr, P.W.: Effect of temperature on the thermodynamic properties, kinetic performance, and stability of polybutadiene-coated zirconia. *Anal. Chem.*, 69 (1997) 837-843.
- 2710 Lynch, B., Glennon, J.D., Tröltzsch, C., Menyes, U., Pursch, M. and Albert, K.: A (-)-methyl bonded silica phase for chiral separations: synthesis and solid state NMR characteristics. *Anal. Chem.*, 69 (1997) 1756-1762.
- 2711 Majors, R.E.: New chromatography columns and accessories at the 1997 Pittsburgh Conference, Part I. *LC-GC Int.*, 10 (1997) 220-239.
- 2712 Makriyannis, T. and Clonis, Y.D.: Design and study of peptide-ligand affinity chromatography adsorbents: application to the case of trypsin purification from bovine pancreas. *Biotechnol. Bioeng.*, 53 (1997) 49-57; *C.A.*, 126 (1997) 100958g.
- 2713 McCalley, D.V.: Comparative evaluation of bonded-silica reversed-phase columns for high-performance liquid chromatography using strongly basic compounds and alternative organic modifiers buffered at acid pH. *J. Chromatogr. A*, 769 (1997) 169-178.
- 2714 Monser, L.I., Greenway, G.M. and Ewing, D.F.: Novel 2-chrysanyl- and 1-pyrenyl-tartaramide derivatives as liquid chromatographic chiral phases for enantiomeric separation on porous graphitic carbon. *Tetrahedron: Asymmetry*, 7 (1996) 1189-1198; *C.A.*, 125 (1996) 47927x.
- 2715 Moriyama, H., Anegayama, M. and Kato, Y.: New tools for rapid HPLC based on 2.3- μ m porous microspherical silica gel. *Am. Lab. (Shelton)*, 28 (1996) 20H, 20J; *C.A.*, 126 (1997) 44502q.

- 2716 Pichon, V., Rogniaux, H., Fischer-Durand, N., Ben Rejeb, S., le Goffic, F.L. and Hennion, M.-C.: Characteristics of immunosorbents used as a new approach to selective solid-phase extraction in environmentally analysis. *Chromatographia*, 45 (1997) 289-295.
- 2717 Plunkett, S.D.: Substrate-selective metal-affinity composite adsorbents prepared by template polymerization: synthesis, characterization and application to chromatography. Avail. *Univ. Microfilms Int.*, Order No. DA9704405, 1995, 167 pp.; C.A., 126 (1997) 173541a.
- 2718 Sándi, Á., Bede, Á., Szepesy, I. and Rippel, G.: Characterization of different RP-HPLC columns by a gradient elution technique. *Chromatographia*, 45 (1997) 206-214.
- 2719 Swart, R., Kraak, J.C. and Poppe, H.: A weak cation-exchange phase for the separation of biogenic amines by open tubular liquid chromatography. *Chromatographia*, 44 (1997) 295-302.
- 2720 Theodoridis, G., Papadoyannis, I., Hermans-Lokkerbol, A. and Verpoorte, R.: A study of the behaviour of some new column materials in the chromatographic analysis of *Catharanthus* alkaloids. *Chromatographia*, 45 (1997) 52-58.
- 2721 Yashima, E., Sahavattanapong, P. and Okamoto, Y.: HPLC enantioseparation on cellulose tris(3,5-dimethylphenylcarbamate) as a chiral stationary phase: influence of pore size of silica gel, coating amount, coating solvent, and column temperature on chiral discrimination. *Chirality*, 8 (1996) 446-451; C.A., 126 (1997) 74450p.
- 2722 Yu, J. and El Rassi, Z.: High performance liquid chromatography of small and large molecules with nonporous silica-based stationary phases. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 183-2201.
- For additional information see C.A.:
- 126 (1997) 83736p, 104857w, 112543f, 139272d, 144051k, 154627s, 154631p, 165930m, 206908f, 278682a.
- See also 2658, 2769, 2775, 2776, 2779, 2781, 2782, 2783, 2786, 2789, 2818, 3121, 3131, 3134, 3139, 3174, 3190, 3230, 3232, 3309, 3388, 3462, 3488, 3542, 3795, 3851.
- 3d. Quantitative analysis**
- See 2744, 2807, 3354, 3465, 3471, 3498.
- 3e. Preparative scale chromatography**
- 2723 Brandt, A., Mann, G. and Arlt, W.: Temperature gradients in preparative high-performance liquid chromatography columns. *J. Chromatogr. A*, 769 (1997) 109-117.
- 2724 Cavoy, E., Deltent, M.-F., Lehoucq, S. and Miggiano, D.: Laboratory-developed simulated moving bed for chiral drug separations. Design of the system and separation of Tramadol enantiomers. *J. Chromatogr. A*, 769 (1997) 49-57.
- 2725 Kaltenbrunner, O. and Jungbauer, A.: Simple model for blending aqueous salt buffers. Application to preparative chromatography. *J. Chromatogr. A*, 769 (1997) 37-48.
- 2726 Mazzotti, M., Storti, G. and Morbidelli, M.: Optimal operation of simulated moving bed units for nonlinear chromatographic separations. *J. Chromatogr. A*, 769 (1997) 3-24.
- 2727 Navarro, A., Caruel, H., Rigal, L. and Phemius, P.: Continuous chromatographic separation process: simulated moving bed allowing simultaneous withdrawal of three fractions. *J. Chromatogr. A*, 770 (1997) 39-50.
- 2728 Row, K.H.: Purification of thymine dimer from monomer solution in preparative liquid chromatography. *Chromatographia*, 45 (1997) 296-300.
- 2729 Schoenrock, K.: Performance limits in industrial chromatographic separation processes. *Zuckerindustrie (Berlin)*, 122 (1997) 22-27; C.A., 126 (1997) 173289z.
- 2730 Schulte, M., Ditz, R., Devant, R.M., Kinkel, J.N. and Charton, F.: Comparison of the specific productivity of different chiral stationary phases used for simulated moving-bed chromatography. *J. Chromatogr. A*, 769 (1997) 93-100.
- 2731 Yun, T., Zhong, G. and Guiochon, G.: Simulated moving bed under linear conditions: experimental vs. calculated results. *AIChE J.*, 43 (1997) 935-945; C.A., 126 (1997) 279471t.
- See also 2734, 2745, 2747, 2749, 2853, 3025, 3128, 3160, 3189, 3534, 3535, 3645, 3723, 3741.
- 3f. Programmed temperature, pressure, vapors, gradients**
- 2732 Haldna, U., Timotheus, H., Yakovleva, I., Pakosta, M. and Inno, I.: Application of eluents containing phthalic acid and protonated ethoxyamines in single column ion chromatography. *Eesti Tead Akad. Toim., Keem.*, 45 (1996) 9-14; C.A., 126 (1997) 112452a.
- 2733 Meyer, V.R.: Example of gradient elution in normal-phase liquid chromatography. *J. Chromatogr. A*, 768 (1997) 315-319.
- See also 2646, 2718, 2723, 3814.
- 4. SPECIAL TECHNIQUES**
- 4a. Automation**
- See 2740, 3125, 3350, 3599, 3742, 3751, 3773, 3847.
- 4b. Computerization and modelling**
- 2734 Altenhöner, U., Meurer, M., Strube, J. and Schmidt-Traub, H.: Parameter estimation for the simulation of liquid chromatography. *J. Chromatogr. A*, 769 (1997) 59-69.
- 2735 Anklam, M.R., Prud'homme, R.K. and Finlayson, B.A.: Ion exchange chromatography laboratory. Experimentation and numerical modeling. *Chem. Eng. Educ.*, 31 (1997) 26-31; C.A., 126 (1997) 199052s.
- 2736 Collantes, E.R., Duta, R., Welsh, W.J., Zielinski, W.L. and Brower, J.: Preprocessing of HPLC trace impurity patterns by wavelet packets for pharmaceutical fingerprinting using artificial neural networks. *Anal. Chem.*, 69 (1997) 1392-1397.
- 2737 Dolan, J.W.: The system logbook. *LC-GC Int.*, 10 (1997) 216-220.
- 2738 Eberhardt, W. and Spatz, R.: (Windows NT in the chromatography laboratory). *LaborPraxis*, 20 (1996) 36-37; C.A., 126 (1997) 180581s.

- 2739 Gantman, Yu.L. and Sazhin, S.G.: (Interactive method for primary processing of chromatographic signals). *Plast. Massy*, (1995) 35-36; C.A., 126 (1997) 54246y.
- 2740 Huber, L.: Validation of computerized analytical systems, Part IV: ensuring ongoing performance. *LC-GC Int.*, 10 (1997) 300-308.
- 2741 Huguenard, C., Widmaier, J., Elaissari, A. and Pefferkorn, E.: Adsorption of polyelectrolytes on chromatographic columns simulated and experimental concentration profiles. *Macromolecules*, 30 (1997) 1434-1441; C.A., 126 (1997) 131993u.
- 2742 Jimenez, O., Garcia, M.A. and Marina, M.L.: Neural network capability for retention modeling in micellar liquid chromatography with hybrid eluents. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 731-742.
- 2743 Kaczmarski, K.: The use of splines in the simulation of adsorption chromatography. *Acta Chromatogr.*, 5 (1995) 122-143; C.A., 126 (1997) 139145q.
- 2744 Kantoci, D.: Non-linear data bunch. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1049-1055.
- 2745 Meurer, M., Altenhöner, U., Strube, J. and Schmidt-Traub, H.: Dynamic simulation of simulated moving bed chromatographic reactors. *J. Chromatogr. A*, 769 (1997) 71-79.
- 2746 Osborne, L.M. and Miyakawa, T.W.: Use of experimental design in the optimization of HPLC methodology for the separation of stereoisomers. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 501-509.
- 2747 Pais, L.S., Loureiro, J.M. and Rodrigues, A.E.: Modeling, simulation and operation of a simulated moving bed for continuous chromatographic separation of 1,1'-bi-2-naphthol enantiomers. *J. Chromatogr. A*, 769 (1997) 25-35.
- 2748 Pais, L.S., Loureiro, J.M. and Rodrigues, A.E.: Separation of 1,1'-bi-naphthol enantiomers by continuous chromatography in simulated moving bed. *Chem. Eng. Sci.*, 52 (1996) 245-257; C.A., 126 (1997) 105736t.
- 2749 Strube, J., Altenhöner, U., Meurer, M., Schmidt-Traub, H. and Schulte, M.: Dynamic simulation of simulated moving-bed chromatographic processes for the optimization of chiral separations. *J. Chromatogr. A*, 769 (1997) 81-92.
- 2750 Watanabe, H. and Sato, H.: Peak intensity in ion-exchange chromatography with bulk-property detectors. *Anal. Sci.*, 12 (1996) 859-867; C.A., 126 (1997) 139169a.
- For additional information see C.A.:
126 (1997) 165916m.
- See also 2631, 2645, 2657, 2730, 2753, 2773, 3120, 3137, 3512, 3531.
- 4c. *Combination with other physico-chemical techniques (MS, IR etc.)*
- 2751 Bowers, L.D.: Coupled mass spectrometric-chromatographic systems. In: Wong, S.H.-Y. and Sunshine, I. (Editors), *Handb. Anal. Ther. Drug Monit., Toxicol.*, CRC, Boca Raton 1997, pp. 173-199; C.A., 126 (1997) 127919g - a review with 125 refs.
- 2752 Buchberger, W. and Haider, K.: Studies on the combination of ion chromatography-particle-beam mass spectrometry with capillary columns. *J. Chromatogr. A*, 770 (1997) 59-68.
- 2753 Cuesta Sánchez, F., Vandeginste, B.G.M., Hanczewicz, T.M. and Massart, D.L.: Resolution of complex liquid chromatography - Fourier transform infrared spectroscopy data. *Anal. Chem.*, 69 (1997) 1477-1484.
- 2754 Herderich, M., Richling, E., Roscher, R., Schneider, C., Schwab, W., Hump, H.-U. and Schreier, P.: Application of atmospheric pressure ionization HPLC-MS-MS for the analysis of natural products. *Chromatographia*, 45 (1997) 127-132.
- 2755 Imatani, K. and Smith, C.: An easy-to-use benchtop liquid chromatograph/mass selective detector. *Am. Lab. (Shelton)*, 28 (1996) 29-33; C.A., 126 (1997) 72134q.
- 2756 Kar, S. and Dasgupta, P.K.: Direct coupling of ion chromatography with suppressed conductometric capillary electrophoresis. *J. Microcolumn Sep.*, 8 (1996) 561-568; C.A., 126 (1997) 232755y.
- 2757 Lobinski, R.: Hyphenated techniques for speciation analysis. In: Welz, B. (Editor), *CANAS '95, Colloq. Anal. Atomspektrosk.* 1995, Bodenseewerk Perkin-Elmer, Überlingen, 1996, pp. 389-397; C.A., 126 (1997) 232713h - a review with 34 refs.
- 2758 Mondello, L., Dugo, G. and Bartle, K.D.: Coupled HPLC-HRGC-MS: a new method for the online analysis of real samples. *Am. Lab. (Shelton)*, 28 (1996) 41-49; C.A., 126 (1997) 148201g.
- 2759 Nabeshima, T., Sakairi, M., Takada, Y. and Koizumi, H.: (New interface for semi-micro liquid chromatograph/mass spectrometer using atmospheric pressure chemical ionization). *Kuramatogurafu*, 17 (1996) 268-269; C.A., 126 (1997) 206930g.
- 2760 Puig, D., Barcelo, D., Silgoner, I. and Grasserbauer, M.: Comparison of three different liquid chromatography-mass spectrometry interfacing techniques for determination of priority phenotic compounds in water. *J. Mass Spectrom.*, 31 (1996) 1297-1307; C.A., 126 (1997) 22706g.
- 2761 Visser, T., Vredenbregt, M.J., ten Hove, G.J., de Jong, A.P.J.M. and Somsen, G.W.: Gradient elution liquid chromatography-infrared spectrometry at $\mu\text{g l}^{-1}$ level using capillary column switching and addition of a make-up liquid. A preliminary study. *Anal. Chim. Acta*, 342 (1997) 151-158.
- For additional information see C.A.:
126 (1997) 165920h, 287381d.
- See also 2672, 2681, 2766, 2768, 2795, 2808, 2811, 2821, 2829, 2833, 2866, 2910, 2913, 2955, 2961, 2966, 2974, 2976, 2985, 2991, 3012, 3048, 3066, 3105, 3111, 3119, 3135, 3187, 3236, 3250, 3267, 3276, 3329, 3330, 3338, 3346, 3362, 3377, 3391, 3394, 3403, 3404, 3405, 3406, 3407, 3421, 3426, 3428, 3440, 3474, 3484, 3489, 3494, 3515, 3527, 3529, 3540, 3545, 3549, 3559, 3561, 3564, 3583, 3592, 3608, 3610, 3611, 3613, 3618, 3630, 3638, 3655, 3658, 3662, 3667, 3677, 3679, 3681, 3726, 3737, 3748, 3756, 3761, 3774, 3784, 3785, 3805, 3852.
- 4d. *Affinity chromatography (advances)*
- 2762 Flatten, M.: (Affinity chromatography using immobilized protein A and G). *Bioforum*, 19 (1996) 512-514; C.A., 126 (1997) 141516e - a review with 13 refs.

- 2763 Holmes, L.D. and Schiller, M.R.: Immobilized iron(III) metal affinity chromatography for the separation of phosphorylated macromolecules: ligands and applications. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 123-142 - a review with 67 refs.
- 2764 Litaker, J., Donald, S., Spears, R. and Vincent, J.B.: Carbonic anhydrase and carboxypeptidase A metalloprotein affinity metal chromatography. *Trans. Soc. Min. Metall. Explor.*, 298 (Sect. 3) (1995, Publ. 1996) 108-111; C.A., 125 (1996) 305443m.
- 2765 Patwardhan, A.V. and Ataa, M.M.: Site accessibility and the pH dependence of the saturation capacity of a highly cross-linked matrix. Immobilized metal affinity chromatography of bovine serum albumin on Chelating Superose. *J. Chromatogr. A*, 767 (1997) 11-23.
- 2766 Van Emon, J.M. and Lopez-Avila, V.: Immunoaffinity extraction with online liquid chromatography-mass spectrometry. *ACS Symp. Ser.*, 646 (1996) 74-88; C.A., 126 (1997) 112516z - a review with 32 refs.
- For additional information see C.A.:
126 (1997) 14776q, 101442w, 101454b, 157820k.
- See also 2712, 2722, 3079, 3087, 3094, 3127, 3142, 3156, 3172, 3181, 3205, 3208, 3217, 3282, 3298, 3328, 3443, 3716.
- 4e. Functional analysis**
- 2767 Saitoh, T.: (Micellar system in analytical separation). *Dojin News*, 82 (1996) 3-9; C.A., 126 (1997) 154574x - a review with 18 refs.
- See also 3054, 3202.
- 4f. Trace analysis and preseparation techniques**
- 2768 Courchesne, P.L. and Patterson, S.D.: Manual microcolumn chromatography for sample cleanup before mass spectrometry. *BioTechniques*, 22 (1997) 244-250; C.A., 126 (1997) 222432b.
- 2769 Lubda, D., Meyer, B., Wieland, G., Boss, K.-S. and Grimm, C.-H.: HPLC-integrated solid phase extraction and analysis of biological samples. Part I: Tailor-made adsorbents and method development. *LaborMedizin*, 19 (1996) 203-206; C.A., 126 (1997) 72288t.
- 2770 Moskvin, L.N.: Chromatographic membrane and its analytical potentialities in the preconcentration of substances from liquid and gas phases. *J. Anal. Chem.*, 51 (1996) 1027-1030; C.A., 126 (1997) 54097a - a review with 4 refs.
- 2771 Schwedt, G.: (Solid-phase extraction as sample preparation for chromatography). *Nachr. Chem., Tech. Lab.*, 44(Suppl.1) (1996) S63-S68; C.A., 126 (1997) 152199c.
- See also 2622, 2687, 2736, 2766, 2916, 2993, 3011, 3611, 3749, 3797, 3801.
- 4g. Enantiomers, separation**
- 2772 Ameyibor, E. and Stewart, J.T.: Enantiomeric HPLC separation of selected chiral drugs using native and derivatized β -cyclodextrins as chiral mobile phase additives. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 855-869.
- 2773 Gattuzzo, M.J., McCulloch, B., Gottschall, K., House, D.W. and Baumann, W.M.: The Sorbex simulated moving bed: a separation process for pure enantiomers. *Int. Chim.*, 383 (1996) 105-107; C.A., 126 (1997) 105746w.
- 2774 Gottfries, J., Johansson, P. and Karlsson, A.: Influence of chromatographic descriptors on enantioresolution of a dihydropyridine and structurally related compounds. *J. Chromatogr. A*, 763 (1997) 115-123.
- 2775 Haginaka, J. and Kanasugi, N.: Enantioselectivity of bovine serum albumin-bonded columns produced with isolated protein fragments. II. Characterization of protein fragments and chiral binding sites. *J. Chromatogr. A*, 769 (1997) 215-223.
- 2776 Hofstetter, H., Hofstetter, O. and Schurig, V.: Rapid separation of enantiomers in perfusion chromatography using a protein chiral stationary phase. *J. Chromatogr. A*, 764 (1997) 35-41.
- 2777 Kagel, J.R., Rossi, D.T. and Lathia, C.D.: Management of non-matrix interfering peaks in a chiral high-performance liquid chromatographic assay produced by solid-phase extraction of rat plasma. *J. Chromatogr. A*, 763 (1997) 129-137.
- 2778 Li, W., Zhou, J., Zhang, L. and Corke, H.: (Development and study on modified cyclodextrins). *Zhongguo Liangyou Xuebao*, 12 (1997) 29-31; C.A., 126 (1997) 279247z.
- 2779 Liu, Q.Y., Wu, X.J., He, J.G. and Liu, G.Q.: Diethyl tartrate on polystyrene bead as chiral stationary phase in liquid chromatography. *Chin. Chem. Let.*, 7 (1996) 1035-1036; C.A., 126 (1997) 109009f.
- 2780 Nyström, A. and Karlsson, A.: Enantiomeric resolution on Chiral-AGP with the aid of experimental design. Unusual effects of mobile phase pH and column temperature. *J. Chromatogr. A*, 763 (1997) 105-113.
- 2781 Pirkle, W.H., Gan, K.Z. and Brice, L.J.: The enhancement of enantioselectivity by halogen substituents. *Tetrahedron: Asymmetry*, 7 (1996) 2813-2816; C.A., 126 (1997) 74458x.
- 2782 Schweitz, L., Andersson, L.I. and Nilsson, S.: Capillary electrochromatography with predetermined selectivity obtained through molecular imprinting. *Anal. Chem.*, 69 (1997) 1179-1183.
- 2783 Sébille, B., Guillaume, M., Vidal-Madjar, C. and Thuaud, N.: Retention and enantioselectivity properties of β -cyclodextrin polymers and derivatives on porous silica for reverse-phase liquid chromatographic separation of enantiomers. *Chromatographia*, 45 (1997) 383-389.
- 2784 Stringham, R.W. and Blackwell, J.A.: Factors that control successful entropically driven chiral separations in SFC and HPLC. *Anal. Chem.*, 69 (1997) 1414-1420.
- 2785 Szabó, L.P., Kallo, D., Szotyory, L., Major, H., Bélafi-Bakó, K., Hadik, P. and Sisák, C.: Contribution of the lipophilic buffer to chiral recognition under reversed-phase conditions. *Chromatographia*, 45 (1997) 378-382.
- 2786 Szabó, L.P., Kallo, D. and Szotyory, L.: Chiral stationary phases on a crystalline support. *Mikrochim. Acta*, 124 (1996) 263-271; C.A., 126 (1997) 152213e.
- 2787 Szemán, J., Roos, N. and Csabai, K.: Ruggedness of enantiomeric separation by capillary electrophoresis and high-performance liquid chromatography with methylated cyclodextrins as chiral selectors. *J. Chromatogr. A*, 763 (1997) 139-147.
- 2788 Van Overbeke, A., Baeyens, W., Oda, H. and Abdoul-Enein, H.Y.: Direct enantiomeric HPLC separation of several 2-arylpropionic acids, barbituric acids and benzodiazepines on Chiracel OJ-R chiral stationary phase. *Chromatographia*, 43 (1996) 599-606.

2789 Van Overbeke, A.A.L., Baeyens, W.R.G., Beyaert, A., Abou-Enein, H.Y. and Oda, H.: Chiral resolution of several phenothiazine compounds and trimipramine, a dibenzazepine drug on chiralcel OJ-R. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 693-705.

2790 Yang, J. and Hage, D.S.: Effect of mobile phase composition on the binding kinetics of chiral solutes on a protein-based high-performance liquid chromatography column: Interactions of D- and L-tryptophan with immobilized human serum albumin. *J. Chromatogr. A*, 766 (1997) 15-25.

For additional information see C.A.:

126 (1997) 18411q, 139275g, 203801e.

See also 2710, 2714, 2721, 2724, 2730, 2746, 2747, 2748, 2749, 2848, 2989, 3000, 3023, 3032, 3036, 3045, 3053, 3054, 3055, 3372, 3395, 3415, 3424, 3518, 3523, 3534, 3547, 3548, 3550, 3567, 3575, 3584, 3594, 3597, 3615, 3616, 3626, 3633, 3634, 3641, 3645, 3646, 3648, 3661, 3688, 3689, 3692, 3698, 3731.

4h. Other special techniques

2791 Bischoff, K.: (Ultra-fast liquid chromatography). *LaborPraxis*, 20 (1996) 56-58; C.A., 126 (1997) 112552h.

2792 Fedotov, P.S., Kronrod, V.A., Maryutina, T.A. and Spivakov, B.Y.: On the mechanism of stationary phase retention in rotating coil columns. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3237-3254.

2793 Ludwig, U., Grischek, T., Neitzel, P. and Nestler, W.: Ultrafiltration: a technique for determining the molecular-mass distribution of group parameters of organic pollutants in natural waters. *J. Chromatogr. A*, 763 (1997) 315-321.

2794 Renault, J.-H., Thépenier, P., Zèches-Hanrot, M., le Men-Olivier, L., Durand, A., Foucault, A. and Margraff, R.: Preparative separation of anthocyanins by gradient elution centrifugal partition chromatography. *J. Chromatogr. A*, 763 (1997) 345-352.

2795 Spraul, M., Braumann, U., Renault, J.-H., Thépenier, P. and Nuzillard, J.-M.: Nuclear magnetic resonance monitoring of centrifugal partition chromatography in pH-zone-refining mode. *J. Chromatogr. A*, 766 (1997) 255-260.

2796 Torres-Lapasió, J.R., Baeza-Baeza, J.J. and García-Alvarez-Coque, M.C.: Description of the retention behaviour in micellar liquid chromatography as a function of pH, surfactant and modifier concentration. *J. Chromatogr. A*, 769 (1997) 155-168.

For additional information see C.A.:

126 (1997) 252153d.

See also 2651, 2689, 2782, 3178, 3185, 3515, 3672, 3686, 3754, 3760, 3806, 3818, 3830.

5. HYDROCARBONS AND HALOGEN DERIVATIVES

5a. Aliphatic hydrocarbons

2797 Jiang, Q., Xiong, L., Tang, S. and Wu, Z.: (Separation analytical technique of Al_2O_3 -filled capillary for acid digested hydrocarbon). *Shiyou Yu Tianranqi Dizhi*, 17 (1996) 167-168; C.A., 126 (1997) 173887t.

For additional information see C.A.:

126 (1997) 26173d.

5b. Cyclic hydrocarbons, fullerenes

2798 Bubnov, V.P., Spitsina, N.G. and Yagubskii, E.B.: Synthesis and high-speed single-column separation of fullerenes C_{60} , C_{70} and $C_n(n70)$. *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. C*, 7 (1996) 85-88; C.A., 126 (1997) 165677j.

2799 Cichna, M., Knopp, D. and Niessner, R.: Immunoaffinity chromatography of polycyclic aromatic hydrocarbons in columns prepared by the sol-gel method. *Anal. Chim. Acta*, 339 (1997) 241-250.

2800 Hao, C., Wu, S., Gu, Y., Shen, L., Gan, W., Zhao, X., Tang, A. and Tang, A.-C.: Separation and purification of C_{60}/C_{70} by depressurizing liquid chromatography. *Chin. Sci. Bull.*, 41 (1996) 1969-1971; C.A., 126 (1997) 83558g.

2801 Janoszka, B., Bodzek, D., Szotek, A. and Warzecha, L.: HPLC and TLC identification of nitrogen polynuclear aromatic compounds in airborne particulate matter. *J. Planar Chromatogr.*, 10 (1997) 55-58.

2802 Mathiessen, A.: Use of a keeper to enhance the recovery of volatile polycyclic aromatic hydrocarbons in HPLC analysis. *Chromatographia*, 45 (1997) 190-194.

2803 Murahashi, T. and Hayakawa, K.: A sensitive method for the determination of 6-nitrochrysene, 2-nitro-fluoranthene and 1-, 2- and 4-nitropyrenes in airborne particulates using high-performance liquid chromatography with chemiluminescence detection. *Anal. Chim. Acta*, 343 (1997) 251-257.

2804 Reinersdorff, D., Bush, E. and Liberato, D.J.: Plasma kinetics of vitamin A in human after a single oral dose of $(8,9,10^{18}\text{C})$ retinyl palmitate. *J. Lipid Res.*, 37 (1996) 1875-1874.

See also 2645, 2666, 2708, 2742, 2818.

5c. Halogen derivatives

2805 Grimvall, E., Colmsjö, A., Wrangskog, K., Östman, C. and Eriksson, M.: Quantitative structure-retention relationships for polychlorinated biphenyls and chlorobenzenes on selected normal-phase liquid chromatographic stationary phases. *J. Chromatogr. Sci.*, 35 (1997) 63-70.

See also 3768.

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

2806 Carbognani, L.: High temperature (70°C) size exclusion chromatography of petroleum waxes with RI and FI detection. *J. High Resolut. Chromatogr.*, 19 (1996) 549-558.

- 2807 Cebolla, V.L., Membrado, L., Vela, J., Ferrando, A.C. and Romero, C.: Evaporative light scattering detection in quantitative HPLC of PAC mixtures and coal-tar pitches. *Prepr. Pap.-Am. Chem. Soc., Div. Fuel Chem.*, 41 (1996) 1152-1156; C.A., 125 (1996) 172844u.
- 2808 Lewis, A.C., Askey, S.A., Holden, K.M., Bartle, K.D. and Pilling, M.J.: On-line LC-GC-AED and LC-GC-MS - multidimensional methods for the analysis of PAC in fuels, combustion emissions and atmospheric samples. *J. High Resolut. Chromatogr.*, 20 (1997) 109-114.
- 2809 Padlo, D.M., Subramanian, K.B. and Kugler, E.L.: Hydrocarbon class analysis of coal-derived liquid using high-performance liquid chromatography. *Fuel Process Technol.*, 49 (1996) 247-258; C.A., 126 (1997) 133306w.

6. ALCOHOLS

- 2810 Tanabe, T., Tajima, S., Suzuki, T., Okawa, E., Machida, R., Ichimura, S. and Yabuchi, M.: Quantification of 1,5-anhydro-D-glucitol in urine by automated borate complex anion-exchange chromatography with an immobilized enzyme reactor. *J. Chromatogr. B*, 692 (1997) 23-30.

See also 2649, 2850, 2930.

7. PHENOLS

- 2811 Bergeron, C., Marston, A., Wolfender, J.-L., Mavi, S., Rogers, C. and Hostettmann, K.: Isolation of polyphenols from *Polygala gaziensis* and liquid chromatography-mass spectrometry of related African *Polygala* species. *Phytochem. Anal.*, 8 (1997) 32-36; C.A., 126 (1997) 255329b.
- 2812 Fiehn, O. and Jekel, M.: Analysis of phenolic compounds in industrial wastewater with high-performance liquid chromatography and post-column reaction detection. *J. Chromatogr. A*, 769 (1997) 189-200.
- 2813 García Sánchez, M^a.T., Pérez Pavón, J. and Moreno Cordero, B.: Continuous membrane extraction of phenols from crude oils followed by high-performance liquid chromatographic determination with electrochemical detection. *J. Chromatogr. A*, 766 (1997) 61-69.
- 2814 Higuera, B.L. and de Gómez, V.M.: Contribution of HPLC to the study of the defense mechanisms acting in carnation (*Dianthus caryophyllus* L.) roots on infection with *Fusarium oxysporum* f.sp. *Dianthi*. *J. High Resolut. Chromatogr.*, 19 (1996) 706-708.
- 2815 Jáuregui, O. and Galceran, M.T.: Determination of phenols in water by on-line solid-phase disk extraction and liquid chromatography with electrochemical detection. *Anal. Chim. Acta*, 340 (1997) 191-199.
- 2816 Lambert, C. and Larroque, M.: Chromatographic analysis of water and wine samples for phenolic compounds released from food-contact epoxy resins. *J. Chromatogr. Sci.*, 35 (1997) 57-62.
- 2817 Masque, N., Galia, M., Marce, R.M. and Borrull, F.: Solid-phase extraction of phenols and pesticides in water with a modified polymeric resin. *Analyst (Cambridge)*, 122 (1997) 425-428.

- 2818 Nikitin, Y.S., Lanin, S.N. and Al-Ahmed, A.: Retention of polyphenols and substituted polycyclic aromatic hydrocarbons in the system hydroxylated silica-n-hexane. *Chromatographia*, 45 (1997) 408-413.
- 2819 Oertel, B.: HPLC-method to determine complete phenolic patterns in rosaceous plants containing ellagitannins. *Acta Hortic.*, 381 (International Symposium on Natural Phenols in Plant Resistance, Vol. 2) (1994) 775-781; C.A., 126 (1997) 274300b.
- 2820 Pirisi, F.M., Angioni, A., Cabras, P., Garau, V.L., Sanjust di Teulada, M.R., Karim dos Santos, M. and Bandino, G.: Phenolic compounds in virgin olive oils. I. Low-wavelength quantitative determination of complex phenols by high-performance liquid chromatography under isocratic elution. *J. Chromatogr. A*, 768 (1997) 207-213.
- 2821 Preiss, A., Lewin, U., Wennrich, L., Findeisen, M. and Efer, J.: Analysis of nitrophenols and other polar nitroaromatic compounds in ammunition waste water by high-field proton nuclear magnetic resonance (¹NMR) spectroscopy and chromatographic methods. *Fresenius J. Anal. Chem.*, 357 (1997) 676-686.
- 2822 Roggero, J.-P.: Wine phenolics analysis via direct HPLC injection. *Am. Lab. (Shelton)*, 29 (1997) 12D, 12F-12G; C.A., 126 (1997) 170567c.

See also 2649, 2691, 2697, 2703, 2747, 2748, 2760, 3764.

8. SUBSTANCES CONTAINING HETERO CYCLIC OXYGEN

8a. Flavonoids

- 2823 Milovanovic, M., Jovanovic, K.P., Radovic, V.B. and Vrbaski, Z.: Antioxidant effects of flavonoids of *Anthriscus sylvestris* in lard. *J. Am. Oil Chem. Soc.*, 73 (1996) 773-776.
- 2824 Myara, I., Pico, I., Vedie, B. and Moatti, N.: A chromatographic method for measuring protective effects of flavonoids on low-density lipoprotein oxidation. *Bull. Mol. Biol. Med.*, 20 (1995) 57-59; C.A., 126 (1997) 246299q.
- 2825 Pinto, A.C., Antunes, O.A.C., Rezende, C.M., Correia, C.R.D.: Separation of acidic components of *Vellozia flavicans* by silica gel-potassium hydroxide chromatography. *Phytochem. Anal.*, 8 (1997) 14-17; C.A., 126 (1997) 248416z.
- 2826 Robards, K. and Antolovich, M.: Analytical chemistry of fruit bioflavonoids. A review. *Analyst (Cambridge)*, 122 (1997) 11R-34R.
- 2827 Tsai, T.H., Chou, C.J., Tsai, T.R. and Chen, C.F.: Determination of wogonin in rat plasma by liquid chromatography and its pharmacokinetic application. *Planta Med.*, 62 (1996) 263-266; C.A., 125 (1996) 184774j.

8b. Aflatoxins and other mycotoxins

- 2828 Holak, W., DiProssimo, V. and Malek, E.G.: Reductive voltammetric HPLC detection of aflatoxins: determination of aflatoxin B₁ in foods. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1057-1065.
- 2829 Huopalaiti, R.P., Ebel, J., Jr. and Henion, J.D.: Supercritical fluid extraction of mycotoxins from feeds with analysis by LC/UV and LC/MS. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 537-551.

- 2830 Morovján, G., Szakács, G. and Fekete, J.: Monitoring of selected metabolites and biotransformation products from fermentation broths by high-performance liquid chromatography. *J. Chromatogr. A*, 763 (1997) 165-172.
- 2831 Poling, S.M. and Plattner, R.D.: Rapid purification of fumonisins B₃ and B₄ with solid phase extraction columns. *J. Agric. Food Chem.*, 44 (1996) 2299-2303; C.A., 125 (1996) 160504v.
- 2832 Thellmann, A. and Weber, W.: (Determination of ochratoxin A in cereals, malt, and beer after accumulation and separation on immunoaffinity columns and following high-pressure liquid chromatography with fluorescence detection). *Dtsch. Lebensm.-Rundsch.*, 93 (1997) 1-3; C.A., 126 (1997) 276514y.

See also 2957.

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

- 2833 Gu, Z.-M., Zhou, D., Wu, J., Shi, G., Zeng, L. and McLaughlin, J.L.: Screening for annonaceous acetogenins in bioactive plant extracts by liquid chromatography/mass spectrometry. *J. Natural Prod.*, 60 (1997) 242-248.
- 2834 Kanjahn, D., Jarms, U. and Maier, H.G.: (Hydroxymethylfurfural and furfural in coffee and related beverages. Part 1. Evaluation of the method). *Dtsch. Lebensm.-Rundsch.*, 92 (1996) 328-331; C.A., 126 (1997) 73884w.
- 2835 Lopez, P., Prognon, P., Muniategui, S., Letellier, D., Sargi, L. and Mahuzier, G.: Cyclodextrins as possible post-column fluorogenic reagents for the liquid chromatographic determination of psoralens. *Quim. Anal. (Barcelona)*, 15 (1996) 230-238; C.A., 126 (1997) 72047p.
- 2836 Petri, G., Krawczyk, U. and Kery, A.: Spectrophotometric and chromatographic investigation of bilberry anthocyanins for quantification purposes. *Microchem. J.*, 55 (1997) 12-23; C.A., 126 (1997) 222550p.

For additional information see C.A.:
126 (1997) 44511s.

See also 2706, 2707, 2794.

9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

- 2837 Biedermann, M., Grob, K., Bronz, M., Curcio, R., Huber, M. and Lopez-Fabal, F.: Bisphenol-A-diglycidyl ether (BADGE) in edible-oil-containing canned foods. Determination by LC-LC-fluorescence detection. *Mitt. Geb. Lebensmittelunters Hyg.*, 87 (1996) 547-558; C.A., 126 (1997) 156517e.
- 2838 Bohnenstengel, F., Eichelbaum, M., Golbs, E. and Kroemer, H.K.: High-performance liquid chromatographic determination of acrolein as a marker for cyclophosphamide bioactivation in human liver microsomes. *J. Chromatogr. B*, 692 (1997) 163-168.
- 2839 Brown, R.K. and Kelly, F.J.: Peroxides and other products. In: Puchard, N.A. and Kelly, F.J. (Editors), *Free Radicals*, IRL Press, Oxford, 1996, pp. 119-131; C.A., 126 (1997) 128855v.

- 2840 Glen, V.L., Hutson, P.R., Kehrl, N.J., Boothman, D.A. and Wilding, G.: Quantitation of β -lapachone and 3-hydroxy- β -lapachone in human plasma samples by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 692 (1997) 181-186.
- 2841 Huang, S.-D., Ting, C.Y. and Lin, C.-S.: Determination of haloethers in water by solid-phase microextraction. *J. Chromatogr. A*, 769 (1997) 239-246.
- 2842 Menet, M.-C., Gueylard, D., Fievet, M.-H. and Thuillier, A.: Fast specific separation and sensitive quantification of bactericidal and sporicidal aldehydes by high-performance liquid chromatography: example of glutaraldehyde determination. *J. Chromatogr. B*, 692 (1997) 79-86.
- 2843 Park, M.K., Kim, B.K., Park, J.H., Shin, Y.G., Cho, K.H. and Do, Y.M.: Photoreactivity of anthraquinones for the analysis of ginsenosides using photoreduction fluorescence detection-HPLC. *Arch. Pharm. Res.*, 19 (1996) 562-565; C.A., 126 (1997) 162349t.
- 2844 Taguchi, T. and Miwa, I.: Carbonyl contaminants in commercially available preparations of D-glyceraldehyde. *Med. Sci. Res.*, 24 (1996) 781-783; C.A., 126 (1997) 162118s.
- 2845 Van Uden, W., Bos, J.A., Boeke, G.M., Woerdenbag, H.J. and Pras, N.: The large-scale isolation of deoxypodophyllotoxin from rhizome of *Anthriscus sylvestris* followed by its bioconversion into 5-methoxypodophyllotoxin β -D-glucoside by cell culture of *Linum flavum*. *J. Natural Prod.*, 60 (1997) 401-403.
- 2846 Yasaei, P.M., Yang, G.C., Warner, C.R., Daniels, D.H. and Ku, Y.: Singlet oxygen oxidation of lipids resulting from photochemical sensitizers in the presence of antioxidants. *J. Am. Oil Chem. Soc.*, 73 (1996) 1177-1181.

For additional information see C.A.:

126 (1997) 26174e, 224407w.

See also 2649, 2706, 2707, 2851, 3392, 3584, 3768.

10. CARBOHYDRATES

10a. Mono and oligosaccharides. Structural studies

- 2847 Aoki, N., Matsuda, T., Sakiyama, T., Iwatsuki, K. and Furukawa, K.: Species-specific β -N-acetylgalactosaminylation of serum IgG proteins. *Biochim. Biophys. Acta*, 1334 (1997) 207-213.
- 2848 Bai, C., Ohru, H., Nishida, Y. and Meguro, H.: A fluorometric determination method for D,L configurations of per-O-methylated monosaccharides by anomeric 2-methyl-2 β -naphthyl-1,3-benzodioxole 4-carboxylation and high-performance liquid chromatography. *Anal. Biochem.*, 246 (1997) 246-252.
- 2849 Caron, I., Elfakir, C. and Dreux, M.: Advantages of evaporative light scattering detection for the purity control of commercial cyclodextrins. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1015-1035.
- 2850 Chen, Z.-L. and Hibbert, D.B.: Simultaneous amperometric and potentiometric detection of sugars, polyols and carboxylic acids in flow systems using copper wire electrodes. *J. Chromatogr. A*, 766 (1997) 27-33.

- 2851 Cheng, C. and Ma, J.-H.: Glucose metabolism and bioreduction of 2-butanone by *Candida utilis* studied by means of ion-exchange chromatography. *J. Chromatogr. A.*, 763 (1997) 205-211.
- 2852 Chiba, A., Matsumura, K., Yamada, H., Inazu, T., Shimizu, T., Kusunoki, S., Kanazawa, I., Kobata, A. and Endo, T.: Structures of sialylated O-linked oligosaccharides of bovine peripheral nerve α -dystroglycan. The role of a novel O-mannosyl-type oligosaccharide in the binding of α -dystroglycan with laminin. *J. Biol. Chem.*, 272 (1997) 2156-2162.
- 2853 Deckert, P. and Arlt, W.: (Pilot plant for simulated countercurrent chromatography. Results from the separation of fructose and glucose). *Chem.-Ing.-Tech.*, 69 (1997) 115-119; C.A., 126 (1997) 279476y.
- 2854 Endo, T., Nagase, H., Ueda, H., Kobayashi, S. and Nagai, T.: Isolation, purification, and characterization of cyclomaltotetraose (ϵ -cyclodextrin), cyclomaltoundecaose (ζ -cyclodextrin) and cyclomaltotriosecaose (θ -cyclodextrin). *Chem. Pharm. Bull.*, 45 (1997) 532-536.
- 2855 Ferreira, J.C., Thevelein, J.M., Hohmann, S., Paschoalin, V.M.F., Trugo, L.C. and Panek, A.D.: Trehalose accumulation in mutants of *Saccharomyces cerevisiae* deleted in the UDPG-dependent trehalose synthase-phosphatase complex. *Biochim. Biophys. Acta*, 1335 (1997) 40-50.
- 2856 Fukushima, K., Ohkura, T. and Yamashita, K.: Synthesis of lipid-linked oligosaccharides is dependent on the cell cycle in rat 3Y1 cells. *J. Biochem. (Tokyo)*, 121 (1997) 415-418.
- 2857 Ghandehari, H., Smith, P.L., Ellens, H., Yeh, P.-Y. and Kopecek, J.: Size-dependent permeability of hydrophilic probes across rabbit colonic epithelium. *J. Pharmacol. Exp. Ther.*, 280 (1997) 747-753.
- 2858 Hashimoto, W., Maesaka, K., Sato, N., Kimura, S., Yamamoto, K., Kumagai, H. and Murata, K.: Microbial system for polysaccharide depolymerization: enzymatic route for gellan depolymerization by *Bacillus* sp. GL1. *Arch. Biochem. Biophys.*, 339 (1997) 17-23.
- 2859 Herring, C.J. and Piepmeyer, E.H.: A glow discharge-conductivity detector for carbohydrates in aqueous chromatography. *Anal. Chem.*, 69 (1997) 1738-1745.
- 2860 Karamanos, N.K., Vanký, P., Tzanakakis, G.N., Tsegenidis, T. and Hjerpe, A.: Ion-pair high-performance liquid chromatography for determining disaccharide composition in heparin and heparan sulphate. *J. Chromatogr. A.*, 765 (1997) 169-179.
- 2861 Konno, M., Sakamoto, R. and Kamaya, Y.: Quantitative analysis of pulp-derived soluble oligosaccharides by an enzymic-HPLC method. *J. Ferment. Bioeng.*, 82 (1996) 607-609; C.A., 126 (1997) 141589f.
- 2862 Li, Z., Mou, S., Liao, W. and Lu, D.: The study of the relationship between retention and structure on D-mannose and its derivatives with high-performance anion-exchange chromatography. *Carbohydr. Res.*, 295 (1996) 229-234; C.A., 126 (1997) 171778j.
- 2863 Masuda, R., Kaneko, K. and Yamashita, I.: Sugar and cyclitol determination in vegetables by HPLC using postcolumn fluorescent derivatization. *J. Food Sci.*, 61 (1996) 1186-1190; C.A., 126 (1997) 73889b.
- 2864 Packer, N.H., Pawlak, A., Kett, W.C., Gooley, A.A., Redmond, J.W. and Williams, K.L.: Proteome analysis of glycoforms: a review of strategies for the microcharacterisation of glycoproteins separated by two-dimensional polyacrylamide gel electrophoresis. *Electrophoresis (Weinheim)*, 18 (1997) 452-460.
- 2865 Robles, M.D., Niell, F.X. and Matés, J.M.: Separation and determination of α - and β -galactose from agar-type polysaccharides by liquid chromatography. *J. Chromatogr. Sci.*, 34 (1996) 517-520.
- 2866 Shahghols, M., Ohorodnik, S., Callahan, J.H. and Fox, A.: Trace detection of underivatized muramic acid in environmental dust samples by microcolumn liquid chromatography - electrospray tandem mass spectrometry. *Anal. Chem.*, 69 (1997) 1956-1960.
- 2867 Shindou, T. and Ishizuka, H.: Quantitative determination of erythritol from various natural cheeses by HPLC. *Food Sci. Technol. (Tsukuba)*, 2 (1996) 82-83; C.A., 126 (1997) 143418y.
- 2868 Striegel, A.M.: Electrospray mass spectrometry and gel permeation chromatography of oligo- and polysaccharides dissolved in N,N-dimethyl acetamide/lithium chloride. Avail. *Univ. Microfilms Int.* Order No. DA9701578, 1996, 196 p.; C.A., 126 (1997) 139277j.
- 2869 Suortti, T.: Coupled size-exclusion chromatography-anion-exchange chromatography in the analysis of poly- and oligosaccharides. *J. Chromatogr. A*, 763 (1997) 331-335.
- 2870 Urashima, T., Kusaka, Y., Nakamura, T., Saito, T., Maeda, N. and Messer, M.: Chemical characterization of milk oligosaccharides of the brown bear, *Ursus arctos yesoensis*. *Biochim. Biophys. Acta*, 1334 (1997) 247-255.
- 2871 Wasserkrug, K. and El Rassi, Z.: High performance liquid phase separation of glycosides. I. Reversed phase chromatography of cyanogenic glycosides with UV and pulsed amperometric detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 335-349.
- 2872 Wormald, M.R., Rudd, P.M., Harvey, D.J., Chang, S., Scragg, I.G. and Dwek, R.A.: Variations in oligosaccharide-protein interactions in immunoglobulin G determine the site-specific glycosylation profiles and modulate the dynamic motion of the Fc oligosaccharides. *Biochemistry*, 36 (1997) 1370-1380.
- 2873 Xin, Y., Lee, R.E., Scherman, M.S., Khoo, K.-H., Besra, G.S., Brennan, P.J. and McNeil, M.: Characterization of the *in vitro* synthesized arabinan of mycobacterial cell walls. *Biochim. Biophys. Acta*, 1335 (1997) 231-234.
- See also 2622, 2722, 2727, 2729, 2734, 2881, 2885, 3236, 3719.
- 10b. Polysaccharides, mucopolysaccharides, lipopolysaccharides*
- 2874 Buschmann, N., Huelskoetter, F., Kruse, A. and Wodarczak, S.: Analytical methods for the determination of alkylpolyglucosides. *Fett/Lipid*, 98 (1996) 399-402; C.A., 126 (1997) 145611e.
- 2875 Feyzi, E., Lustig, F., Fager, G., Spillmann, D., Lindhal, U. and Salmivirta, M.: Characterization of heparin and heparan sulfate domains binding to the long splice variant of platelet-derived growth factor A chain. *J. Biol. Chem.*, 272 (1997) 5518-5524.

- 2876 Freyberger, A.: Rapid, high-performance liquid chromatography-based, periodate-coupled thiobarbituric acid method for the determination of sialic acid in bronchoalveolar lavage fluid [BALF]. *Exp. Toxicol. Pathol.*, 48 (1996) 526-528; C.A., 126 (1997) 196997t.
- 2877 Gan, C. and Lin, Q.: (High-performance gel chromatographic behavior of sodium alginate and determination of its molecular weight parameters). *Sepu*, 15 (1997) 147-149; C.A., 126 (1997) 252631h.
- 2878 Gorocica, P., Monroy, A., Rivas, B., Estrada-Parra, S., Leroy, Y., Chávez, R. and Zenteno, E.: Purification of the lipophosphoglycan from two *Leishmania mexicana* strains by lectin affinity chromatography. *Prepar. Biochem. Biotechnol.*, 27 (1997) 1-17.
- 2879 Knobloch, J.E. and Shaklee, P.N.: Absolute molecular weight distribution of low-molecular-weight heparins by size-exclusion chromatography with multiangle laser light scattering detection. *Anal. Biochem.*, 245 (1997) 231-241.
- 2880 Lokeshwar, V.B., Öbek, C., Soloway, M.S. and Block, N.L.: Tumor-associated hyaluronic acid: a new sensitive and specific urine marker for bladder cancer. *Cancer Res.*, 57 (1997) 773-777.
- 2881 Mars, M., de Bruyn, A., Schraml, J., Herdewijn, P., Claeysens, M., Fiers, W. and Contreras, R.: Structural characterization of N-linked oligosaccharides from cellobiohydrolase I secreted by the filamentous fungus *Trichoderma reesei* RUTC 30. *Eur. J. Biochem.*, 245 (1997) 617-625.
- 2882 Mino, Y., Yamada, K., Takeda, T. and Nagasawa, O.: Metal-containing components in medicinal plants. III. Manganese-containing components in *Theae folium* as oral magnetic resonance imaging contrast materials. *Chem. Pharm. Bull.*, 44 (1996) 2305-2308.
- 2883 Miura, N.N., Ohno, N., Adachi, Y. and Yadomae, T.: Characterization of sodium hypochlorite degradation of β -glucan in relation to its metabolism *in vivo*. *Chem. Pharm. Bull.*, 44 (1996) 2137-2141.
- 2884 Ottoey, M.H., Vaarum, K.M., Christensen, B.E., Anthonsen, M.W. and Smidsroed, O.: Preparative and analytical size-exclusion chromatography of chitosans. *Carbohydr. Polym.*, 31 (1996, Publ. 1997) 253-261; C.A., 126 (1997) 252630g.
- 2885 Ross, S.A., ElSohly, M.A. and Wilkins, S.P.: Quantitative analysis of *Aloe vera* mucillaginous polysaccharide in commercial *Aloe vera* products. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 455-457.
- 2886 Stöcker, G., Stickeler, E., Switalla, S., Fischer, D.-C., Greiling, H. and Haubeck, H.-D.: Development of an enzyme immunoassay specific for a core protein epitope of a novel small basement membrane associated heparan sulphate proteoglycan from human kidney. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 95-99.
- 2887 Wong, K.S. and Jane, J.: Quantitative analysis of debranched amylopectin by HPAEC-PAD with a postcolumn enzyme reactor. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 297-310.
- For additional information see C.A.:
126 (1997) 154639x, 159307x.
- See also 2667, 2857, 2868, 2869.
- 10c. *Glycoproteins and their constituents*
- 2888 Figlas, D.N., Arias, H.R., Fernández, A. and Alperin, D.M.: Dramatic saccharide-mediated protection of chaotropic-induced deactivation of concanavalin A. *Arch. Biochem. Biophys.*, 340 (1997) 154-158.
- 2889 Klarke, D.A., Røjkjær, R., Christensen, L. and Schousboe, I.: Identification of β_2 -glycoprotein I as a membrane-associated protein in kidney: purification by calmodulin affinity chromatography. *Biochim. Biophys. Acta*, 1339 (1997) 203-216.
- 2890 O'Keefe, B.R., Beutler, J.A., Cardellina II, J.H., Gulakowski, R.J., Krepps, B.L., McMahon, J.B., Sowder II, R.C., Henderson, L.E., Pannell, L.K. et al.: Isolation and characterization of niphatevirin, a human-immunodeficiency-virus-inhibitory glycoprotein from the marine sponge *Niphates erecta*. *Eur. J. Biochem.*, 245 (1997) 47-53.
- 2891 Rudd, P.M., Morgan, B.P., Wormald, M.R., Harvey, D.J., van den Berg, C.W., Davis, S.J., Ferguson, M.A.J. and Dwek, R.A.: The glycosylation of the complement regulatory protein, human erythrocyte CD59. *J. Biol. Chem.*, 272 (1997) 7229-7244.
- 2892 Saari, H., Halinen, S., Ganlöv, K., Sorsa, T. and Konttinen, Y.T.: Salivary mucous glycoprotein MG1 in Sjögren's syndrome. *Clin. Chim. Acta*, 259 (1997) 83-96.
- 2893 Seko, A., Koketsu, M., Nishizono, M., Enoki, Y., Ibrahim, H.R., Juneja, L.R., Kim, M. and Yamamoto, T.: Occurrence of a sialylglycopeptide and free sialylglycans in hen's egg yolk. *Biochim. Biophys. Acta*, 1335 (1997) 23-32.
- 2894 Thornton, D.J., Howard, M., Khan, N. and Sheehan, J.K.: Identification of two glycoforms of the MUC5B mucin in human respiratory mucus. Evidence for a cysteine-rich sequence repeated within the molecule. *J. Biol. Chem.*, 272 (1997) 9561-9566.
- 2895 Wiese, T.J., Dunlap, J.A. and Yorek, M.A.: Effect of L-fucose and D-glucose concentration on L-fucoprotein metabolism in human Hep G2 cells and changes in fucosyltransferase and α -L-fucosidase activity in liver of diabetic rats. *Biochim. Biophys. Acta*, 1335 (1997) 61-72.
- For additional information see C.A.:
126 (1997) 15184g.
- See also 2864, 3193.
11. ORGANIC ACIDS AND LIPIDS
- 11a. *Organic acids and simple esters*
- 2896 Bostedor, R.G., Karkas, J.D., Arison, B.H., Bansal, V.S., Baidya, S., Germershausen, J.I., Kurtz, M.M. and Bergstrom, J.D.: Farnesol-derived dicarboxylic acids in the urine of animals treated with zaragozic acid A or with farnesol. *J. Biol. Chem.*, 272 (1997) 9197-9203.
- 2897 Bruzzoniti, M.C., Mentasti, E. and Sarzanini, C.: Divalent pairing ion for ion-interaction chromatography of sulphonates and carboxylates. *J. Chromatogr. A*, 770 (1997) 51-57.
- 2898 Bruzzoniti, M.C., Mentasti, E., Sarzanini, C. and Hajós, P.: Ion chromatographic separation of carboxylic acids. Prediction of retention data. *J. Chromatogr. A*, 770 (1997) 13-22.

- 2899 Chen, Z.L., Alexander, P.W. and Haddad, P.R.: Liquid chromatography of carboxylic acids using potentiometric detection with a tungsten oxide electrode. *Anal. Chim. Acta*, 338 (1997) 41-49.
- 2900 Ding, M.-Y., Chen, P.-R. and Luo, G.-A.: Simultaneous determination of organic acids and inorganic anions in tea by ion chromatography. *J. Chromatogr. A*, 764 (1997) 341-345.
- 2901 Eiteman, M.A. and Chastain, M.J.: Optimization of the ion-exchange analysis of organic acids from fermentation. *Anal. Chim. Acta*, 338 (1997) 69-75.
- 2902 Ek, B.A., Cistola, D.P., Hamilton, J.A., Kaduce, T.L. and Spector, A.A.: Fatty acid binding proteins reduce 15-lipoxygenase-induced oxygenation of linoleic acid and arachidonic acid. *Biochim. Biophys. Acta*, 1346 (1997) 75-85.
- 2903 Fischer, K., Chodura, A., Kotalik, J., Bieniek, D. and Kettrup, A.: Analysis of aliphatic carboxylic acids and amino acids in effluents of landfills, composting plants and fermentation plants by ion-exclusion and ion-exchange chromatography. *J. Chromatogr. A*, 770 (1997) 229-241.
- 2904 Fuse, T., Kusu, F. and Takamura, K.: Determination of higher fatty acids in oils by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. A*, 764 (1997) 177-182.
- 2905 Geschke, R. and Zehringer, M.: A new method for the determination of complexing agents in river water using HPLC. *Fresenius J. Anal. Chem.*, 357 (1997) 773-776.
- 2906 Gibson, L.T., Cooksey, B.G., Littlejohn, D. and Tennent, N.H.: A diffusion tube sampler for the determination of acetic acid and formic acid vapours in museum cabinets. *Anal. Chim. Acta*, 341 (1997) 11-19.
- 2907 Gibson, L.T., Cooksey, B.G., Littlejohn, D. and Tennent, N.H.: Determination of experimental diffusion coefficients of acetic acid and formic acid vapours in air using a passive sampler. *Anal. Chim. Acta*, 341 (1997) 1-10.
- 2908 Glöd, B.K. and Perez, G.: Retention of acidic aromatic compounds in ion exclusion chromatographic separations. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1005-1013.
- 2909 Graham-Lorence, S., Truan, G., Peterson, J.A., Falck, J.R., Wei, S., Helvig, C. and Capdevila, J.H.: An active site substitution, F87V, converts cytochrome P450 BM-3 into a regio- and stereoselective (14S,15R)-arachidonic acid epoxygenase. *J. Biol. Chem.*, 272 (1997) 1127-1135.
- 2910 Haas, M.J. and Scott, K.M.: Combined nonenzymatic-enzymatic method for the synthesis of simple alkyl fatty acid esters from Soapstock. *J. Am. Oil Chem. Soc.*, 73 (1996) 1393-1402.
- 2911 He, L., Jiao, X., Bai, S. and Qi, L.: (Determination of usnic acid in serum by reversed-phase high performance liquid chromatography). *Fenxi Huaxue*, 24 (1996) 858; *C.A.*, 125 (1996) 184721q.
- 2912 Honow, R., Bongartz, D. and Hesse, A.: An improved HPLC-enzyme-reactor method for the determination of oxalic acid in complex matrices. *Clin. Chim. Acta*, 261 (1997) 131-139.
- 2913 Johnson, S.K., Houk, L.L., Feng, J., Johnson, D.C. and Houk, R.S.: Determination of small carboxylic acids by ion-exclusion chromatography with electrospray mass spectrometry. *Anal. Chim. Acta*, 341 (1997) 205-216.
- 2914 Klampfl, C.W., Buchberger, W., Rieder, G. and Bonn, G.K.: Retention behavior of carboxylic acids on highly cross-linked poly(styrene-divinylbenzene)-based and silica-based cation exchangers. *J. Chromatogr. A*, 770 (1997) 23-28.
- 2915 Koshiishi, I., Takayama, H., Aimi, N., Yamaguchi, K., Toyoda, H. and Imanari, T.: A novel reaction of cyanate with dehydroascorbate. *Chem. Pharm. Bull.*, 45 (1997) 344-348.
- 2916 Kucharska, U. and Maslowska, J.: Comparison of enzymic and chemical methods for detecting and determining trace quantities of organic acids and amino acids on chromatograms. *Chem. Anal. (Warsaw)*, 41 (1996) 965-973; *C.A.*, 126 (1997) 165949z.
- 2917 Lee, B.L., Koh, D., Ong, H.Y. and Ong, C.N.: High-performance liquid chromatographic determination of dehydroabietic and abietic acids in traditional Chinese medications. *J. Chromatogr. A*, 763 (1997) 221-226.
- 2918 Marcenac, F., Bernard, D., Boyer, F., Chabannes, J., Danion, Y., Minfray, M., Peyre, N., Zandanel, E., Hillairet, M. et al.: Lactic derivatives: methods for determining the optical purity of various intermediates. *Ind. Chem. Libr.*, 8 (1996) 536-549; *C.A.*, 126 (1997) 54277j.
- 2919 McCabe, D.R., Maher, T.J. and Acworth, I.N.: Improved method for the estimation of hydroxyl free radical levels *in vivo* based on liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 691 (1997) 23-32.
- 2920 Medved', A.L., Ivanov, A.A. and Shpigun, O.A.: Ion-exclusion chromatography of organic acids: determination of phenolic carboxylic acids. *J. Anal. Chem. (Transl. of Zh. Anal. Khim.)*, 52 (1997) 45-47; *C.A.*, 126 (1997) 232872j.
- 2921 Medved', A.L., Ivanov, A.A. and Shpigun, O.A.: Ion-exclusion chromatography of organic acids: regularities in the retention of aliphatic carboxylic acids. *J. Anal. Chem.*, 51 (1996) 964-971; *C.A.*, 126 (1997) 26171b.
- 2922 Nakahara, T., Yokochi, T., Higashira, T., Tanak, S., Yaguchi, T. and Honda, D.: Production of docosahexaenoic and docosapentaenoic acid by *Schizochytrium* sp. isolated from Yap islands. *J. Am. Oil Chem. Soc.*, 73 (1996) 1421-1426.
- 2923 Narui, T., Culberson, C.F., Culberson, W.L., Johnson, A. and Shibata, S.: A contribution to the chemistry of the lichen family Umbilicariaceae (Ascomycotina). *Bryologist*, 99 (1996) 199-201; *C.A.*, 125 (1996) 216470a.
- 2924 Oliw, E.H., Hörnsten, L. and Sprecher, H.: Oxygenation of 5,8,11-eicosatrienoic acid by prostaglandin H synthase-2 of ovine placental cotyledons: isolation of 13-hydroxy-5,8,11-eicosatrienoic and 11-hydroxy-5,8,12-eicosatrienoic acids. *J. Chromatogr. B*, 690 (1997) 332-337.
- 2925 Pfeiffer, K., Berg, W., Bongartz, D. and Hesse, A.: The direct determination of urinary oxalate by non-suppressed ion chromatography. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 305-308.
- 2926 Piazza, G.J., Foglia, T.A. and Nunez, A.: Soybean lipoxygenase-promoted oxidation of free and esterified linoleic acid in the presence of deoxycholate. *J. Am. Oil Chem. Soc.*, 73 (1996) 1045-1049.
- 2927 Powell, W.S., Wang, L., Khanapure, S.P., Manna, S. and Rokach, J.: High-pressure liquid chromatography of oxo-eicosanoids derived from arachidonic acid. *Anal. Biochem.*, 247 (1997) 17-24.
- 2928 Sarney, D.B., Barnard, M.J., MacManus, D.A. and Vulfson, E.N.: Application of lipases to the regioselective synthesis of sucrose fatty acid monoesters. *J. Am. Oil Chem. Soc.*, 73 (1996) 1481-1488.

- 2929 Sébédio, J.L., Juanéda, P., Dobson, G., Ramilison, I., Martin, J.C., Chardigny, J.M. and Christie, W.W.: Metabolites of conjugated isomers of linoleic acid (CLA) in the rat. *Biochim. Biophys. Acta*, 1345 (1997) 5-10.
- 2930 Sivasothy, A. and Reilly, P.J.: Low-molecular weight organic composition of acid water from coconut oil soapstock. *J. Am. Oil Chem. Soc.*, 73 (1996) 1305-1309.
- 2931 Tanaka, K., Ohta, K. and Fritz, J.S.: Ion-exclusion chromatography of aliphatic carboxylic acids on a cation-exchange resin by elution with polyvinyl alcohol. *J. Chromatogr. A*, 770 (1997) 211-218.
- 2932 Terry, A., Kleiman, I. and Kleiman, R.: Mineral acid-catalyzed condensation of meadowfoam fatty acids into estolides. *J. Am. Oil Chem. Soc.*, 73 (1996) 1097-1107.
- 2933 Trifirò, A., Saccani, G., Gherardi, S., Vicini, E., Spotti, E., Previdi, M.P., Ndagijimana, M., Cavalli, S. and Reschiotto, C.: Use of ion chromatography for monitoring microbial spoilage in the fruit juice industry. *J. Chromatogr. A*, 770 (1997) 243-252.
- 2934 Wu, H.-L., Shyu, Y.-Y., Kou, H.-S., Chen, S.-H., Wu, S.-M. and Wu, S.-S.: Chemically removable derivatization reagent for liquid chromatography: 2-(2-naphthoxy)ethyl 2-[1-(4-benzyl)piperazyl]ethanesulfonate. *J. Chromatogr. A*, 769 (1997) 201-207.
- For additional information see C.A.:
 126 (1997) 154633r, 165929t;
 128 (1997) 103851c.
- See also 2691, 2703, 2722, 2788, 2804, 2833, 2844, 2850, 2851, 2938, 2945, 2948, 2949, 2954, 3005, 3226, 3387, 3638, 3782, 3838, 3839, 3850.
- 11b. Prostaglandins**
- 2935 Hardcastle, J.E., Vermillion-Salsbury, R., Zhao, K. and Jano, I.: Use of secondary equilibria in reversed-phase high-performance liquid chromatography for the determination of dissociation constants of polyprotic leukotrienes. *J. Chromatogr. A*, 763 (1997) 199-203.
- 2936 Iwase, H., Takatori, T., Niijima, H., Nagao, M., Amano, T., Iwadate, K., Matsuda, Y., Nakajima, M. and Kobayashi, M.: Formation of leukotoxin (9,10-epoxy-12-octadecenoic acid) during the autoxidation of phospholipids promoted by hemoproteins. *Biochim. Biophys. Acta*, 1345 (1997) 27-34.
- 2937 Mita, H., Oosaki, R., Mizushima, Y., Kobayashi, M. and Akiyama, K.: Efficient method for the quantitation of urinary leukotriene E₄: extraction using an Empore C₁₈ disk cartridge. *J. Chromatogr. B*, 692 (1997) 461-466.
- 2938 Wohlfeil, E.R. and Campbell, W.B.: 25-Hydroxycholesterol enhances eicosanoid production in cultured bovine coronary artery endothelial cells by increasing prostaglandin G/H synthase-2. *Biochim. Biophys. Acta*, 1345 (1997) 109-120.
- 11c. Lipids and their constituents**
- 2939 Adlof, R.O.: Normal-phase separation effects with lipids on a silver ion high-performance liquid chromatography column. *J. Chromatogr. A*, 764 (1997) 337-340.
- 2940 Akasaka, K., Takamura, T., Ohru, H., Meguro, H. and Hashimoto, K.: Highly sensitive flow injection analysis of hydroperoxides in foodstuffs. *Biosci. Biotechnol. Biochem.*, 60 (1996) 1772-1775; C.A., 126 (1997) 17949j.
- 2941 Alvarez, J.G., Slomovic, B. and Ludmir, J.: Analysis of dipalmitoyl phosphatidylcholine in amniotic fluid by high-performance liquid chromatography. *J. Chromatogr. B*, 690 (1997) 338-342.
- 2942 Arai, H., Mohri, S., Suzuki, T., Takama, K. and Terao, J.: Coulometric electrochemical detection of phospholipid hydroperoxides by high-performance liquid chromatography. *Biosci. Biotechnol. Biochem.*, 61 (1997) 191-193; C.A., 126 (1997) 196991m.
- 2943 Arishima, T., Sugimoto, K., Kiwata, R., Mori, H. and Sato, K.: ¹³C Cross-polarization and magic-angle spinning nuclear magnetic resonance of polymorphic forms of tree triglycerols. *J. Am. Oil Chem. Soc.*, 73 (1996) 1231-1236.
- 2944 Caboni, M.F., Menotta, S. and Lercker, G.: Separation and analysis of phospholipids in different foods with a light-scattering detector. *J. Am. Oil Chem. Soc.*, 73 (1996) 1561-1566; C.A., 126 (1997) 17941a.
- 2945 Cartens, M., Grima, E.M., Medina, A.R., Giménez, A.G. and González, J.I.: Eicosapentaenoic acid (20:5n-3) from the marine microalga *Phaeodactylum tricornutum*. *J. Am. Oil Chem. Soc.*, 73 (1996) 1025-1031.
- 2946 Gerasimov, O.V., Schwan, A. and Thompson, D.H.: Acid-catalyzed plasmenylcholine hydrolysis and its effect on bilayer permeability: a quantitative study. *Biochim. Biophys. Acta*, 1324 (1997) 200-214.
- 2947 Gildenast, T. and Lasch, J.: Isolation of ceramide fractions from human stratum corneum lipid extracts by high-performance liquid chromatography. *Biochim. Biophys. Acta*, 1346 (1997) 69-74.
- 2948 Gladovic, N., Zupancic-Kralj, L. and Plavec, J.: Determination of primary oxidation products of linoleic acid and triacylglycerols. *J. Chromatogr. A*, 767 (1997) 63-68.
- 2949 Hou, C.T.: Novel compound, 12,13,17-trihydroxy-9(Z)-octadecenoic acid, from linoleic acid by a new microbial isolate *Clavibacter* sp. ALA2. *J. Am. Oil Chem. Soc.*, 73 (1996) 1359-1362.
- 2950 Huang, A.S., Robinson, L.R., Pelluso, T.A., Gursky L.G., Pidel, A., Manz, A., Softly, B.J., Templeman, G.J., Finley, J.W. and Leveille, G.A.: Quantification of generic Salatrim in foods containing Salatrim and other fats having medium- and long-chain fatty acids. *J. Agric. Food Chem.*, 45 (1997) 1770-1778; C.A., 126 (1997) 250300a.
- 2951 Kambayashi, Y., Yamashita, S., Niki, E. and Yamamoto, Y.: Oxidation of rat liver phospholipids: comparison of pathways in homogeneous solution, in liposomal suspension and in whole tissue homogenates. *J. Biochem. (Tokyo)*, 121 (1997) 425-431.
- 2952 Kwon, D.Y., Song, H.N. and Suk, H.Y.: Synthesis of medium-chain glycerides by lipase in organic solvent. *J. Am. Oil Chem. Soc.*, 73 (1996) 1521-1526.
- 2953 Michnik, A. and Sulkowska, A.: Destabilisation of liposomes by bovine serum albumin; Sepharose 2B-C1 experiment. *Chromatographia*, 45 (1997) 155-157.

2954 Neff, W.E., Jackson, M.A., List, G.R. and King, J.W.: Qualitative and quantitative determination of methyl esters, free fatty acids, mono-, di-, and triacylglycerols via HPLC coupled with a flame ionization detector. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1079-1090.

2955 Olsson, N.U. and Salem, N., Jr.: Molecular species analysis of phospholipids. *J. Chromatogr. B*, 692 (1997) 245-256 - a review with 122 refs.

2956 Qureshi, N., Kaltashov, I., Walker, K., Doroshenko, V., Cotter, R.J., Takayama, K., Sievert, T.R., Rice, P.A., Lin, J.-S.L. and Golenbock, D.T.: Structure of the monophosphoryl lipid A moiety obtained from the lipopolysaccharide of *Chlamydia trachomatis*. *J. Biol. Chem.*, 272 (1997) 10594-10600.

2957 Solfrizzo, M., Avantaggiato, G. and Visconti, A.: Rapid method to determine sphinganine/sphingosine in human and animal urine as a biomarker for fumonisin exposure. *J. Chromatogr. B*, 692 (1997) 87-93.

2958 Suzuki, K., Okada, K., Kamiya, Y., Zhu, X.F., Nakagawa, T., Kawamukai, M. and Matsuda, H.: Analysis of the decaprenyl diphosphate synthase (dps) gene in fission yeast suggests a role of ubiquinone as an antioxidant. *J. Biochem. (Tokyo)*, 121 (1997) 496-505.

2959 Tasioula-Margari, M., Márquez-Ruiz, G. and Dobarganes, M.C.: Fractionation of oligomeric triacylglycerides and the relation to rejection limits for used frying oils. *J. Am. Oil Chem. Soc.*, 73 (1996) 1579-1584.

2960 Wang, Y.H., Hong, C.Y., Chen, C.F. and Tsai, T.H.: Determinations of trilinolein and 1,2-dilinoleoyl-3-oleoyl-glycerol in various *Panax ginseng* by HPLC. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 899-905.

2961 Wolf, R., Raith, K. and Neubert, R.: Separation and quantitation of glycolipids as penetration modifiers in human skin using high-performance liquid chromatography-mass spectrometry with electrospray ionization. *J. Chromatogr. A*, 766 (1997) 71-75.

For additional information see C.A.:
126 (1997) 154811x, 165928s.

See also 2806, 2839, 2856, 2910, 2932, 3480, 3719.

11d. Lipoproteins and their constituents

2962 Okazaki, M.: (Determination of lipoprotein by HPLC). *Rinsho Kensa*, 40 (1996) 1281-1292; C.A., 126 (1997) 168603t.

2963 Rogers, D.P., Brouillet, C.G., Engler, J.A., Tendian, S.W., Roberts, L., Mishra, V.K., Anantharamaiah, G.M., Lund-Katz, S., Phillips, M.C. and Ray, M.J.: Truncation of the amino terminus of human apolipoprotein A-I substantially alters only the lipid-free conformation. *Biochemistry*, 36 (1997) 288-300.

2964 Shige, H., Ishikawa, T., Ikewaki, K., Nishiwaki, M., Higashi, K., Nakajima, K. and Nakamura, H.: Remnant-like very-low-density lipoprotein isolated from hypertriglyceridemic patients by immunoaffinity chromatography suppressed 3-hydroxy-3-methyl-glutaryl coenzyme A activity of cultured human skin fibroblasts. *Clin. Chim. Acta*, 258 (1997) 145-158.

2965 Zhou, L. and Dovletoglou, A.: Practical capillary electrophoresis method for the quantitation of the acetate counter-ion in a novel antifungal lipopeptide. *J. Chromatogr. A*, 763 (1997) 279-284.

See also 2936.

12. ORGANIC PEROXIDES

See 2940, 2948, 3027.

13. STEROIDS

13a. General techniques

See 2966, 3179.

13b. Pregnane and androstane derivatives

2966 Bean, K.A. and Henion, J.D.: Direct determination of anabolic steroid conjugates in human urine by combined high-performance liquid chromatography and tandem mass spectrometry. *J. Chromatogr. B*, 690 (1997) 65-75.

2967 Bud'ko, A.P., Serebryakova, E.A., Demidova, N.V., Zimakova, N.I. and Arzamastsev, A.P.: (Determination of testiphenone and chlorphenacyl in biological fluids by HPLC). *Khim.-Farm. Zh.*, 30 (1996) 52-53; C.A., 125 (1996) 157654p.

2968 Euerby, M.R., Graham, J.A., Johnson, C.M., Lewis, R.J. and Wallace, D.B.: The S-oxidative degradation of a novel corticosteroid tipredane (INN). Part III. Detailed investigations into the disulfoxidation of tipredane. *J. Pharm. Biomed. Anal.*, 15 (1996) 299-313.

2969 Fenske, M.: Clean-up and re-use of kieselguhr (Extrelut) for liquid-liquid extraction of urinary cortisol. *J. Chromatogr. B*, 692 (1997) 238-240.

2970 Gleixner, A., Sauerwein, H. and Meyer, H.H.D.: Detection of the anabolic steroid methyltestosterone in hair by HPLC-EIA. *Chromatographia*, 45 (1997) 49-51.

2971 Hua, Z., Zhang, Q.-Y., Su, T., Lipinskas, T.W. and Ding, X.: cDNA Cloning, heterologous expression, and characterization of mouse CYP2G1, an olfactory-specific steroid hydroxylase. *Arch. Biochem. Biophys.*, 340 (1997) 208-214.

2972 Mesmer, M.Z. and Satzger, R.D.: Determination of anabolic steroids by HPLC with UV-Vis-Particle beam mass spectrometry. *J. Chromatogr. Sci.*, 35 (1997) 38-42.

2973 Morineau, G., Gosling, J., Patricot, M.-C., Soliman, H., Boudou, P., Al Halmak, A., le Brun, G., Bréault, J.-L., Julien, R., Villette, J.-M. and Fiet, J.: Convenient chromatographic prepurification step before measurement of urinary cortisol by radioimmunoassay. *Clin. Chem. (Washington)*, 43 (1997) 786-793.

2974 Shibasaki, H., Furuta, T. and Kasuya, Y.: Quantification of corticosteroids in human plasma by liquid chromatography-thermospray mass spectrometry using stable isotope dilution. *J. Chromatogr. B*, 692 (1997) 7-14.

2975 Shimada, K., Fukuda, N. and Nakagi, T.: Studies on neurosteroids V: separation and characterization of pregnenolone 3-stearate in rat brains using high-performance liquid chromatography. *J. Chromatogr. Sci.*, 35 (1997) 71-74.

- 2976 Watson, D.G., Davidson, A.G. and Knight, B.I.: The analysis of some corticosteroids and corticosteroid esters by liquid chromatography coupled with frit fast-atom bombardment mass spectrometry. *Rapid Commun. Mass Spectrom.*, 11 (1997) 415-417; *C.A.*, 126 (1997) 221525x.

See also 2978.

13c. Estrogens

- 2977 DeSilva, K.H., Vest, F.B. and Karnes, H.T.: Pyrene sulphonyl chloride as a reagent for quantitation of estrogens in human serum using HPLC with conventional and laser-induced fluorescence detection. *Biomed. Chromatogr.*, 10 (1996) 318-324; *C.A.*, 126 (1997) 70268n.

- 2978 Gleisner, A. and Meyer, H.H.D.: Detection of estradiol and testosterone in hair of cattle by HPLC/EIA. *Fresenius J. Anal. Chem.*, 357 (1997) 1198-1201.

13d. Sterols

- 2979 Masohan, A., Bhatia, V.K. and Tondon, M.: HPLC in the analysis of steroid compound mixtures as applied to biocrudes. *J. Chromatogr. Sci.*, 34 (1996) 550-555.

See also 2953.

13e. Bile acids and alcohols

- 2980 Bousquet, E., Santagati, N.A. and Tirendi, S.: Determination of chenodeoxycholic acid in pharmaceutical preparations of ursodeoxycholic acid by high performance liquid chromatography with coulometric electrochemical detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 757-770.

- 2981 Yoshimura, T., Taniguchi, T., Kurosawa, T., Kimura, A. and Tohma, M.: High-performance liquid chromatographic determination of conjugated and unconjugated 3-oxo- Δ^4 - and 3-oxo- $\delta^{4,6}$ -bile acids in human urine. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 923-934.

13g. Other steroids

- 2982 Aribi, N., Pitoizet, N., Quennedey, A. and Delbecque, J.P.: 2-Deoxyecdysone is a circulating ecdysteroid in the beetle *Zophobas atratus*. *Biochim. Biophys. Acta*, 1335 (1997) 246-252.

See also 2979.

14. STEROID GLYCOSIDES AND SAPONINS

- 2983 Harwood, S., Little, J.A., Gallacher, G., Perrett, D., Edwards, R. and Dawnay, A.: Development of enzyme immunoassay for endogenous ouabain-like compound in human plasma. *Clin. Chem. (Washington)*, 43 (1997) 715-722.

- 2984 Scholer, A., Boecker, J., Engelmayer, U., Feldmann, K., Hannak, D., Kattermann, R., Oellerich, M., Raith, H., Schlebusch, H., Wieland, H., Willems, D. et al.: Comparability of a new turbidimetric digoxin test with other immunochemical tests and with HPLC: a multicenter evaluation. *Clin. Chem. (Washington)*, 43 (1997) 92-99.

- 2985 Tracqui, A., Kintz, P., Ludes, B. and Mangin, P.: High-performance liquid chromatography-ionspray mass spectrometry for the specific determination of digoxin and some related cardiac glycosides in human plasma. *J. Chromatogr. B*, 692 (1997) 101-109.

See also 2843.

15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

15a. Terpenes

- 2986 Dimitrijevic, S.M., Humer, U., Shehadeh, M., Ryves, W.J., Hassan, N.M. and Evans, F.J.: Analysis and purification of phorbol esters using normal phase HPLC and photodiode-array detection. *J. Pharm. Biomed. Anal.*, 15 (1996) 393-401.

- 2987 García-Granados, A., Parra, A. and Arias, J.M.: Biotransformation of ent-atisenes and ent-beyerenes by *Rhizopus nigricans* and *Fusarium moniliforme* cultures. *J. Natural Prod.*, 60 (1997) 86-92.

- 2988 Gocan, S., Samian, L. and Batiu, I.: Chromatographic behavior of some new hydrazones and hydrazidohydrazones of terpenoids and related compounds. *Rev. Roum. Chim.*, 41 (1996) 453-455; *C.A.*, 126 (1997) 47374k.

- 2989 Kramell, R., Schneider, G. and Miersch, O.: Chiral separation of amide conjugates of jasmonic acid by liquid chromatography. *Chromatographia*, 45 (1997) 104-108.

- 2990 Martinez, A., Duque, C., Sato, N. and Fujimoto, Y.: (8Z,13Z,20Z)-Strobilinin and (7Z,13Z,20Z)-felixinin: new furanosesterterpene tetratonic acids from marine sponges of the genus *Ircinia*. *Chem. Pharm. Bull.*, 45 (1997) 181-184.

- 2991 Schneider, G., Ziethe, F. and Schmidt, J.: Liquid chromatography/electrospray ionization-tandem mass spectrometry: a tool for the identification and quantitation of abscisic acid glycosyl ether. *Chromatographia*, 45 (1997) 78-80.

16. NITRO AND NITROSO COMPOUNDS

- 2992 Warzecha, L.: Separation and analysis of nitroarenes from airborne particulate organic matter by HPLC and capillary GC-MS methods. *J. High Resolut. Chromatogr.*, 19 (1996) 639-642.

See also 2649, 2691, 2801, 2803, 2821, 3663, 3772.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17a. Amines and polyamines

- 2993 Bustó, O., Miracle, M., Guasch, J. and Borrull, F.: Solid phase extraction of biogenic amines from wine before chromatographic analysis of their AQC derivatives. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 743-755.
- 2994 Djozan, Dj. and Faraj-Zadeh, M.A.: Determination of low molecular weight aliphatic amines by HPLC in environmental water samples. *J. High Resolut. Chromatogr.*, 19 (1996) 633-638.
- 2995 Feng, Y., Halaris, A.E. and Piletz, J.E.: Determination of agmatine in brain and plasma using high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 691 (1997) 277-286.
- 2996 Gibbs, B.F., Alli, I. and Mulligan, C.N.: Determination of amines in food products. *Sep. Sci. Technol.*, 31 (1996) 2713-2721; *C.A.*, 126 (1997) 17952e.
- 2997 Heimbecker, S., Lee, Y.-C., Tabibi, S.E. and Yalkowsky, S.H.: Derivatization and high-performance liquid chromatographic analysis of pentaazapentacosane pentahydrochloride. *J. Chromatogr. B*, 691 (1997) 173-178.
- 2998 Kirschbaum, J., Busch, I. and Brückner, H.: Determination of biogenic amines in food by automated pre-column derivatization with 2-naphthylloxycarbonyl chloride (NOC-Cl). *Chromatographia*, 45 (1997) 263-268.
- 2999 Kucharska, U. and Masłowska, J.: Detection of trace quantities of amines with the use of enzymic reactions and chromatographic techniques. *Chem. Anal. (Warsaw)*, 41 (1996) 975-982; *C.A.*, 126 (1997) 180603a.
- 3000 Morley, J., Elrod, L., Jr., Linton, C., Shaffer, D. and Krogh, S.: Determination of residual amines used in bulk drug synthesis by pre-column derivatization with 3,5-dinitrobenzoyl chloride and high-performance liquid chromatography. *J. Chromatogr. A*, 766 (1997) 77-83.
- 3001 Saleh, M.I. and Pok, F.W.: Separation of primary and secondary amines as their sulfonamide derivatives by reversed-phase high-performance liquid chromatography. *J. Chromatogr. A*, 763 (1997) 173-178.
- 3002 Teerlink, T., Hennekes, M.W.T., Mulder, C. and Brulez, H.F.H.: Determination of dimethylamine in biological samples by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 269-276.
- 3003 Toomey, A.B., Dalrymple, D.M., Jasperse, J.L., Manning, M.M. and Schulz, M.V.: Analysis of quaternary ammonium compounds by high performance liquid chromatography with evaporative light scattering detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1037-1047.
- 3004 Vallé, M., Malle, P. and Bouquelet, S.: Optimization of a liquid chromatographic method for determination of amines in fish. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 49-56.

See also 2678, 2679, 2719, 3006, 3045, 3803.

17b. Catecholamines and their metabolites

- 3005 Bonfigli, A.R., Coppa, G., Testa, R., Testa, I. and de Sio, G.: Determination of vanillylmandelic, 5-hydroxyindoleacetic and homovanillic acid in urine by isocratic liquid chromatography. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 57-61.
- 3006 Lakshmana, M.K. and Raju, T.R.: An isolation assay for nor-epinephrine, dopamine, and 5-hydroxytryptamine using their native fluorescence by high-performance liquid chromatography with fluorescence detection in discrete brain areas of rat. *Anal. Biochem.*, 246 (1997) 166-170.
- 3007 Masige, H.: (Determination of brain amines by HPLC). *Rinsho Kensa*, 40 (1996) 1259-1267; *C.A.*, 126 (1997) 168565g - a review with 20 refs.
- 3008 Sarre, S., Thorre, K., Smolders, I. and Michotte, Y.: Microbore liquid chromatography analysis of monoamine transmitters. *Methods Mol. Biol. (Totowa)*, 72(Neurotransmitter Methods) (1997) 185-196; *C.A.*, 126 (1997) 274297f.
- 3009 Tuomainen, P. and Männistö, P.T.: Optimization of the hydrolysis of conjugated L-DOPA, dopamine and dihydroxyphenylacetic acid in human urine for assay by high-performance liquid chromatography with electrochemical detection. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 229-235.

For additional information see *C.A.*:
126 (1997) 154634s.

See also 3374, 3598.

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

- 3010 Carter, A.J. and Kehr, J.: Microbore high-performance liquid chromatographic method for measuring acetylcholine in microdialysis samples: optimizing performance of platinum electrodes. *J. Chromatogr. B*, 692 (1997) 207-212.
- 3011 Kasai, N., Matsue, T., Uchida, I., Horiuchi, T., Morito, M. and Niva, O.: Femtomole acetylcholine detection with microdisc array electrodes. *Denki Kagaku Oyobi Kogyo Butsuri Kagaku*, 64 (1996) 1269-1271; *C.A.*, 126 (1997) 101349w.
- 3012 Koga, D., Santa, T., Fukushima, T., Homma, H. and Imai, K.: Liquid chromatographic-atmospheric pressure chemical ionization mass spectrometric determination of anandamide and its analogs in rat brain and peripheral tissues. *J. Chromatogr. B*, 690 (1997) 7-13.
- 3013 Nishino, J., Hayashi, H., Ishii, S. and Kagamiyama, H.: An anomalous side reaction of the Lys303 mutant aromatic L-amino acid decarboxylase unravels the role of the residue in catalysis. *J. Biochem. (Tokyo)*, 121 (1997) 604-611.
- 3014 Polanauer B.M. and Ershova, Z.A.: (HPLC quantitation of betain in nutritive media and fermentation broth samples). *Biotechnologia*, (1996) 56-59; *C.A.*, 126 (1997) 154637v.
- 3015 Tinnerberg, H., Spanne, M., Dalene, M. and Skarping, G.: Determination of complex mixtures of airborne isocyanates and amines. Part 3. Methylenediphenyl diisocyanate, methylenediphenylamino isocyanate and methylenediphenylamine and structural analogues after thermal degradation of polyurethane. *Analyst (Cambridge)*, 122 (1997) 275-278.

- 3016 Veremeichenko, S.M.: (Determination of phosphoethanolamine and other amino components in the lipopolysaccharides of gram-negative bacteria by the method of ion exchange chromatography). *Mikrobiol. Zh.*, 58 (1996) 70-75; C.A., 126 (1997) 141593c.
- 3017 Xie, H. and Zhang, S.: (Determination of taurine in *Lycium barbarum* L. by high performance liquid chromatography with OPA-urea pre-column derivatization). *Sepu*, 15 (1997) 54-56; C.A., 126 (1997) 222430z.

See also 3086.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

18a. Amino acids and their derivatives

- 3018 Brau, K. and Kuhl, P.: Papain-catalyzed esterification of N^a-protected amino acids and dipeptides with ethanol in different organic systems. *Pharmazie*, 52 (1997) 203-206.
- 3019 Candito, M., Bedoucha, P., Mahagne, M.H., Scavini, G. and Chatel, M.: Total plasma homocysteine determination by liquid chromatography before and after methionine loading. Results in cerebrovascular disease. *J. Chromatogr. B*, 692 (1997) 213-216.
- 3020 Chen, B.-M., Xia, L.-W. and Zhao, R.-Q.: Determination of N^{G,N^G}-dimethylarginine in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 692 (1997) 467-471.
- 3021 Chen, P. and Liang, S.: (The analysis of DABS-amino acids by high-performance liquid chromatography using an alcohol elution system). *Hunan Shifan Daxue Ziran Kexue Xuebao*, 19 (1996) 59-62; C.A., 126 (1997) 180592w.
- 3022 Colwell, A., Hamer, A., Blumsohn, A. and Eastell, R.: To determine the effects of ultraviolet light, natural light and ionizing radiation on pyridinium crosslinks in bone and urine using high-performance liquid chromatography. *Eur. J. Clin. Invest.*, 26 (1996) 1107-1114; C.A., 126 (1997) 168457y.
- 3023 Csapó, J., Csapó-Kiss, Z., Wágner, L., Tálos, T., Martin, T.G., Folestad, S., Tivesten, A. and Némethy, S.: Hydrolysis of proteins performed at high temperatures and for short times with reduced racemization, in order to determine the enantiomers of D- and L-amino acids. *Anal. Chim. Acta*, 339 (1997) 99-107.
- 3024 Das Neves, H.J.C. and Morais, Z.B.: HPLC assay of underivatized free amino acids with column switching and evaporative light-scattering detection. *J. High Resolut. Chromatogr.*, 20 (1997) 115-118.
- 3025 Dominguez, V., Guihard, L. and Prigent, Y.: Uptake of hydrophobic amino acids and sodium chloride by a strong cation exchanger: application of desalting and separation by preparative liquid chromatography. *Chromatographia*, 44 (1997) 240-246.
- 3026 Fitzgerald, L.M. and Szmant, A.M.: Biosynthesis of 'essential' amino acids by scleractinian corals. *Biochem. J.*, 322 (1997) 213-221.
- 3027 Fu, S.-L. and Dean, R.L.: Structural characterization of the products of hydroxyl-radical damage to leucine and their detection on proteins. *Biochem. J.*, 324 (1997) 41-48.
- 3028 Gilfix, B.M., Blank, D.W. and Rosenblatt, D.S.: Novel reductant for determination of total plasma homocysteine. *Clin. Chem. (Washington)*, 43 (1997) 687-688.
- 3029 Hamase, K., Homma, H., Takigawa, Y., Fukushima, T., Santa, T. and Imai, K.: Regional distribution and postnatal changes of D-amino acids in rat brain. *Biochim. Biophys. Acta*, 1334 (1997) 214-222.
- 3030 Herbert, B.R., Molloy, M.P., Yan, J.X., Gooley, A.A., Bryson, W.G. and Williams, K.L.: Characterisation of wool intermediate filament proteins separated by micropreparative two-dimensional electrophoresis. *Electrophoresis (Weinheim)*, 18 (1997) 568-572.
- 3031 Hummert, C., Reichelt, M. and Luckas, B.: Automatic HPLC-UV determination of domoic acid in mussels and algae. *Chromatographia*, 45 (1997) 284-288.
- 3032 Husain, S., Sekar, R. and Rao, R.N.: Ligand-exchange liquid chromatographic separation and determination of optical isomers of α -amino acids used as precursors in synthesis of β -lactum antibiotics. *Indian Drugs*, 34 (1997) 127-131; C.A., 126 (1997) 255557z.
- 3033 Lakritz, J., Plopper, C.G. and Buckpitt, A.R.: Validated high-performance liquid chromatography-electrochemical method for determination of glutathione and glutathione disulfide in small tissue samples. *Anal. Biochem.*, 247 (1997) 63-68.
- 3034 Lamprecht, G.: Rapid method for the isolation of hydroxylsylpyridinoline and lysylpyridinoline from concentrated bone hydrolysates by liquid chromatographic techniques. *J. Chromatogr. B*, 691 (1997) 297-304.
- 3035 Meddah, B., Brazier, M., Kamel, S., Maamer, M., Samson, L., Desmet, G. and Sebert, J.L.: (Urinary excretion of free and total deoxypyridinoline in elderly with secondary hyperparathyroidism. Comparison of chromatographic (HPLC) and immunoenzymic (Pyrilinks-D) methods). *Anal. Biol. Clin.*, 54 (1996) 353-358; C.A., 126 (1997) 154785s.
- 3036 Miyazawa, T., Minowa, H., Imagawa, K. and Yamada, T.: Enantiomeric separation of non-protein amino acids by chiral ligand-exchange high performance liquid chromatography. *Anal. Lett.*, 30 (1997) 867-882.
- 3037 Molnár-Perl, I.: Tryptophan analysis in peptides and proteins, mainly by liquid chromatography. *J. Chromatogr. A*, 763 (1997) 1-10 - a review with 84 refs.
- 3038 Moro, L., Bettica, P., Romanello, M. and Suarez, K.N.: 17 β -Estradiol and tamoxifen prevent the over-glycosylation of rat trabecular cone collagen induced by ovariectomy. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 29-33.
- 3039 Nicoletti, I., Cogliandro, E., Corradini, C. and Corradini, D.: Analysis of ϵ -N-2-furoylmethyl-L-lysine (furosine) in concentrated milk by reversed phase chromatography with a microbore column. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 719-729.
- 3040 Ohta, J., Ubuka, T., Kodama, H., Sugahara, K. and Nagamine, N.: A new metabolite of propargylglycine, γ -glutamylpropargylglycylglycine, in liver of D,L-propargylglycine-administered rats. *Biochim. Biophys. Acta*, 1334 (1997) 240-246.
- 3041 Okada, Y. and Mu, Y.: Amino acids and peptides. XLIX. Synthesis of γ -2-adamantylglutamate and its evaluation for peptide synthesis. *Chem. Pharm. Bull.*, 45 (1997) 88-92.

- 3042 Pettersson, A., Uggla, L. and Backman, V.: Determination of dimethylated arginines in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 692 (1997) 257-262.
- 3043 Pugniere, M., Matras, H., Castro, B. and Previero, A.: Adsorption liquid chromatography on silica for the chiral separation of amino acids and asymmetric amines derivatized with optically active N- α -9-fluorenylmethoxycarbonyl-amino acid-N-carboxy-anhydrides. *J. Chromatogr. A*, 767 (1997) 69-75.
- 3044 Rearick, D.E. and McKay, C.: The behavior of amino acids in chromatographic molasses desugaring systems. *Proc. Sugar Process. Res. Conf.*, (1996) 481-491; *C.A.*, 126 (1997) 279233s.
- 3045 Satoh, T., Yokota, K. and Kakuchi, T.: Chiral recognition properties of (1 \rightarrow 6)-2,5-anhydro-3,4-di-O-alkyl-D-glucitol toward racemic amino acids and amines. *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)*, 38 (1997) 260-261; *C.A.*, 126 (1997) 251321v.
- 3046 Singh, R., Pervin, S., Rogers, N.E., Ignarro, L.J. and Chaudhuri, G.: Evidence for the presence of an unusual nitric oxide- and citrulline-producing enzyme in rat kidney. *Biochem. Biophys. Res. Commun.*, 232 (1997) 672-677.
- 3047 Smolders, I., Sarre, S., Ebinger, G. and Michotte, Y.: Microbore liquid chromatography analysis of amino acid transmitters. *Methods Mol. Biol. (Totowa)*, 72(Neurotransmitter Methods) (1997) 192-204; *C.A.*, 126 (1997) 274298g.
- 3048 Takemura, A., Muramatsu, S., Kobayashi, N., Nakagawa, A., Kitazawa, E. and Uematsu, T.: Determination of urosine in hair by liquid chromatography-tandem mass spectrometry. *Biomed. Chromatogr.*, 11 (1997) 61-62; *C.A.*, 126 (1997) 222562u.
- 3049 Toran, A.A., Barbera, R., Farre, R., Lagarde, M.J. and Lopez, J.C.: HPLC method for cyst(e)ine and methionine in infant formulas. *J. Food Sci.*, 61 (1996) 1132-1170; *C.A.*, 126 (1997) 73888a.
- 3050 Van Eijk, H.M.H., Rooyakkers, D.R., Wagenmakers, A.J.M., Soeters, P.B. and Deutz, N.E.P.: Isolation and quantitation of isotopically labeled amino acids from biological samples. *J. Chromatogr. B*, 691 (1997) 287-296.
- 3051 Van Wandelen, C. and Cohen, S.A.: Using quaternary high-performance liquid chromatography eluent systems for separating 6-aminoquinolyl-N-hydroxysuccinimidyl carbamate-derivatized amino acid mixtures. *J. Chromatogr. A*, 763 (1997) 11-22.
- 3052 Vanteristo, L.T., Ollilainen, V. and Varo, P.: Liquid chromatographic determination of folate monoglutamates in fish, egg, and dairy products consumed in Finland. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 373-378.
- 3053 Vollenbroich, D. and Krause, K.: Quantitative analysis of D- and L-amino acids by HPLC. In: Kamp, R.M., Choli-Papadopoulou, T. and Wittmann-Liebold, B. (Editors), *Protein Struct. Anal.*, Springer, Berlin, 1997, pp. 249-255; *C.A.*, 126 (1997) 248427d.
- 3054 Wan, H. and Blomberg, L.G.: Optimized chiral separation of 20 amino acids derivatized with 9-fluorenylmethyl chloroformate using cyclodextrin as chiral selectors in capillary electrophoresis. *J. Chromatogr. Sci.*, 34 (1996) 540-546.
- 3055 Wan, Q.-H., Shaw, P.N., Davies, M.C. and Barrett, D.A.: Chiral chromatography of amino acids on porous graphitic carbon coated with a series of N-substituted L-phenylalanine selectors. Effect of the anchor molecule on enantioselectivity. *J. Chromatogr. A*, 765 (1997) 187-200.
- 3056 Wilson, C.J., Husain, S.S., Stimson, E.R., Dangott, L.J., Miller, K.W. and Maggio, J.E.: *p*-(4-Hydroxybenzoyl)phenylalanine: a photoreactive amino acid analog amenable to radioiodination for elucidation for peptide-protein interaction application to substance P-receptor. *Biochemistry*, 36 (1997) 4542-4551.
- 3057 Yan, J.X., Packer, N.H., Tonella, L., Ou, K., Wilkins, M.R., Sanchez, J.-C., Gooley, A.A., Hochstrasser, D.F. and Williams, K.L.: High sample throughput phosphoamino acid analysis of proteins separated by one- and two-dimensional gel electrophoresis. *J. Chromatogr. A*, 764 (1997) 201-210.
- For additional information see *C.A.*:
126 (1997) 83845y.
- See also 2622, 2763, 2776, 2790, 2903, 2916, 3013.
- 18b. Peptides, peptidic and proteinous hormones, growth factors*
- 3058 Abbruscato, T.J., Thomas, S.A., Hruby, V.J. and Davis, T.P.: Blood-brain barrier permeability and bioavailability of a highly potent and μ -selective opioid receptor antagonist, CTAP: comparison with morphine. *J. Pharmacol. Exp. Ther.*, 280 (1997) 402-409.
- 3059 Allen, D., Baffi, R., Bausch, J., Bongers, J., Costello, M., Dougherty, J., Jr., Federici, M., Garnick, R., Peterson, S., Riggins, R., Sewerin, K. and Tuls, J.: Validation of peptide mapping for protein identity and genetic stability. Biologics and biotechnology section, pharmaceutical research and manufacturers of America. *Biologicals*, 24 (1996) 255-275; *C.A.*, 126 (1997) 148475z.
- 3060 Bettica, P., Masino, M., Cucinotta, E., Vago, T., Norbiato, G., Moro, L., Suarez, K.N., Romanello, M. and Bevilacqua, M.: Comparison of the clinical performances of the immunoenzymometric assays for N-terminal and C-terminal type I collagen telopeptides and the HPLC assay for pyridinium cross-links. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 63-68.
- 3061 Blondelle, S.E., Forood, B., Perez-Paya, E. and Houghten, R.A.: Evidence of conformational equilibria during the RP-HPLC elution process of peptides. *Int. J. Bio-Chromatogr.*, 2 (1996) 133-144; *C.A.*, 126 (1997) 141586c.
- 3062 Bondoc, L.L. Jr., Varnerin, J.P. and Tang, J.C.-T.: Resolution of recombinant human interleukin 10 from variants by recycling free flow focusing. *Anal. Biochem.*, 246 (1997) 234-238.
- 3063 Bramhall, E.A., Cross, R.L., Rospert, S., Steede, N.K. and Landry, S.J.: Identification of amino acid residues at nucleotide-binding sites of chaperonin GroEL/GroES and cpn 10 by photoaffinity labeling with 2-azido-adenosine 5'-triphosphate. *Eur. J. Biochem.*, 244 (1997) 627-634.
- 3064 Chang, J.P., Dickson, D.A., Ferguson, T.H., Record, P.A., Masicarenhas, S.S. and Richey, H.G.: Extraction and quantification of recombinant bovine somatotropin from oleaginous vehicle. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 245-256.
- 3065 Craig, A.G., Jimenez, E.C., Dykert, J., Nielsen, D.B., Gulyas, J., Abogadie, F.C., Porter, J., Rivier, J.E., Cruz, L.J., Olivera, B.M. and McIntosh, J.M.: A novel post-translational modification involving bromination of tryptophan. Identification of the residue, L-6-bromotryptophan, in peptides from *Coccus imperialis* and *Conus radiatus* venom. *J. Biol. Chem.*, 272 (1997) 4689-4698.

- 3066 D'Agostino, P.A., Hancock, J.R. and Provost, L.R.: Analysis of bioactive peptides by liquid chromatography-high-resolution electrospray mass spectrometry. *J. Chromatogr. A*, 767 (1997) 77-85.
- 3067 Davis, C.M. and Vincent, J.B.: Isolation and characterization of a biologically active chromium oligopeptide from bovine liver. *Arch. Biochem. Biophys.*, 339 (1997) 335-343.
- 3068 Egerton, M., Moritz, R.L., Druker, B., Kelso, A. and Simpson, R.J.: Identification of the 70 kD heat shock cognate protein (Hsc 70) and α -actinin-1 as novel phosphotyrosine-containing proteins in T-lymphocytes. *Biochem. Biophys. Res. Commun.*, 224 (1996) 666-674.
- 3069 Endo, T., Miyagi, M. and Ujiiie, A.: Simultaneous determination of glycyl-L-histidyl-L-lysine and its metabolite, L-histidyl-L-lysine, in rat plasma by high-performance liquid chromatography with post-column derivatization. *J. Chromatogr. B*, 692 (1997) 37-42.
- 3070 Franke, I., Buck, F. and Hampe, W.: Purification of a head-activator receptor from hydra. *Eur. J. Biochem.*, 244 (1997) 940-945.
- 3071 Garcia-Echeverria, C.: Chromatographic purification of solid-phase-synthesized peptides using *n*-alkyl probes. In: Kaumaya, P.T.P. and Hodges, R.S. (Editors), *Pept.: Chem., Struct. Biol., Proc. Am. Pept. Symp., 14th 1995*, Mayflower Scientific, King-swinford, 1996, pp. 96-97; C.A., 126 (1997) 16370b.
- 3072 Hamel, F.G., Gehm, B.D., Rosner, M.R. and Duckworth, W.C.: Identification of the cleavage sites of transforming growth factor α by insulin-degrading enzymes. *Biochim. Biophys. Acta*, 1338 (1997) 207-214.
- 3073 Hara, S., Rosenfeld, R. and Lu, H.S.: Preventing the generation of artifacts during peptide map analysis of recombinant human-insulin-like growth factor-I. *Anal. Biochem.*, 243 (1996) 74-79.
- 3074 Holman, G.M. and Hayes, T.K.: HPLC methods to isolate peptide neurotransmitters. *Methods Mol. Biol. (Totowa)*, 72(Neurotransmitter Methods) (1997) 205-218; C.A., 126 (1997) 274299h.
- 3075 Irvine, G.B.: Molecular weight estimation for neuropeptides using size-exclusion high performance liquid chromatography. *Methods Mol. Biol. (Totowa)*, 73 (1997) 89-95; C.A., 126 (1997) 44507v.
- 3076 Jansson, M., Yhlen, M. and Nilsson, B.: Structural changes in insulin-like growth factor (IGF) I mutant proteins affecting binding kinetic rates to IGF binding protein 1 and IGF-I receptor. *Biochemistry*, 36 (1997) 4108-4117.
- 3077 Kanazawa, H., Nagatsuka, T., Miyazaki, M. and Matsushima, Y.: Determination of peptides by high-performance liquid chromatography with laser-induced fluorescence detection. *J. Chromatogr. A*, 763 (1997) 23-29.
- 3078 Kimura, T., Fukui, T., Tanaka, S., Akaji, K. and Kiso, Y.: A reductive acidolysis final deprotection strategy in solid phase peptide synthesis based on safety-catch protection. *Chem. Pharm. Bull.*, 45 (1997) 18-26.
- 3079 Liesiene, J., Racaityte, K., Morkeviciene, M., Valancius, P. and Burnelis, V.: Immobilized metal affinity chromatography of human growth hormone. Effect of ligand density. *J. Chromatogr. A*, 764 (1997) 27-33.
- 3080 Lu, M. and Tjerneld, F.: Interaction between tryptophan residues and hydrophobically modified dextran. Effect on partitioning of peptides and proteins in aqueous two-phase systems. *J. Chromatogr. A*, 766 (1997) 99-108.
- 3081 Marcus, J.P., Goulter, K.C., Green, J.L., Harrison, S.J. and Manners, J.M.: Purification, characterization and cDNA cloning of an antimicrobial peptide from *Macadamia integrifolia*. *Eur. J. Biochem.*, 244 (1997) 743-749.
- 3082 Nagai, M., Kojima, F., Naganawa, H., Hamada, M., Aoyagi, T. and Takeuchi, T.: Phebestin, a new inhibitor of aminopeptidase N, produced by *Streptomyces* sp. MJ716-m3. *J. Antibiot.*, 50 (1997) 82-84.
- 3083 Ohki, K., Sakura, N. and Hashimoto, T.: Hydrolytic cleavage of pyroglutamyl-peptide bond. IV. Highly selective cleavage of thyrotropin releasing hormone (TRH) in aqueous methanesulfonic acid. *Chem. Pharm. Bull.*, 45 (1997) 194-197.
- 3084 Okada, Y., Wang, J., Yamamoto, T., Yokoi, T. and Mu, Y.: Amino acids and peptides. L. Development of a novel N^o-protecting group for histidine, N^o-2-adamantylloxymethylhistidine, and its application to peptide synthesis. *Chem. Pharm. Bull.*, 45 (1997) 452-456.
- 3085 Oliva, A., Farina, J. and Llabres, M.: Fingerprint analysis of insulin: application in stability studies of pharmaceutical preparations. *Drug Dev. Ind. Pharm.*, 23 (1997) 127-132; C.A., 126 (1997) 203638g.
- 3086 Paruszewski, R., Jaworski, P., Tautz, J. and Dudkiewicz, J.: New renin inhibitors containing aliphatic or aromatic amides at the C-terminus. *Pharmazie*, 52 (1997) 206-209.
- 3087 Patwardhan, A.V. and Ataai, M.M.: One step purification of human interleukin-1 β from the cellular protein of *Escherichia coli* using the immobilized metal affinity chromatography. *Int. J. Bio-Chromatogr.*, 2 (1996) 119-124; C.A., 126 (1997) 73497x.
- 3088 Phillips, T.M.: Measurement of bioactive neuropeptides using a chromatographic immunosensor cartridge. *Biomed. Chromatogr.*, 10 (1996) 331-336; C.A., 126 (1997) 42763b.
- 3089 Ranta, V.-P., Urtti, A. and Auriola, S.: Gradient high-performance liquid chromatographic analysis of enkephalin peptides, their metabolites and enzyme inhibitors using combined ultraviolet and electrochemical detection. I. Optimization of separation and detection. *J. Chromatogr. A*, 766 (1997) 85-97.
- 3090 Sasaki, Y. and Abe, J.: Protection of $\psi(\text{CH}_2\text{NH})$ peptide bond with 2,4-dimethoxybenzyl group in solid-phase peptide synthesis. *Chem. Pharm. Bull.*, 45 (1997) 13-17.
- 3091 Schlüter, H., Mentrup, D., Gross, I., Meyer, H.E., Spengler, B., Kaufmann, R. and Zidek, W.: Identification of endogenous des-arg⁹-[Hyp³]-bradykinin in human plasma with post-source-decay matrix-assisted laser desorption/ionization mass spectrometry. *Anal. Biochem.*, 246 (1997) 15-19.
- 3092 Shaw, C.: Purification of extracted peptides for structural analysis. *Methods Mol. Biol. (Totowa)*, 73 (1997) 9-16; C.A., 126 (1996) 44506u.
- 3093 Shiomi, K., Qian, W.-H., Lin, X.-Y., Shimakura, K., Nagashim, Y. and Ishida, M.: Novel polypeptide toxins with crab lethality from the sea anemone *Anemonia erythraea*. *Biochim. Biophys. Acta*, 1335 (1997) 191-198.
- 3094 Strong, R.A., Cho, B.-Y., Fisher, D.H., Nappier, J. and Krull, I.S.: Immunodetection approaches and high-performance immunoaffinity chromatography for an analog of bovine growth hormone releasing factor at trace levels. *Biomed. Chromatogr.*, 10 (1996) 337-345; C.A., 126 (1997) 42764c.

- 3095 Surendran, N., Stankovic, C.J. and Stewart, B.H.: Development and validation of an ion-pair reversed-phase high-performance liquid chromatographic method for the separation of phosphonodipeptides. *J. Chromatogr. B*, 691 (1997) 305-312.
- 3096 Tojo, T., Yomoto, C., Okada, S. and Kawamura, J.: (Analysis of impurities in human growth hormone by reversed-phase high-performance liquid chromatography). *Iyakuhin Kenkyu*, 27 (1996) 815-820; *C.A.*, 126 (1997) 109016f.
- 3097 Valenzano, K.J., Heath-Monnig, E., Tollesen, S.E., Lake, M. and Lobel, P.: Biophysical and biological properties of naturally occurring high molecular weight insulin-like growth factor II variants. *J. Biol. Chem.*, 272 (1997) 4804-4813.
- 3098 Valero, E., Chambaz, E.M. and Cochet, C.: Modulation of the protein kinase CK2 activity by a synthetic peptide corresponding to the N-terminus of its β regulatory subunit. *Biochem. Biophys. Res. Commun.*, 232 (1997) 178-182.
- 3099 Walters, A.E., Myrdal, P.B., Pinsuwan, S., Manka, A.M. and Yalkowsky, S.H.: Determination of melanotan II in rabbit urine using solid-phase extraction sample preparation followed by reversed-phase high-performance liquid chromatography. *J. Chromatogr. B*, 690 (1997) 99-103.
- 3100 Wang, G., Miller, R.B., Melendez, L. and Jacobus, R.: A stability-indicating HPLC method for the determination of oxytocin acetate in oxytocin injection, USP, synthetic. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 567-581.
- 3101 Windisch, V., DeLucia, F., Duhau, L., Herman, F., Mencel, J.J., Tang, S.-Y. and Vuilhorgne, M.: Degradation pathways of salmon calcitonin in aqueous solution. *J. Pharm. Sci.*, 86 (1997) 359-364.
- 3102 Wojcik, E.G.C., van den Berk, M., Poort, S.R. and Bertina, R.M.: Modification of the N-terminus of human factor IX by defective propeptide cleavage or acetylation results in a destabilized calcium-induced conformation: effects on phospholipid binding and activation by factor Xla. *Biochem. J.*, 323 (1997) 629-636.
- 3103 Zhao, F., Ghezzo-Schöneich, E., Aced, G.I., Hong, J., Milby, T. and Schöneich, C.: Metal-catalyzed oxidation of histidine in human growth hormone. Mechanism, isotope effects, and inhibition by a mild denaturing alcohol. *J. Biol. Chem.*, 272 (1997) 9019-9029.
- For additional information see *C.A.:*
- 126 (1997) 15185h, 19320w, 70658q, 135719g, 154628t, 167481q.
- See also 2681, 3041, 3229, 3244, 3578.
- 18c. Elucidation of structure of proteins and enzymes
- 3104 Birkett, A.J., Yélamos, B., Rodríguez-Crespo, I., Gavilanes, F. and Peterson, D.L.: Cloning, expression, purification, and characterization of the major core protein (p26) from equine infectious anemia virus. *Biochim. Biophys. Acta*, 1339 (1997) 62-72.
- 3105 Dainese, P., Staudenmann, W., Quadroni, M., Korostensky, C., Gonnet, G., Kertesz, M. and James, P.: Probing protein function using a combination of gene knockout and proteome analysis by mass spectrometry. *Electrophoresis (Weinheim)*, 18 (1997) 432-442.
- 3106 Delforge, D., Devreese, B., Dieu, M., Delaive, E., van Beeumen, J. and Remacle, J.: Identification of lysine 74 in the pyruvate binding site of alanine dehydrogenase from *Bacillus subtilis*. Chemical modification with 2,4,6-trinitrobenzenesulfonic acid, N-succinimidyl 3-(2-pyridylthio)propionate, and 5'-(p-fluorosulfonyl)benzoyl)adenosine. *J. Biol. Chem.*, 272 (1997) 2276-2284.
- 3107 Fujinari, E.M. and Manes, J.D.: Determination of molecular-mass distribution of food-grade protein hydrolyzates by size-exclusion chromatography and chemiluminescent nitrogen detection. *J. Chromatogr. A*, 763 (1997) 323-329.
- 3108 Gite, S. and Rajbhandary, U.L.: Lysine 207 as the site of cross-linking between the 3'-end of *Escherichia coli* initiator tRNA and methionyl-tRNA formyltransferase. *J. Biol. Chem.*, 272 (1997) 5305-5312.
- 3109 Heidrich, K., Otto, A., Behlke, J., Rush, J., Wenzel, K.-W. and Kriegel, T.: Autophosphorylation-inactivation site of hexokinase 2 in *Saccharomyces cerevisiae*. *Biochemistry*, 36 (1997) 1960-1964.
- 3110 Holland, L.Z., McFall-Ngai, M. and Somero, G.N.: Evolution of lactate dehydrogenase-A homologs of barracuda fishes (genus *Sphyraena*) from different thermal environments: differences in kinetic properties and thermal stability are due to amino acid substitutions outside the active site. *Biochemistry*, 36 (1997) 3207-3215.
- 3111 Ji, H., Reid, G.E., Moritz, R.L., Eddes, J.S., Burgess, A.W. and Simpson, R.J.: A two-dimensional gel database of human colon carcinoma proteins. *Electrophoresis (Weinheim)*, 18 (1997) 605-613.
- 3112 Jiang, M. and Hart, G.W.: A subpopulation of estrogen receptors are modified by O-linked N-acetylglucosamine. *J. Biol. Chem.*, 272 (1997) 2421-2428.
- 3113 Larsson, T., Norbeck, J., Karlsson, H., Karlsson, K.-A. and Blomberg, A.: Identification of two-dimensional gel electrophoresis resolved yeast proteins by matrix-assisted laser desorption ionization mass spectrometry. *Electrophoresis (Weinheim)*, 18 (1997) 418-423.
- 3114 Loeb, C., Combeau, C., Ehret-Sabatier, L., Breton-Gilet, A., Faucher, D., Rousseau, B., Commercon, A. and Goeldner, M.: [3 H](Azidophenyl)ureido taxoid photolabels peptide amino acids 281-304 of α -tubulin. *Biochemistry*, 36 (1997) 3820-3825.
- 3115 Mortensen, B. and Huseby, N.-E.: Clearance of circulating γ -glutamyltransferase by the asialoglycoprotein receptor. Enzyme forms with different sialic acid content are eliminated at different clearance rates and without apparent desialylation. *Clin. Chim. Acta*, 258 (1997) 47-58.
- 3116 Sanna, M.T., Razynska, A., Karavitis, M., Koley, A.P., Friedman, F.K., Russu, I.M., Brinigar, W.S. and Fronticelli, C.: Assembly of human hemoglobin. Studies with *Escherichia coli*-expressed α -globin. *J. Biol. Chem.*, 272 (1997) 3478-3486.
- 3117 Sharma, J., Panico, M., Barber, J. and Morris, H.R.: Characterization of the low molecular weight photosystem II reaction center subunits and their light-induced modifications by mass spectrometry. *J. Biol. Chem.*, 272 (1997) 3935-3943.
- 3118 Takakura, H., Yamamoto, T. and Sherman, F.: Sequence requirement for trimethylation of yeast cytochrome c. *Biochemistry*, 36 (1997) 2642-2648.

- 3119 Turula, V.E., Bishop, R.T., Ricker, R.D. and de Haseth, J.A.: Complete structure elucidation of a globular protein by particle beam liquid chromatography-Fourier transform infrared spectrometry and electrospray liquid chromatography-mass spectrometry. Sequence and conformation of β -lactoglobulin. *J. Chromatogr. A.*, 763 (1997) 91-103.
- 3120 Zgoda, V.G., Prosovsky, V.N., Koen, Y.M., Bachanova, G.I. and Archakov, A.I.: Prediction and experimental confirmation of the cytochrome b5 three-dimensional peptide map. *Phys. Chem. Biol. Med.*, 2 (1995) 135-142; C.A., 126 (1997) 101282u.

See also 3030, 3059, 3072, 3092, 3119, 3184, 3199, 3310, 3311.

19. PROTEINS

19a. General techniques

- 3121 Adachi, T., Takayanagi, H. and Sharpe, A.D.: Ion-exchange high-performance liquid chromatographic separation of protein variants and isoforms on MCI GEL ProtEx stationary phases. *J. Chromatogr. A.*, 763 (1997) 57-63.
- 3122 Batas, B., Jones, H.R. and Chaudhuri, J.B.: Studies of the hydrodynamic volume changes that occur during refolding of lysozyme using size-exclusion chromatography. *J. Chromatogr. A.*, 766 (1997) 109-119.
- 3123 Coffman, J.L., Lightfoot, E.N. and Root, T.W.: Protein diffusion in porous chromatographic media studied by proton and fluorine PFG-NMR. *J. Phys. Chem. B.*, 101 (1997) 2218-2223; C.A., 126 (1997) 141584a.
- 3124 Creedy, J.H.: Chromatographic strategy in bioprocess purification. *Spec. Publ.-R.Soc. Chem.*, 196(Progress in Ion Exchange) (1997) 219-226; C.A., 126 (1997) 248428e.
- 3125 Delgado, C., Malmsten, M. and van Alstine, J.M.: Analytical partitioning of poly(ethylene glycol)-modified proteins. *J. Chromatogr. B.*, 692 (1997) 263-272.
- 3126 Finette, G.M.S., Mao, Q.-M. and Hearn, M.T.W.: Comparative studies on the isothermal characteristics of proteins adsorbed under batch equilibrium conditions to ion-exchange, immobilised metal ion affinity and dye affinity matrices with different ionic strength and temperature conditions. *J. Chromatogr. A.*, 763 (1997) 71-90.
- 3127 Hasnaoui, M'H., Debbia, M., Cochet, S., Cartron, J.P., Lambin, P. and Bertrand, O.: Screening of a large number of dyes for the separation of human immunoglobulin G2 from the other immunoglobulin G subclasses. Immunoglobulin G2 enrichment on immobilized Procion Yellow HE-4R. *J. Chromatogr. A.*, 766 (1997) 49-60.
- 3128 He, Z., Han, Z. and Feng, Y.: Experimental study on purification of biological products by preparative high performance high performance liquid chromatography. *Huaxue Gongye Yu Gongcheng (Tianjin)*, 13 (1996) 9-13; C.A., 126 (1997) 101283v.
- 3129 Jacobson, F.S., Hanson, J.T., Wong, P.-Y., Mulkerrin, M., Devaney, J., Reilly, D. and Wong, S.C.: Role of high-performance liquid chromatographic protein analysis in developing fermentation processes for recombinant human growth hormone, relaxin, antibody fragments and lymphotoxin. *J. Chromatogr. A.*, 763 (1997) 31-48.
- 3130 Kabzinski, A.K.M. and Takagi, T.: Separation of thioproteins and metallothioproteins, in particular metallothionein by covalent chromatography with thiodisulphide interchange. *Acta Chromatogr.*, 5 (1995) 60-102; C.A., 126 (1997) 128821f - a review with 263 refs.
- 3131 Kasper, C., Breier, J., Vogt, S. and Freitag, R.: Protein displacement chromatography on hydroxy- and fluoroapatite columns. *Bioseparation*, 6 (1996) 247-262; C.A., 126 (1997) 222425b.
- 3132 Kim, Y.-H. and Lee, E.K.: Comparison of axial and radial flow chromatography on protein separation speed and resolution. *Korean J. Chem. Eng.*, 13 (1996) 466-472; C.A., 126 (1997) 101279y.
- 3133 Loidl-Stahlhofen, A., Ulrich, A.S., Kaufmann, S. and Bayerl, T.M.: Protein binding to supported lecithin bilayers controlled by the lipid phase state: a new concept for highly selective protein purification. *Eur. Biophys. J.*, 25 (1996) 151-153; C.A., 126 (1997) 196996s.
- 3134 Mingalyov, P.G. and Fadeev, A.Yu.: Comment on the theory of protein adsorption on a biospecific rigid matrix. *J. Chromatogr. A.*, 764 (1997) 21-26.
- 3135 Opteck, H.J., Lewis, K.C., Jorgenson, J.W. and Anderegg, R.J.: Comprehensive on-line LC/MS/MS of proteins. *Anal. Chem.*, 69 (1997) 1518-1524.
- 3136 Pence, D.N. and Gu, T.: Liquid-liquid equilibrium of the acetonitrile-water system for protein purification. *Sep. Technol.*, 6 (1996) 261-264; C.A., 126 (1997) 44497s.
- 3137 Perkins, T.W., Mak, D.S., Root, T.W. and Lightfoot, E.N.: Protein retention in hydrophobic interaction chromatography: modeling variation with buffer ionic strength and column hydrophobicity. *J. Chromatogr. A.*, 766 (1997) 1-14.
- 3138 Ratto, J.J., O'Conner, S.R., Distler, A.R., Wu, G.-M., Hummel, D., Treuheit, M.J., Herman, A.C. and Davis, J.M.: Ethanol-sodium chloride-phosphate mobile phase for size-exclusion chromatography of poly(ethylene glycol) modified proteins. *J. Chromatogr. A.*, 763 (1997) 337-344.
- 3139 Sarfert, F.T. and Etzel, M.R.: Mass transfer limitations in protein separations using ion-exchange membranes. *J. Chromatogr. A.*, 764 (1997) 3-20.
- 3140 Scopes, R.: Chromatographic procedures. In: Price, N.C. (Editor), *Proteins Labfax*, Academic, San Diego, 1996, pp. 33-64; C.A., 126 (1997) 16335u - a review with many refs.
- 3141 Strong, J.C. and Frey, D.D.: Experimental and numerical studies of the chromatofocusing of dilute proteins using retained pH gradients formed on a strong-base anion-exchange column. *J. Chromatogr. A.*, 769 (1997) 129-143.
- 3142 Wombacher, H. and Jacob, L.: Affinity chromatography of proteins. In: Kamp, R.M., Choli-Papadopoulou, T. and Wittmann-Liebold, B. (Editors), *Protein Struct. Anal.*, Springer, Berlin, 1997, pp. 11-30; C.A., 126 (1997) 248425b.
- 3143 Yang, T.-T., Nelson, P.S., Bush, G.L., Meyer, D.I. and Kain, S.R.: An immobilized Co^{2+} affinity matrix for purification of histidine-tagged proteins. *Am. Biotechnol. Lab.*, 15 (1997) 12-14; C.A., 126 (1997) 196993p.

For additional information see C.A.:

126 (1997) 19315y, 141749h, 154632q, 197114q.

See also 2681, 2722, 2763, 2765, 2767, 3057, 3080, 3119, 3163, 3174, 3229.

19b. *Proteins of cells, viruses and subcellular particles*

- 3144 Dreusch, A., Bürgisser, D.M., Heizmann, C.W. and Zumft, W.G.: Lack of copper insertion into unprocessed cytoplasmic nitrous oxide reductase generated by an R2D substitution in the arginine consensus motif of the signal peptide. *Biochim. Biophys. Acta*, 1319 (1997) 311-318.
- 3145 Hasham, M.I., Pelech, S.L., Koide, H.B. and Krieger, C.: Activation of protein kinase C by intracellular free calcium in the motoneuron cell line NSC-19. *Biochim. Biophys. Acta*, 1360 (1997) 177-191.
- 3146 Hidaka, Y., Park, H. and Inouye, M.: Demonstration of dimer formation of the cytoplasmic domain of a transmembrane osmosensor protein, EnvZ, of *Escherichia coli* using Ni-histidine tag affinity chromatography. *FEBS Lett.*, 400 (1997) 238-242; C.A., 126 (1997) 141213d.
- 3147 Hsu, Y., Wu, G., Mendiaz, E.A., Syed, R., Wypych, J., Toso, R., Mann, M.B., Boone, T.C., Narhi, L.O., Lu, H.S. and Langley, K.E.: The majority of stem cell factor exists as monomer under physiological conditions. Implications for dimerization mediating biological activity. *J. Biol. Chem.*, 272 (1997) 6406-6415.
- 3148 Kitakawa, M., Graack, H.-R., Grohmann, L., Goldschmidt-Reisen, S., Herfurth, E., Wittmann-Liebold, B., Nishimura, T. and Isono, K.: Identification and characterization of the genes for mitochondrial ribosomal proteins of *Saccharomyces cerevisiae*. *Eur. J. Biochem.*, 245 (1997) 449-456.
- 3149 Montesano-Roditis, L., Glitz, D.G., Perrault, A.R. and Cooperman, B.S.: Incorporation of dinitrophenyl protein L23 into totally reconstituted *Escherichia coli* 50 S ribosomal subunits and its localization at two sites by immune electron microscopy. *J. Biol. Chem.*, 272 (1997) 8695-8703.
- 3150 Mouat, M.F. and Manchester, K.L.: Non-ideal size exclusion chromatography of eukaryotic protein synthesis initiation factor 2. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 143-153.
- 3151 Novikov, D., Dieuaide-Noubhani, M., Vermeesch, J.R., Fournier, B., Mannaerts, G.P. and van Veldhoven, P.P.: The human peroxisomal multifunctional protein involved in bile acid synthesis: activity measurement, deficiency in Zellweger syndrome and chromosome mapping. *Biochim. Biophys. Acta*, 1360 (1997) 229-240.
- 3152 Perez-Estevez, A., Diaz-Jullien, C., Covelo, G., Salgueiro, M.T. and Freire, M.: A 180-kDa protein kinase seems to be responsible for the phosphorylation of prothymosin α observed in proliferating cells. *J. Biol. Chem.*, 272 (1997) 10506-10513.
- 3153 Sato, K., Nishina, Y. and Shiga, K.: *In vitro* assembly of FAD, AMP, and the two subunits of electron-transferring flavoprotein: an important role of AMP related with the conformational change of the apoprotein. *J. Biochem. (Tokyo)*, 121 (1997) 477-486.

- 3154 Van Damme, E.J.M., Roy, S., Barre, A., Citores, L., Mostafapous, K., Rougé, P., van Leuven, F., Girbés, T., Goldstein, I.J. and Peumans, W.J.: Elderberry (*Sambucus nigra*) bark contains two structurally different Neu5Ac(α 2,6)Gal/Gal1NAc-binding type 2-ribosome-inactivating proteins. *Eur. J. Biochem.*, 245 (1997) 648-655.

- 3155 Xin, H., Leanza, K. and Spremulli, L.L.: Expression of bovine mitochondrial elongation factor Ts in *Escherichia coli* and characterization of the heterologous complex formed with prokaryotic elongation factor Tu. *Biochim. Biophys. Acta*, 1352 (1997) 102-112.

For additional information see C.A.:

126 (1997) 143008q.

See also 3104, 3238.

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

- 3156 Arata, Y., Hirabayashi, J. and Kasai, K.-i.: The two lectin domains of the tandem-repeat 32-kDa galectin of the nematode *Caenorhabditis elegans* have different binding properties. Studies with recombinant protein. *J. Biochem. (Tokyo)*, 121 (1997) 1002-1009.
- 3157 Kitamura, M., Koshino, Y., Kamikawa, Y., Kohno, K., Kojima, S., Miura, K.-i., Sagara, T., Akutsu, H., Kumagai, I. and Nakaya, T.: Cloning and expression of the rubredoxin gene from *Desulfovibrio vulgaris* (Miyazaki F) - comparison of the primary structure of desulfoferrodoxin. *Biochim. Biophys. Acta*, 1351 (1997) 239-247.
- 3158 Morand, J. and Sepehrnia, B.: Detection and isolation of recombinant proteins from mammalian cells by immunoaffinity chromatography: p53. *Methods Mol. Biol. (Totowa)*, 63 (Recombinant Protein Protocols) (1997) 161-172; C.A., 126 (1997) 276030n.
- 3159 Reist, C.J., Garg, P.K., Alston, K.L., Bigner, D.D. and Zalutsky, M.R.: Radioiodination of internalizing monoclonal antibodies using N-succinimidyl 5-iodo-3-pyridinecarboxylate. *Cancer Res.*, 56 (1996) 4970-4977.
- 3160 Schmidbauer, S.B. and Strobel, O.K.: Rapid purification of histidine-tagged glutathione S-transferase fusion protein by metal chelate POROS perfusion chromatography media. *Biochimica*, (1997) 28-29; C.A., 126 (1997) 196995r.
- 3161 Soloveva, I.Ya., Protasov, E.A., Simbirtsev, A.S., Poltorak, A.N. and Ketlinskij, S.A.: Chromatographic purification of interleukin 1 β manufactured with transgenic *Escherichia coli*. *Russ. RU 2,051,922 (Cl. C07K1/00)*, 10 Jan. 1996, SU Appl. 5,068,124, 19 Jun. 1992; C.A., 126 (1997) 17880e.
- 3162 Zhou, A., Jiang, X., Dou, F., Zhu, D. and Xu, X.: Renaturation, purification, and characterization of human plasminogen activator inhibitor type 2 (PAI-2) accumulated at high level in *Escherichia coli*. *J. Biochem. (Tokyo)*, 121 (1997) 930-934.

See also 3129.

19d. *Microbial and plant proteins*

- 3163 De Frutos, M., Cifuentes, A. and Diez-Masa, J.C.: Behavior of whey proteins in hydrophobic interaction chromatography. *J. High Resolut. Chromatogr.*, 19 (1996) 521-526.

- 3164 Devanathan, S., Genick, U.K., Getzoff, E.D., Meyer, T.E., Cusanovich, M.A. and Tollin, G.: Preparation and properties of a 3,4-dihydroxycinnamic acid chromophore variant of the photoactive yellow protein. *Arch. Biochem. Biophys.*, 340 (1997) 83-89.
- 3165 Hsu, H.-C., Hsu, C.-I., Lin, R.-H., Kao, C.-L. and Lin, J.-Y.: Fip-wo, a new fungal immunomodulatory protein isolated from *Volvariella volvacea*. *Biochem. J.*, 323 (1997) 557-565.
- 3166 Kouzuma, Y., Yamasaki, N. and Kimura, M.: The tissue-type plasminogen activator inhibitor ETla from *Erythrina variegata*: structural basis for the inhibitory activity by cloning, expression, and mutagenesis of the cDNA encoding ETla. *J. Biochem. (Tokyo)*, 121 (1997) 456-463.
- 3167 Palena, C.M., Chan, R.L. and Gonzalez, D.H.: A novel type of dimerization motif, related to leucine zippers, is present in plant homeodomain proteins. *Biochim. Biophys. Acta*, 1352 (1997) 203-212.
- 3168 Papanastasiou, P., McConville, M.J., Ralton, J. and Köhler, P.: The variant-specific surface protein of *Giardia*, VSP4A1, is a glycosylated and palmitoylated protein. *Biochem. J.*, 322 (1997) 49-56.
- 3169 Petushkov, V. and Lee, J.: Purification and characterization of flavoproteins and cytochromes from the yellow marine bacterium *Vibrio fischeri* strain 41. *Eur. J. Biochem.*, 245 (1997) 790-796.
- 3170 Rodriguez-Suarez, R.J., Mora-Garcia, S. and Wolosiuk, R.A.: Characterization of cysteine residues involved in the reductive activation and the structural stability of rapeseed (*Brassica napus*) chloroplast fructose-1,6-bisphosphatase. *Biochem. Biophys. Res. Commun.*, 232 (1997) 388-393.
- See also 3113, 3117, 3135, 3146, 3157.
- 19e. *Proteins of blood, serum and blood cells*
- 3171 Amstutz, H., Balmer, V. and Lerch, P.: High-titer immunoglobulin preparations prepared by affinity chromatography of human plasma fractions. In: Kazatchkine, M.D. and Morell, A. (Editors), *Intravenous Immunoglobulin Res. Ther. [Int. Symp. Intravenous Immunoglobulin Ther.]*, 4th 1996, Parthenon Publishing, New York, 1996, pp. 305-306; C.A., 126 (1997) 229473z.
- 3172 Anspach, F.B., Petsch, D. and Deckwer, W.D.: Purification of murine IgG₁ on group specific affinity sorbents. *Bioseparation*, 6 (1996) 165-184; C.A., 126 (1997) 44496r.
- 3173 Baugh, R.J. and Krishnaswamy, S.: Role of the activation peptide domain in human factor X activation by the extrinsic Xase complex. *J. Biol. Chem.*, 271 (1996) 16126-16134.
- 3174 Berna, N., Berna, P. and Oscarsson, S.: Polyol-promoted adsorption of serum proteins to amphiphilic agarose-based adsorbents. *J. Chromatogr. A*, 764 (1997) 193-200.
- 3175 Carrette, O., Mizon, C., Sautière, P., Sesboüé, R. and Mizon, J.: Purification and characterization of pig inter- α -inhibitor and its constitutive heavy chains. *Biochim. Biophys. Acta*, 1338 (1997) 21-30.
- 3176 Diamond, F.B., Jr., Eichler, D.C., Duckett, G., Jorgensen, E.V., Shulman, D. and Root, A.W.: Demonstration of a leptin binding factor in human serum. *Biochim. Biophys. Res. Commun.*, 233 (1997) 818-822.
- 3177 Flatten, M.: (Antibody isolation by thiophilic adsorption). *LaborPraxis*, 20 (1996) 88-90; C.A., 126 (1997) 156032t - a review with 18 refs.
- 3178 Gottschlich, N. and Kasche, V.: Purification of monoclonal antibodies by simulated moving-bed chromatography. *J. Chromatogr. A*, 765 (1997) 201-206.
- 3179 Hill, M., Lapčík, O. and Hampl, R.: Evaluation and separation of steroid-bovine serum albumin conjugates by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 187-191.
- 3180 Ingham, K.C., Brew, S.A., Huff, S. and Litvinovich, S.V.: Cryptic self-association sites in type III modules of fibronectin. *J. Biol. Chem.*, 272 (1997) 1718-1724.
- 3181 Konceny, P., Brown, R.J. and Scouten, W.H.: Purification of monospecific polyclonal antibodies from hyperimmune whey using immunoaffinity chromatography. *Prep. Biochem. Biotechnol.*, 26 (1996) 229-243; C.A., 126 (1997) 17954g.
- 3182 Legallais, C., Anspach, F.B., Bueno, S.M.A., Haupt, K. and Vijayalakshmi, M.A.: Strategies for the depyrogenation of contaminated immunoglobulin G solutions by histidine-immobilized hollow fiber membrane. *J. Chromatogr. B*, 691 (1997) 33-41.
- 3183 Lewis, J.D. and Nail, S.L.: The influence of ion exchange chromatography conditions on aggregation of equine IgG. *Process Biochem. (Oxford)*, 32 (1997) 279-283; C.A., 126 (1997) 249892p.
- 3184 Mizon, C., Héron, A., Capon, C., Sautière, P., Michalski, C., Sesboüé, R. and Mizon, J.: Human pre- α -inhibitor: isolation from a by-product of industrial scale plasma fractionation and structural analysis of its H3 heavy chain. *J. Chromatogr. B*, 692 (1997) 281-291.
- 3185 Reissner, K., Prior, A., Wolfgang, J., Bart, H.J. and Byers, C.H.: Preparative desalting of bovine serum albumin by continuous annular chromatography. *J. Chromatogr. A*, 763 (1997) 49-56.
- 3186 Sanjay, A., Kalraiyai, R.D. and Mehta, N.G.: Modification of the erythrocyte surface in rats bearing Yoshida ascites sarcoma is brought about by a tumour variant of α_2 -macroglobulin. *Biochem. J.*, 322 (1997) 379-394.
- 3187 Seta, K., Isobe, T., Nakayama, H., Yamaki, S., Shinkai, F., Kanai, M., Xu, H., Yamaguchi, M. and Okuyama, T.: (Analysis of plasma proteins using multi-dimensional HPLC-ESI/ITMS system). *Kuromatogurafu*, 17 (1996) 344-345; C.A., 126 (1997) 154777r.
- 3188 Sjöström, I., Gröndahl, H., Falk, G., Kronvall, G. and Ullberg, M.: Purification and characterisation of a plasminogen-binding protein from *Haemophilus influenzae*. Sequence determination reveals identity with aspartase. *Biochim. Biophys. Acta*, 1324 (1997) 182-190.
- 3189 Thoennes, J., Bader, A., Karau, A. and Kula, M.-R.: Integrative antibody purification from whole broth by fluidized bed adsorption. In: Carrondo, M.J.T., Griffiths, B. and Moreira, J.L.P. (Editors), *Anim. Cell Technol.: Vaccines Genet. Med. [Proc. Meet. ESACT]*, 14th 1996, Kluwer, Dordrecht, 1997, pp. 227-233; C.A., 126 (1997) 276028t.
- 3190 Vidal-Madjar, C., Jaulmes, A., Renard, J., Peter, D. and Lafaye, P.: Chromatographic study of the adsorption kinetics of albumin and monoclonal and polyclonal immunoabsorbents. *Chromatographia*, 45 (1997) 18-24.

3191 Vogel, J.H., Randolph, I. and Kröner, K.-H.: Simplified screening of monoclonal antibodies for immunoaffinity chromatography - a case study on anti-hIL-2-antibodies. In: Carrondo, M.J.T., Griffiths, B. and Moreira, J.L.P. (Editors), *Anim. Cell Technol.: Vaccines Genet. Med., [Proc. Meet. ESACT], 14th 1996*, Kluwer, Dordrecht, 1997, pp. 221-226; C.A., 126 (1997) 249905v.

3192 Volker, K.W. and Knull, H.R.: A glycolytic enzyme binding domain on tubulin. *Arch. Biochem. Biophys.*, 338 (1997) 237-243.

3193 Yasukawa, K. and Nishimura, S.: (Determination of glycoalbumins by HPLC). *Rinsho Kensa*, 40 (1996) 1275-1280; C.A., 126 (1997) 196992n.

For additional information see C.A.:

126 (1997) 46308e, 101145b, 156218h, 156409w.

See also 2775, 2953, 3127, 3162, 3202, 3203, 3204, 3210, 3211.

19f. Structural and muscle proteins

3194 Cadene, A., Grigorescu, F., Serrano, J.-J. and Cros, G.: Characterization of vanadyl sulfate effect on vascular contraction: roles of calcium and tyrosine phosphorylation. *J. Pharmacol. Exp. Ther.*, 281 (1997) 491-498.

3195 Fledelius, C., Johnsen, A.H., Cloos, P.A.C., Bonde, M. and Qvist, P.: Characterization of urinary degradation products derived from type I collagen. Identification of a β -isomerized Asp-Gly sequence within the C-terminal telopeptide ($\alpha 1$) region. *J. Biol. Chem.*, 272 (1997) 9755-9763.

3196 Hashimoto, K., Noshiro, M., Ohno, S., Kawamoto, T., Satakeda, H., Akagawa, Y., Nakashima, K., Okimura, A., Ishida, H., Okamoto, T., Pan, H., Shen, M., Yan, W. and Kato, Y.: Characterization of a cartilage-derived 66-kDa protein (RGD-CAP/BIG-h3) that binds to collagen. *Biochim. Biophys. Acta*, 1355 (1997) 303-314.

3197 Moss, J.M., van Damme, M.-P.I., Murphy, W.H., Stanton, P.G., Thomas, P. and Preston, B.N.: Purification, characterization, and biosynthesis of bovine cartilage lysozyme isoforms. *Arch. Biochem. Biophys.*, 339 (1997) 172-182.

3198 Nishita, K., Ojima, T., Takahashi, A. and Inoue, A.: Troponin from smooth adductor muscle of Ezo-giant scallop. *J. Biochem. (Tokyo)*, 121 (1997) 419-424.

19g. Protamines, histones and other nuclear proteins

3199 Kim, S., Merrill, B.M., Rajpurohit, R., Kumar, A., Stone, K.L., Papov, V.V., Schneiders, J.M., Szer, W., Wilson, S.H., Paik, W.K. and Williams, K.R.: Identification of N^G-methylarginine residues in human heterogeneous RNP protein A1: Phe/Gly-Gly-Arg-Gly-Gly/Phe is a preferred recognition motif. *Biochemistry*, 36 (1997) 5185-5192.

3200 Zhelev, N.Zh., Barratt, M.J. and Mahadevan, L.C.: Use of reversed-phase high-performance liquid chromatography on polystyrene-divinylbenzene columns for the rapid separation and purification of acid-soluble nuclear proteins. *J. Chromatogr. A*, 763 (1997) 65-70.

19h. Chromoproteins and metalloproteins

3201 Allen, B.G., Durussel, I., Walsh, M.P. and Cox, J.A.: Characterization of two Ca²⁺-binding properties of calgizzarin (S100C) isolated from chicken gizzard smooth muscle. *Biochem. Cell Biol.*, 74 (1996) 687-694.

3202 Doelman, C.J.A., Siebelder, C.W.M., Nijhof, W.A., Weykamp, C.W., Janssens, J. and Penders, T.J.: Capillary electrophoresis system for hemoglobin A_{1c} determinations evaluated. *Clin. Chem. (Washington)*, 43 (1997) 644-648.

3203 Halwachs-Baumann, G., Katzensteiner, S., Schnedl, W., Pürstner, P., Pieber, T. and Truschnig-Wilders, M.: Comparative evaluation of three assay systems for automated determination of hemoglobin A_{1c}. *Clin. Chem. (Washington)*, 43 (1997) 511-517.

3204 Huber, K., Wolf, H., van Lindern, M., Worofka, B., Rosen, A., Hafner, E., Beug, H., Philipp, K. and Bauer, K.: Development of a rapid means of estimating the hemoglobin F content of candidate fetal cells isolated from maternal blood using HPLC. *Prenatal Diagn.*, 16 (1996) 1011-1019; C.A., 126 (1997) 101281t.

3205 Kabzinski, A.K.M.: Application of covalent affinity chromatography for separation of Zn-thionein from liver of rats exposed to Zn. *Chem. Anal. (Warsaw)*, 42 (1997) 11-21; C.A., 126 (1997) 273323z.

3206 Kabzinski, A.K.M.: Application of solid-phase extraction to the preconcentration of metallothionein and metals from physiological fluids. *J. Chromatogr. A*, 766 (1997) 121-131.

3207 Kabzinski, A.K.M.: Investigation of metallothionein concentration with preconcentration by solid phase extraction on covalent affinity chromatography gel for quantitative determination of exposure to heavy metals. *Pol. J. Environ. Stud.*, 5 (1996) 9-13; C.A., 126 (1997) 71319s.

3208 Kabzinski, A.K.M. and Paruszczak, T.: Physicochemical changes of metallothiolate proteins' structure during separation by covalent affinity chromatography on the example of metallothioneins. *Acta Chromatogr.*, 5 (1995) 34-59; C.A., 126 (1997) 141590z.

3209 Mosca, A., Paleari, R., Trapolini, A., Capani, F., Pagnao, G. and Plebani, M.: A re-evaluation of glycohaemoglobin standardisation: the Italian experience with 119 laboratories and 12 methods. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 243-248.

3210 Renner, F. and Kanitz, R.-D.: Quantification of carbohydrate-deficient transferrin by ion-exchange chromatography with an enzymatically prepared calibrator. *Clin. Chem. (Washington)*, 43 (1997) 485-490.

3211 Riou, J., Godart, C., Hurtrel, D., Mathis, M., Bimet, C., Barakdjian-Michau, J., Préhu, C., Wajeman, H. and Galactéros, F.: Cation-exchange HPLC evaluated for presumptive identification of hemoglobin variants. *Clin. Chem. (Washington)*, 43 (1997) 34-39.

3212 Sellami, M., Labaied, N., Ghanem, A., Nagati, K. and Fattoum, S.: (Determination of glycated hemoglobin A_{1c} by liquid chromatography and immunoagglutination). *Arch. Inst. Pasteur Tunis*, 72 (1995) 3-6; C.A., 126 (1997) 222439j.

3213 Shimizu, Y., Kusunose, E., Kikuta, Y., Arakawa, T., Ichihara, K. and Kusunose, M.: Purification and characterization of two new cytochrome P-450 related to CYP2C subfamily from rabbit small intestine microsomes. *Biochim. Biophys. Acta*, 1339 (1997) 268-276.

3214 Studer, R. and Hunziker, P.E.: Quantification of basal amounts of isometallothioneins in cultured cells by reversed-phase HPLC. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 617-625.

3215 Terry, M.J. and Kendrick, R.E.: The aurea and yellow-green-2 mutants of tomato are deficient in phytochrome chromophore synthesis. *J. Biol. Chem.*, 271 (1996) 21681-21686.

3216 Werle, E., Seitz, G.E., Kohl, B., Fiehn, W. and Seitz, H.K.: High-performance liquid chromatography improves diagnostic efficiency of carbohydrate-deficient transferrin. *Alcohol Alcohol (Oxford)*, 32 (1997) 71-77; *C.A.*, 126 (1997) 248429f.

For additional information see *C.A.*:
126 (1997) 135584j.

See also 3116, 3118, 3130, 3157, 3234.

19i. *Proteins of glands, gland products, various zymogens (incl. milk proteins)*

3217 Berkovsky, A.L. and Potapov, P.P.: Development of a purification procedure for the placental protein 14 involving metal-chelate affinity chromatography and hydrophobic interaction chromatography. *J. Chromatogr. B*, 692 (1997) 273-279.

3218 De Frutos, M., Cifuentes, A. and Diez-Masa, J.C.: Whey proteins eluted in reversed phase gradients. *J. High Resolut. Chromatogr.*, 20 (1997) 29-33.

3219 Gambero, A., Kubota, L.T., Gushikem, Y., Airoldi, C., Granjeiro, J.M., Taga, E.M. and Alcanbara, E.F.C.: Use of chemically modified silica with β -diketooamine groups for separation of α -lactalbumin from bovine milk whey by affinity chromatography. *J. Colloid Interface Sci.*, 185 (1997) 313-316; *C.A.*, 126 (1997) 198663e.

3220 Gong, J., Kini, R.M., Gwee, M.C.E., Gopalakrishnakone, P. and Chung, M.C.M.: Makatoxin I, a novel toxin isolated from the venom of the scorpion *Buthustmartensi* Karsch, exhibits nitro-ergic actions. *J. Biol. Chem.*, 272 (1997) 8320-8324.

3221 Mansouri, A., Haertlé, T., Gérard, A., Gérard, H. and Guéant, J.L.: Retinol free and retinol complexed β -lactoglobulin binding sites in bovine germ cells. *Biochim. Biophys. Acta*, 1357 (1997) 107-114.

3222 Okazaki, A., Katsumata, K. and Kuwajima, K.: Hydrogen-exchange kinetics of reduced α -lactalbumin bound to the chaperonin GroEL. *J. Biochem. (Tokyo)*, 121 (1997) 534-541.

3223 Romi-Lebrun, R., Martin-Eauclaire, M.-F., Escoubas, P., Wu, F.Q., Lebron, B., Hisada, M. and Nakajima, T.: Characterization of four toxins from *Buthustmartensi* scorpion venom which act on apamin-sensitive Ca^{2+} -activated K^+ channels. *Eur. J. Biochem.*, 245 (1997) 457-464.

For additional information see *C.A.*:
126 (1997) 170393t.

See also 3119.

19j. *Proteins of brain, cerebrospinal fluid and eye*

3224 Paudel, H.K.: The regulatory Ser²⁶² of microtubule-associated protein tau is phosphorylated by phosphorylase kinase. *J. Biol. Chem.*, 272 (1997) 1777-1785.

See also 3114.

19k. *Proteins of neoplastic tissue and transformed cells*

See 3111, 3186.

19l. *Specific binding and receptor proteins*

3225 Barbone, F.P., Middleton, S.A., Johnson, D.L., McMahon, F.J., Tullai, J., Gruninger, R.H., Schilling, A.E., Jolliffe, L.K. and Mulcahy, L.S.: Mutagenesis studies of the human erythropoietin receptor. Establishment of structure-function relationships. *J. Biol. Chem.*, 272 (1997) 4985-4992.

3226 Di Pietro, S.M. and Santomé, J.A.: Presence of two new fatty acid binding proteins in carfish liver. *Biochem. Cell Biol.*, 74 (1996) 675-680.

3227 Fabbrini, M.S., Rappocciolo, E., Carpani, D., Solinas, M., Valsasina, B., Breme, U., Cavallaro, U., Nykjaer, A., Rovida, E., Legname, G. and Soria, M.R.: Characterization of a saporin isoform with lower ribosome-inhibiting activity. *Biochem. J.*, 322 (1997) 719-727.

3228 Garzon, J., García-Espana, A. and Sánchez-Blázquez, P.: Opioids binding mu and delta receptors exhibit diverse efficacy in the activation of G_{i} and $\text{G}_{\text{y/z}}$ transducer proteins in mouse periaqueductal gray matter. *J. Pharmacol. Exp. Ther.*, 281 (1997) 549-557.

3229 Hjertén, S., Liao, J.-L., Nakazato, K., Wang, Y., Zamaratskaia, G. and Zhang, H.-X.: Gels mimicking antibodies in their selective recognition of proteins. *Chromatographia*, 44 (1997) 227-234.

3230 Ishimura, K., Fukunaga, K., Irie, T., Uekama, K., Ohta, T. and Nakamura, H.: Application of a β -cyclodextrin sulfate-immobilized precolumn to selective on-line enrichment and separation of heparin-binding proteins by column-switching high-performance liquid chromatography. *J. Chromatogr. A*, 769 (1997) 209-214.

3231 Miller, C.E., Kovac, P. and Glaudemans, C.P.J.: Recovery of monoclonal antibody from its complex with ligand. *Anal. Biochem.*, 245 (1997) 179-183.

3232 Mills, M.J., Maltais, J. and Lough, W.J.: Automated microbore LC with peak compression for the assay of GR138950 and its metabolite in human serum. *Chromatographia*, 45 (1997) 275-283.

3233 Nozaki, N., Naoe, T. and Okazaki, T.: Immunoaffinity purification and characterization of CACGTG sequence-binding proteins from cultured mammalian cells using an anti c-Myc monoclonal antibody recognizing the DNA-binding domain. *J. Biochem. (Tokyo)*, 121 (1997) 550-559.

3234 Saito, S., Okabe, M. and Kurasaki, M.: Localization of renal Cu-binding metallothionein induced by Au injection into rats. *Biochim. Biophys. Acta*, 1335 (1997) 353-358.

3235 Sanny, C.G. and Price, J.A.: Analysis of antibody-antigen interactions using size-exclusion high-performance (pressure) liquid chromatography. *Anal. Biochem.*, 246 (1997) 7-14.

3236 Sheeley, D.M., Merrill, B.M. and Taylor, L.C.E.: Characterization of monoclonal antibody glycosylation: comparison of expression systems and identification of terminal α -linked galactose. *Anal. Biochem.*, 247 (1997) 102-110.

3237 Smedsrød, B., Melkko, K., Araki, N., Sano, H. and Horiuchi, S.: Advanced glycation end products are eliminated by scavenger-receptor-mediated endocytosis in hepatic sinusoidal Kupffer and endothelial cells. *Biochem. J.*, 322 (1997) 567-573.

3238 Tleugabulova, D., Reyes, J., Costa, L., Diaz, J. and Madrano-Pinol, J.: Size exclusion chromatography of hepatitis B surface antigen particles. *Chromatographia*, 45 (1997) 317-320.

3239 Yano, T., Kobayashi, A., Kurata, S. and Natori, S.: Purification and characterization of cathepsin B mRNA 3'-untranslated-region-binding protein (CBBP), a protein that represses cathepsin B mRNA translation. *Eur. J. Biochem.*, 245 (1997) 260-265.

See also 2888, 3068, 3112, 3190, 3201, 3644.

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

3240 Au, K.S.: Purification of a protein inhibitor of erythrocyte plasma membrane Ca^{2+} -ATPase by Ca^{2+} -ATPase-Sepharose affinity chromatography. *Biochem. Mol. Biol. Int.*, 39 (1996) 197-203; C.A., 126 (1997) 101038u.

3241 Chang, J.: A two-stage mechanism for the reductive unfolding of disulfide-containing proteins. *J. Biol. Chem.*, 272 (1997) 69-75.

3242 Eda, S., Suzuki, Y., Kawai, T., Ohtani, K., Kase, T., Fujinaga, Y., Sakamoto, T., Kurimura, T. and Wakamiya, N.: Structure of a truncated human surfactant protein D is less effective in agglutinating bacteria than the native structure and fails to inhibit haemagglutination by influenza A virus. *Biochem. J.*, 323 (1997) 393-399.

3243 Fukao, H., Ueshima, S., Takaishi, T., Okada, K. and Matsuo, O.: Enhancement of tissue-type plasminogen activator (t-PA) activity by purified t-PA receptor expressed in human endothelial cells. *Biochim. Biophys. Acta*, 1356 (1997) 111-120.

3244 Ishida, K., Matsuda, H., Murakami, M. and Yamaguchi, K.: Micropeptins 478-A and -B, plasmin inhibitors from the cyanobacterium *Microcystis aeruginosa*. *J. Natural Prod.*, 60 (1997) 184-187.

3245 Ito, Y., Li, J.-S., Takahashi, T., Imanishi, Y., Okabayashi, Y., Kido, Y. and Kasuga, M.: Enhancement of the mitogenic effect by artificial juxtaarginine stimulation using immobilized EGF. *J. Biochem. (Tokyo)*, 121 (1997) 514-520.

3246 Journe, F., Wattiez, R., Piron, A., Carion, M., Laurent, G., Heuson-Stiennon, J.-A. and Falmagne, P.: Renal epidermal growth factor precursor: proteolytic processing in an *in vitro* cell-free system. *Biochim. Biophys. Acta*, 1357 (1997) 18-30.

3247 Luo, M.-J., Lu, W.-Y. and Chi, C.-W.: Clarification of an uncertain introit within the cDNA sequences of arrowhead proteinase inhibitors A and B. *J. Biochem. (Tokyo)*, 121 (1997) 991-995.

3248 Van't Hof, W., Blankenvoorde, M.F.J., Veerman, E.C.I. and Amerongen, A.V.N.: The salivary lipocalin von Ebner's gland protein is a cysteine proteinase inhibitor. *J. Biol. Chem.*, 272 (1997) 1837-1841.

See also 2893, 3175, 3227.

20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

20a. Oxidoreductases

3249 Bhat, P.V., Poissant, L. and Wang, X.L.: Purification and partial characterization of bovine kidney aldehyde dehydrogenase able to oxidize retinal to retinoic acid. *Biochem. Cell Biol.*, 74 (1996) 695-700.

3250 Branchini, B.R., Magyar, R.A., Murtiashaw, M.H., Magnasco, N., Hinz, L.K. and Stroh, J.G.: Inactivation of firefly luciferase with N-(9D-O-acetyl)-N'-(5-sulfo-1-naphthyl)ethylenediamine (I-AEDANS). *Arch. Biochem. Biophys.*, 340 (1997) 52-58.

3251 Kelson, T.L., Secor Mc Voy, J.R. and Rizzo, W.B.: Human liver fatty aldehyde dehydrogenase: microsomal localization, purification, and biochemical characterization. *Biochim. Biophys. Acta*, 1335 (1997) 99-110.

3252 List, B.M., Klösch, B., Völker, C., Gorren, A.C.F., Sessa, W.C., Werner, E.R., Kukovetz, W.R., Schmidt, K. and Mayer, B.: Characterization of bovine endothelial nitric oxide synthase as a homodimer with down-regulated uncoupled NADPH oxidase activity: tetrahydrobiopterin binding kinetics and role of haem in dimerization. *Biochem. J.*, 323 (1997) 159-165.

3253 Longo, V., Amato, G., Santucci, A. and Gervasi, P.G.: Purification and characterization of three constitutive cytochrome P-450 isoforms from bovine olfactory epithelium. *Biochem. J.*, 323 (1997) 65-70.

3254 Meyer, J., Richter, N. and Hecker, M.: High-performance liquid chromatographic determination of nitric oxide synthase-related arginine derivatives *in vitro* and *in vivo*. *Anal. Biochem.*, 247 (1997) 11-16.

3255 Parry, R.J. and Li, W.: Purification and characterization of isobutyramine N-hydroxylase from the valanimycin producer *Streptomyces viridifaciens* MG456-HF10. *Arch. Biochem. Biophys.*, 339 (1997) 47-54.

3256 Paszczynski, A., Goszczyński, S., Crawford, R. and Crawford, D.: Purification of peroxidases from *Phanerochaete chrysosporium* by affinity chromatography. In: Srebotnik, E. and Messner, K. (Editors), *Biotechnol. Pulp. Pap. Ind., Proc. Int. Conf., 6th 1995*, Facultas-Universitaetsverlag, Vienna, 1996, pp. 441-445; C.A., 126 (1997) 44230z.

3257 Radi, R., Rubbo, H., Bush, K. and Freeman, B.A.: Xanthine oxidase binding to glycosaminoglycans: kinetics and superoxide dismutase interactions of immobilized xanthine oxidase-heparin complexes. *Arch. Biochem. Biophys.*, 339 (1997) 125-135.

3258 Sarkar, S., Martínez, A.T. and Martínez, M.J.: Biochemical and molecular characterization of a manganese peroxidase isoenzyme from *Pleurotus ostreatus*. *Biochim. Biophys. Acta*, 1339 (1997) 23-30.

3259 Takahashi, M., Pischetsrieder, M. and Monnier, V.M.: Isolation, purification, and characterization of amadoriase isoenzymes (fructosyl amine-oxygen oxidoreductase EC 1.5.3) from *Aspergillus* sp. *J. Biol. Chem.*, 272 (1997) 3437-3443.

3260 Tersteegen, A., Linder, D., Thauer, R.K. and Hedderich, R.: Structures and functions of four anabolic 2-oxoacid oxidoreductases in *Methanobacterium thermoautotrophicum*. *Eur. J. Biochem.*, 244 (1997) 862-868.

- 3261 Vioque, J. and Kolattukudy, P.E.: Resolution and purification of an aldehyde-generating and an alcohol-generating fatty acyl-CoA reductase from pea leaves (*Pisum sativum* L.) *Arch. Biochem. Biophys.*, 340 (1997) 64-72.
- 3262 Yamano, S., Ito, K.-i., Ogata, S. and Toki, S.: Purification, characterization and partial primary structure of morphine 6-dehydrogenase from rabbit liver cytosol. *Arch. Biochem. Biophys.*, 341 (1997) 81-88.
- See also 2926, 3046, 3106, 3110, 3419.
- 20b. *Transferases (excl. E.C. 2.7.-.)*
- 3263 Abid, M.R., Sasaki, K., Titani, K. and Miyazaki, M.: Biochemical and immunological characterization of deoxyhypusine synthase purified from the yeast *Saccharomyces carlsbergensis*. *J. Biochem. (Tokyo)*, 121 (1997) 769-778.
- 3264 Duffy, C.F., Bogan, D.P. and O'Kennedy, R.: Determination by HPLC of the UDP-glucuronyl transferase activity for 7-hydroxycoumarin in rabbit tissue samples. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 217-226.
- 3265 Fraser, F., Corstorphine, C.G. and Zammit, V.A.: Topology of carnitine palmitoyltransferase I in the mitochondrial outer membrane. *Biochem. J.*, 323 (1997) 711-718.
- 3266 Homma, H., Tada, M., Nakamura, T., Yamagato, S.-i. and Matsui, M.: Heterogeneous zonal distribution of sulfotransferase isoenzymes in rat liver. *Arch. Biochem. Biophys.*, 339 (1997) 235-241.
- 3267 Hsieh, C.-H., Tsai, S.-P., Yeh, H.-I., Sheu, T.-C. and Tam, M.F.: Mass spectrometric analysis of rat ovary and testis cytosolic glutathione S-transferase (GSTs): identification of a novel class-alpha GST, rGSTA6, in rat testis. *Biochem. J.*, 323 (1997) 503-510.
- 3268 Hu, X. and Singh, S.: Glutathione-S-transferases of female A/J mouse lung and thier induction by anticarcinogenic organosulfides from garlic. *Arch. Biochem. Biophys.*, 340 (1997) 279-286.
- 3269 Humm, A., Fritsche, E., Mann, K., Göhl, M. and Huber, R.: Recombinant expression and isolation of human L-arginine-glycine amidinotransferase and identification of its active-site cysteine residue. *Biochem. J.*, 322 (1997) 771-776.
- 3270 Ioannou, M., Coutsogeorgopoulos, C. and Drainas, D.: Determination of eukaryotic peptidyltransferase activity by pseudo-first-order kinetic analysis. *Anal. Biochem.*, 247 (1997) 115-122.
- 3271 Johnson, J.E., Aebersold, R. and Cornell, R.B.: An amphipathic α -helix is the principle membrane-embedded region of CTP:phosphocholine cytidylyltransferase. Identification of the 3-(trifluoromethyl)-3-(*m*-[¹²⁵I]iodophenyl)diazirine photolabeled domain. *Biochim. Biophys. Acta*, 1324 (1997) 273-284.
- 3272 Kamisaka, Y., Mishra, S. and Nakahara, T.: Purification and characterization of diacylglycerol acyltransferase from the lipid body fraction of an oleaginous fungus. *J. Biochem. (Tokyo)*, 121 (1997) 1107-1114.
- 3273 Micheli, V., Jacomelli, G., Fioravanti, A., Morozzi, G., Marcolongo, R. and Pompucci, G.: Thiopurine methyltransferase activity in the erythrocytes of adults and children: an HPLC-linked assay. *Clin. Chim. Acta*, 259 (1997) 161-168.

- 3274 Murley, L.L. and MacKenzie, R.E.: Monofunctional domains of formiminotransferase-cyclodeaminase retain similar conformational stabilities outside the bifunctional octamer. *Biochim. Biophys. Acta*, 1338 (1997) 223-232.
- 3275 Nicolaou, A., Waterfield, C.J., Kenyon, S.H. and Gibbons, W.A.: The inactivation of methionine synthase in isolated rat hepatocytes by sodium nitroprusside. *Eur. J. Biochem.*, 244 (1997) 876-882.
- 3276 Roecklin, D., Klarskov, K., Cavallin, B., Sabatié, J., Bouchon, B., Loew, D., van Dorsselaer, A. and Bischoff, R.: Addition of acet-aldehyde to the N-terminus of a recombinant *Schistosoma mansoni* glutathione S-transferase upon high-level expression in *Saccharomyces cerevisiae*. *Eur. J. Biochem.*, 245 (1997) 589-599.
- 3277 Sha, S., Minakuchi, K., Higaki, N., Sato, K., Ohtsuki, K., Kurata, A., Yoshikawa, H., Kotaru, M., Masumura, T., Ichihara, K. and Tanaka, K.: Purification and characterization of glutaredoxin (thioltransferase) from rice (*Oryza sativa* L.) *J. Biochem. (Tokyo)*, 121 (1997) 842-848.
- 3278 Stahl, B., Linos, A., Karas, M., Hillenkamp, F. and Steup, M.: Analysis of fructans from higher plants by matrix-assisted laser desorption/ionization mass spectrometry. *Anal. Biochem.*, 246 (1997) 195-204.
- See also 3108, 3115.
- 20c. *Transferases transferring phosphorus containing groups (E.C. 2.7.-.)*
- 3279 Hodgkin, M.N., Gardner, S.D., Rose, S., Paterson, A., Martin, A. and Wakelam, M.J.O.: Purification and characterization of sn-1-stearoyl-2-arachidonoylglycerol kinase from pig testes. *Biochem. J.*, 322 (1997) 529-534.
- 3280 Kadotani, M., Nishiuma, T., Nanahoshi, M., Tsujishita, Y., Ogita, K., Nakamura, S.-i., Kikkawa, U. and Asaoka, Y.: Characterization of tyrosine-phosphorylated δ isoform of protein kinase C isolated from Chinese hamster ovary cells. *J. Biochem. (Tokyo)*, 121 (1997) 1047-1053.
- 3281 Nieznanski, K. and Sobieszek, A.: Telokin (kinase-related protein) modulates the oligomeric state of smooth-muscle myosin light-chain kinase and its interaction with myosin filaments. *Biochem. J.*, 322 (1997) 65-71.
- 3282 Thompson, N.E. and Burgess, R.R.: Immunoaffinity purification of RNA polymerase II and transcription factors using polyol-responsive monoclonal antibodies. *Methods Enzymol.*, 274 (1996) 513-526; C.A., 126 (1997) 71891x.
- 3283 Vallejo, C.G., Seguido, A.M. and Fernández-Renart, M.: Protein kinase in mitochondria of the invertebrate *Artemia franciscana*. *Arch. Biochem. Biophys.*, 339 (1997) 9-16.
- 3284 Walz, K., Pardo, P.S. and Passeron, S.: Purification and characterization of protein kinase CK2 from *Candida albicans*: evidence for the presence of two distinct regulatory subunits β and β' . *Arch. Biochem. Biophys.*, 340 (1997) 347-354.
- 3285 Webb, B.L.J., Lindsay, M.A., Barnes, P.J. and Giembycz, M.A.: Protein kinase C isoenzymes in airway smooth muscle. *Biochem. J.*, 324 (1997) 165-175.
- 3286 Whiteford, C.C., Brearley, C.A. and Ulu, E.T.: Phosphatidylinositol 3,5-bisphosphate defines a novel PI 3-kinase pathway in resting mouse fibroblasts. *Biochem. J.*, 323 (1997) 597-601.

For additional information see C.A.:
126 (1997) 248081m.

See also 3109, 3145, 3270, 3343.

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

- 3287 Arends, S. and Schön, A.: Partial purification and characterization of nuclear ribonuclease P from wheat. *Eur. J. Biochem.*, 244 (1997) 635-645.
- 3288 Brearley, C.A., Parmar, P.N. and Hanke, D.E.: Metabolic evidence for PtDIIns(4,5)P₂-directed phospholipase C in permeabilized plant protoplasts. *Biochem. J.*, 324 (1997) 123-131.
- 3289 Carrière, F., Thirstrup, K., Hjorth, S., Ferrato, F., Nielsen, P.F., Withers-Martinez, C., Cambillau, C., Boel, E., Thim, L. and Verger, R.: Pancreatic lipase structure-function relationships by domain exchange. *Biochemistry*, 36 (1997) 239-248.
- 3290 Frobert, Y., Crémillon, C., Cousin, X., Rémy, M.-H., Chatel, J.-M., Bon, S., Bon, C. and Grassi, J.: Acetylcholinesterases from *Elapidae* snake venoms: biochemical, immunological and enzymatic characterization. *Biochim. Biophys. Acta*, 1339 (1997) 253-267.
- 3291 Hamada, J.S.: Isolation and identification of the multiple forms of soybean phytases. *J. Am. Oil Chem. Soc.*, 73 (1996) 1143-1151.
- 3292 Mateo, J., Rotllan, P., Martí, E., Gomez de Aranda, I., Solsona, C. and Miras-Portugal, M.T.: Diadenosine polyphosphate hydrolase from presynaptic plasma membranes of *Torpedo* electric organ. *Biochem. J.*, 323 (1997) 677-684.
- 3293 Sharma, R.K., Tan, Y. and Raju, R.V.S.: Calmodulin-dependent cyclic nucleotide phosphodiesterase from bovine eye: high calmodulin affinity isozyme immunologically related to the brain 60-kDa isozyme. *Arch. Biochem. Biophys.*, 339 (1997) 40-46.
- 3294 Sobieszek, A., Babiychuk, E.B., Ortner, B. and Borkowski, J.: Purification and characterization of a kinase-associated, myofibrillar smooth muscle myosin light chain phosphatase possessing a calmodulin-targeting subunit. *J. Biol. Chem.*, 272 (1997) 7027-7033.
- 3295 Soubeyrand, S., Khadir, A., Brindle, Y. and Manjunath, P.: Purification of a novel phospholipase A₂ from bovine seminal plasma. *J. Biol. Chem.*, 272 (1997) 222-227.
- 3296 Viryasov, M.B., Yusupova, R.A., Shatskaya, G.S. and Drygin, Yu.F.: Liquid chromatography purification and study of uridyl-nucleotide-(5'P→O)-tyrosine phosphodiesterase. *Chromatography*, 45 (1997) 133-137.
- 3297 Yasuda, T., Takeshita, H., Nakajima, T., Hosomi, O., Nakashima, Y. and Kishi, K.: Purification of deoxyribonuclease I using two-step chromatography. *Anal. Biochem.*, 245 (1997) 255-257.

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

- 3298 Bilkova, K., Kralova, B. and Benes, M.J.: A new method for the purification of yeast α-glucosidase using immunoaffinity chromatography. *Int. J. Bio-Chromatogr.*, 2 (1996) 101-108; C.A., 126 (1997) 71880t.
- 3299 Freire de Mesquita, J., Flosi Paschoalin, V.M. and Panek, A.D.: Modulation of trehalase activity in *Saccharomyces cerevisiae* by an intrinsic protein. *Biochim. Biophys. Acta*, 1334 (1997) 233-239.

3300 Ghosh, A.K., Naskar, A.K. and Sengupta, S.: Characterisation of a xylanolytic amylglucosidase of *Termitomyces clypeatus*. *Biochim. Biophys. Acta*, 1339 (1997) 289-296.

3301 Hoskins, L.C., Boulding, E.T. and Larson, G.: Purification and characterization of blood group A-degrading isoforms of α-N-acetylgalactosaminidase from *Ruminococcus torques* strain IX-70. *J. Biol. Chem.*, 272 (1997) 7932-7939.

3302 Martino, S., Emiliani, C., Tabilio, A., Falzetti, F., Stirling, J.L. and Orlacchio, A.: Distribution of active α- and β-subunits of β-N-acetylhexosaminidase as a function of leukaemic cell types. *Biochim. Biophys. Acta*, 1335 (1997) 5-15.

3303 Numata, Y., Morita, A., Kosugi, Y., Shibata, K., Takeuchi, N. and Uchida, K.: New sandwich ELISA for human urinary N-acetyl-β-D-glucosaminidase isoenzyme B as a useful clinical test. *Clin. Chem. (Washington)*, 43 (1997) 569-574.

3304 Van Peij, N.N.M.E., Brinkman, J., Vrsanska, M., Visser, J. and de Graaff, L.H.: β-Xylosidase activity, encoded by x1nD, is essential for complete hydrolysis of xylan by *Aspergillus niger* but not for induction by the xylanolytic enzyme spectrum. *Eur. J. Biochem.*, 245 (1997) 164-173.

See also 3122.

20f. Other hydrolases

3305 Feller, G., Zekhnini, Z., Lamotte-Brasseur, J. and Gerday, C.: Enzymes from cold-adapted microorganisms. The class C β-lactamase from the antarctic psychrophile *Psychrobacter immobilis* A5. *Eur. J. Biochem.*, 244 (1997) 186-191.

3306 Hiraishi, H., Ohmagari, T., Otsuka, Y., Yokoi, F. and Kumon, A.: Purification and characterization of hepatic inorganic pyrophosphatase hydrolyzing imidodiphosphate. *Arch. Biochem. Biophys.*, 341 (1997) 153-159.

3307 Karlsson, K., Eriksson, U., Andrén, P. and Nyberg, F.: Purification and characterization of substance P endopeptidase activities in the rat spinal cord. *Prepar. Biochem. Biotechnol.*, 27 (1997) 59-78.

3308 Kucerova, Z. and Turkova, J.: Isolation of human pepsin by use of membrane based bioadsorbent. *Int. Bio-Chromatogr.*, 2 (1997) 145-151; C.A., 126 (1997) 222113y.

3309 Kuznetsova, A.V., Bogacheva, A.M., Rudenskaya, G.N. and Stepanov, V.M.: Synthesis and application of sorbents for affinity chromatography of serine proteases. *Chromatographia*, 45 (1997) 44-48.

3310 Lacroix, M., Rossi, V., Gaboriaud, C., Chevallier, S., Jaquinod, M., Thielen, N.M., Gagnon, J. and Arlaud, G.J.: Structure and assembly of the catalytic region of human complement protease C1r: a three-dimensional model based on chemical cross-linking and homology modeling. *Biochemistry*, 36 (1997) 6270-6282.

3311 Lin, S.-R., Leu, L.-F., Chang, L.-S. and Chang, C.-C.: Amino acid sequence and chemical modification of a novel α-neurotoxin (Oh-5) from king cobra (*Ophiophagus hannah*) venom. *J. Biochem. (Tokyo)*, 121 (1997) 690-695.

3312 Narita, Y., Oda, S.-i., Moriyama, A., Takenaka, O. and Kageyama, T.: Pepsinogens and pepsins from house musk shrew, *Suncus murinus*: purification, characterization, determination of the amino-acid sequences of the activation segments, and analysis of proteolytic specificities. *J. Biochem. (Tokyo)*, 121 (1997) 1010-1017.

- 3313 Nishijyo, T., Kawada, A., Kanno, T., Shiraiwa, M. and Takahara, H.: Isolation and molecular cloning of epidermal- and hair follicle-specific peptidylarginine deiminase (type III) from rat. *J. Biochem. (Tokyo)*, 121 (1997) 868-875.
- 3314 Rangarajan, M., Smith, S.J.M., Sally, U. and Curtis, M.A.: Biochemical characterization of the arginine-specific proteases of *Porphyromonas gingivalis* W50 suggests a common precursor. *Biochem. J.*, 323 (1997) 701-709.
- 3315 Sankaran, B., Bhagat, S. and Senior, A.E.: Inhibition of P-glycoprotein ATPase activity by procedures involving trapping of nucleotide in catalytic sites. *Arch. Biochem. Biophys.*, 341 (1997) 160-169.
- 3316 Smith, T.S., Graham, M., Munn, E.A., Newton, S.E., Knox, D.P., Coadwell, W.J., McMichael-Phillips, D., Smith, H., Smith, W.D. and Oliver, J.J.: Cloning and characterization of a microsomal aminopeptidase from the intestine of the nematode *Haemonchus contortus*. *Biochim. Biophys. Acta*, 1338 (1997) 295-306.
- 3317 Terentyeva, E.A., Hayakawa, K., Tanae, A., Katsumata, N., Tanaka, T. and Hibi, I.: Urinary biotinidase and alanine excretion in patients with insulin-dependent diabetes mellitus. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 21-24.
- 3318 Wang, H., Li, T., Zou, H., Zhang, Y., Chao, J. and Chao, L.: The purification of human urinary kallikrein with ion-exchange radial flow membrane chromatography. *Biomed. Chromatogr.*, 10 (1996) 139-143; *C.A.*, 125 (1996) 52647k.

For additional information see *C.A.*:
126 (1997) 71871r.

See also 2712.

20g. Lyases

- 3319 Moffat, C.F., Long, W.F., McLean, M.W. and Williamson, F.B.: Heparinase-II-catalyzed degradation of N-propionylated heparin. *Arch. Biochem. Biophys.*, 338 (1997) 201-206.
- 3320 Ramjee, M.K., Genschel, U., Abell, C. and Smith, A.G.: *Escherichia coli* L-aspartate- α -decarboxylase: preprotein processing and observation of reaction intermediates by electrospray mass spectrometry. *Biochem. J.*, 323 (1997) 661-669.
- 3321 Sygusch, J. and Beaudry, D.: Subunit interaction in mammalian aldolases. *Biochem. J.*, 323 (1997) 671-676.
- 3322 Yamamoto, K., Kawakami, B., Kawamura, Y. and Kawai, K.: *Serratia liquefaciens* as a new host superior for overproduction and purification using the N-acetylneuraminate lyase gene of *Escherichia coli*. *Anal. Biochem.*, 246 (1997) 171-175.
- 3323 Yu, S., Christensen, T.M.I.E., Kragh, K.M., Bojsen, K. and Mørkussen, J.: Efficient purification, characterization and partial amino acid sequencing of two α -1,4-glucan lyases from fungi. *Biochim. Biophys. Acta*, 1339 (1997) 311-320.

See also 3337.

20h. Isomerases

- 3324 Smith, J.S., Thomson, A.J., Proudfoot, A.E.I. and Wells, T.N.C.: Identification of an Fe(III)-dihydroxyphenylalanine site in recombinant phosphomannose isomerase from *Candida albicans*. *Eur. J. Biochem.*, 244 (1997) 325-333.

20i. Ligases

- 3325 Glasemacher, J., Bock, A.-K., Schmid, R. and Schönheit, P.: Purification and properties of acetyl-CoA synthetase (ADP-forming), an archaeal enzyme of acetate formation and ATP synthesis, from the hyperthermophile *Pyrococcus furiosus*. *Eur. J. Biochem.*, 244 (1997) 561-567.
- 3326 Paley, E.L.: A mammalian tryptophanyl-tRNA synthetase is associated with protein kinase activity. *Eur. J. Biochem.*, 244 (1997) 780-788.

20j. Complex mixtures and incompletely identified enzymes

- 3327 D'Aniello, A., Denicé, M.J., de Vincentiis, M., di Fiore, M.M. and Scippa, S.: Hatching enzyme from the sea-squirt *Ciona intestinalis*: purification and properties. *Biochim. Biophys. Acta*, 1339 (1997) 101-112.
- 3328 Lerner, R.A., Cravatt, B.F. and Gilula, N.B.: Purification and characterization of *cis*-9,10-octadecenoamidase of rat and cloning of its partial cDNA. *PCT Int. Appl. WO 96 41,869 (Cl. C12N9/78)*, 27 Dec. 1996, US Appl. 489,535, 12 Jun. 1995; 100 pp.; *C.A.*, 126 (1997) 154435c.

For additional information see *C.A.*:
126 (1997) 154429d.

21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

21a. Purines, pyrimidines, nucleosides, nucleotides

- 3329 Ackland, S.P., Garg, M.B. and Dunstan, R.H.: Simultaneous determination of dihydrofluorouracil and 5-fluorouracil in plasma by high-performance liquid chromatography. *Anal. Biochem.*, 246 (1997) 79-85.
- 3330 Apffel, A., Chakel, J.A., Fischer, S., Lichtenwalter, K. and Hancock, W.S.: Analysis of oligonucleotides by HPLC - electrospray ionization mass spectrometry. *Anal. Chem.*, 69 (1997) 1320-1325.
- 3331 Chen, S.-H., Qian, M., Brennan, J.M. and Gallo, J.M.: Determination of antisense phosphorothioate oligonucleotides and catabolites in biological fluids and tissue extracts using anion-exchange high-performance liquid chromatography and capillary gel electrophoresis. *J. Chromatogr. B*, 692 (1997) 43-51.
- 3332 Chen, Y.-m., Pietrzyk, R.A. and Whitson, P.A.: Quantification of urinary uric acid in the presence of thymol and thimerosal by high-performance liquid chromatography. *J. Chromatogr. A*, 763 (1997) 187-192.
- 3333 Hashimoto, A., Nakamura, T., Kokusenya, Y., Nakai, H. and Sato, T.: Studies on the "signal" constituents for the evaluation of animal crude drugs. III. Nucleic acid components. *Chem. Pharm. Bull.*, 45 (1997) 487-491.
- 3334 Hendricks, S.P. and Mathews, C.K.: Regulation of T4 phage aerobic ribonucleotide reductase. Simultaneous assay of the four activities. *J. Biol. Chem.*, 272 (1997) 2861-2865.
- 3335 Koskinen, M., Rajaniemi, H. and Hemminki, K.: Analysis of tamoxifen-induced DNA adducts by 32 P-postlabelling assay using different chromatographic techniques. *J. Chromatogr. B*, 691 (1997) 155-160.

- 3336 Liebich, H.M., di Stefano, C., Wixforth, A. and Schmid, H.R.: Quantitation of urinary nucleosides by high-performance liquid chromatography. *J. Chromatogr. A.*, 763 (1997) 193-197.
- 3337 Pietta, P.G., Mauri, P.L., Gardana, C. and Benazzi, L.: Assay of soluble guanylate cyclase activity by isocratic high-performance liquid chromatography. *J. Chromatogr. B.*, 690 (1997) 343-347.
- 3338 Polo, L.M., McCarley, T.D. and Limbach, P.A.: Chemical sequencing of phosphorothioate oligonucleotides using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry. *Anal. Chem.*, 69 (1997) 1107-1112.
- 3339 Popovic, D.A. and Leskovac, V.: Simple and rapid chromatographic method for the separation of major classes of ribosomal ribonucleotides. *J. Chromatogr. A.*, 769 (1997) 225-230.
- 3340 Shibusawa, S., Itoh, S. and Yoshizawa, I.: Miscoding properties of model estrogen-DNA adducts in reactions catalyzed by mammalian and *Escherichia coli* DNA polymerases. *Biochemistry*, 36 (1997) 1755-1765.
- 3341 Shuker, D.E.G. and Margison, G.P.: Nitrosated glycine derivatives as a potential source of O⁶-methylguanine in DNA. *Cancer Res.*, 57 (1997) 366-369.
- 3342 Sillero, M.A.G., Madrid, O., Zaera, E. and Sillero, A.: 2',3'-Dideoxynucleoside triphosphates (ddNTP) and di-2',3'-dideoxynucleoside tetraphosphates (ddNp₄NN) behave differently to the corresponding NTP and Np₄N counterparts as substrates of firefly luciferase, dinucleoside tetraphosphatase and phosphodiesterases. *Biochim. Biophys. Acta*, 1334 (1997) 191-199.
- See also 2728, 2763, 3315, 3656, 3680, 3691, 3693, 3697, 3700, 3701, 3703, 3709, 3712, 3713, 3745.
- 21b. Nucleic acids, RNA**
- 3343 Roy, G., Roy, R. and Mitra, S.: Quantitative reverse transcriptase polymerase chain reaction for measuring the N-methylpurine-DNA glycosylate mRNA level in rodent cells. *Anal. Biochem.*, 246 (1997) 45-51.
- 3344 Tortoli, E., Piersimoni, C., Kirschner, P., Bartoloni, A., Burrini, C., Lacchini, C., Mantella, A., Muzzi, G., Tosi, C.P., et al.: Characterization of mycobacterial isolates phylogenetically related to, but different from, *Mycobacterium simiae*. *J. Clin. Microbiol.*, 35 (1997) 697-702; C.A., 126 (1997) 222437g.
- 21c. Nucleic acids, DNA**
- 3345 Kurien, B.T., Scofield, R.H. and Broyles, R.H.: Efficient 5' end labeling of dephosphorylated DNA. *Anal. Biochem.*, 245 (1997) 123-126.
- 3346 Leclercq, L., Laurent, C. and de Pauw, E.: High-performance liquid chromatography/electrospray mass spectrometry for the analysis of modified bases in DNA: 7-(2-hydroxyethyl)guanine, the major ethylene oxide - DNA adduct. *Anal. Chem.*, 69 (1997) 1952-1955.
- 3347 Liu, J.-Q., Nagata, S., Dairi, T., Misono, H., Shimizu, S. and Yamada, H.: The GLY1 gene of *Saccharomyces cerevisiae* encoded a low-specific L-threonine aldolase that catalyzes cleavage of L-allo-threonine and L-threonine to glycine. Expression of the gene in *Escherichia coli* and purification and characterization of the enzyme. *Eur. J. Biochem.*, 245 (1997) 289-293.
- 3348 Xu, L., Magiera, D., Abushamaa, H., Kugabalsooriar, S. and Giese, R.W.: Ketone electrophores and an olefin-release group electrophore-labeled DNA oligomer. Detection via electron capture. *J. Chromatogr. A.*, 764 (1997) 95-102.
- 3349 Zeisig, M. and Möller, L.: ³²P-Postlabeling high-performance liquid chromatographic improvements to characterize DNA adduct stereoisomers from benzo[a]pyrene and benzo[c]phenanthrene, and to separate DNA adducts from 7,12-dimethylbenz[a]anthracene. *J. Chromatogr. B.*, 691 (1997) 341-350.
- 21e. Structural studies on DNA and DNA mapping**
- 3350 Swerdlow, H., Jones, B.J. and Wittwer, C.T.: Fully automated DNA reaction and analysis in a fluidic capillary instrument. *Anal. Chem.*, 69 (1997) 848-855.
- For additional information see C.A.:
126 (1997) 16355a.
- See also 3328.
- 21f. Complex mixtures of nucleic acids and their fragments**
- 3351 Maidt, M.L. and Floyd, R.A.: Measurement of products of free radical attack on nucleic acids. In: Puchard, N.A. and Kelly, F.J. (Editors), *Free Radicals*, IRL Press, Oxford, 1996, pp. 201-209; C.A., 126 (1997) 128856w.
- 22. ALKALOIDS**
- 3352 Amiott, E. and Andrews, A.R.J.: Morphine determination by HPLC with improved chemiluminescence detection using a conventional silica based column. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 311-325.
- 3353 Atay, O. and Öztop, F.: Quantitative determination by using HPLC and GLC methods for cocaine HCl in synthetic binary mixtures with procaine HCl, lidocaine HCl and caffeine. *Anal. Lett.*, 30 (1997) 565-584.
- 3354 Biala, R.G., Tits, M., Wauters, J.N. and Angenot, L.: A new HPLC method for the assay of alkaloids in *Strychnos nux-vomica* and *Strychnos ignatii*. *Fitoterapia*, 67 (1996) 163-165; C.A., 125 (1996) 339170k.
- 3355 Coffman, B.L., Rios, G.R., King, C.D. and Tephly, T.R.: Human UGT2B7 catalyzes morphine glucuronidation. *Drug Metab. Disp.*, 25 (1997) 1-4.
- 3356 Crooks, P.A., Min, L. and Dwoskin, L.P.: Metabolites of nicotine in rat brain after peripheral nicotine administration. Conitine, norconitine, and norcotinine. *Drug Metab. Disp.*, 25 (1997) 47-54.

- 3357 Gomez-Serranillos, P., Carretero, E. and Villar, A.: (A study of phenanthrenic poppy straw alkaloids by reversed-phase HPLC). *Acta Technol. Legis Med.*, 6 (1995) 337-342; C.A., 126 (1997) 22923a.
- 3358 Kim, Y.-P., Takamatsu, S., Hayashi, M., Komiya, K. and Omura, S.: Pyridindolols K1 and K2, new alkaloids from *Streptomyces* sp. K93-0711. *J. Antibiot.*, 50 (1997) 189-193.
- 3359 Lau, O.-W. and Mok, C.-S.: High-performance liquid chromatographic determination of atropine and atropine-like alkaloids in pharmaceutical preparations with indirect conductometric detection. *J. Chromatogr. A*, 766 (1997) 270-276.
- 3360 Leone, M.G., Cometa, M.F., Palmery, M. and Saso, L.: HPLC determination of the major alkaloids extracted from *Hydrastis canadensis* L. *Phytother. Res.*, 10(Suppl. 1) (1996) S45-S46; C.A., 126 (1997) 148572d.
- 3361 Lindigkeit, R., Biller, A., Buch, M., Schiebel, H.-M., Boppré, M. and Hartmann, T.: The two faces of pyrrolizidine alkaloids: the role of the tertiary amine and its N-oxide in chemical defense of insects with acquired plant alkaloids. *Eur. J. Biochem.*, 245 (1997) 626-636.
- 3362 Ohta, H., Seto, Y. and Tsunoda, N.: Determination of *Aconitum* alkaloids in blood and urine samples. I. High-performance liquid chromatographic separation, solid-phase extraction and mass spectrometric confirmation. *J. Chromatogr. B*, 691 (1997) 351-356.
- 3363 Powell, M.W.: Analysis of anatoxin-a in aqueous samples. *Chromatographia*, 45 (1997) 25-28.
- 3364 Suh, D.-Y., Kim, Y.C., Kang, Y.-H., Han, Y.N. and Han, B.H.: Metabolic cleavage of frangufoline in rodents: *in vitro* and *in vivo* study. *J. Natural Prod.*, 60 (1997) 265-269.
- 3365 Tsai, T.H., Chen, C.F., Cheng, F.C., Kuo, K.W. and Tsai, T.R.: Analysis and pharmacokinetics of apomorphine in rat brain by microdialysis coupled with microbore HPLC electrochemical detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 481-490.

For additional information see C.A.:
126 (1997) 43668m, 282865e.

See also 2691, 2720, 3541, 3639.

23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN

23a. *Porphyrins and other pyrroles*

- 3366 Lin, M. and Huie, C.W.: Determination of porphyrins by high performance liquid chromatography with chemiluminescence detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 681-691.

See also 3031.

23b. *Bile pigments*

- 3367 Tsubota, H., Sato, E. and Katayama, Y.: (Determination of serum bilirubin by HPLC). *Rinsho Kensa*, 40 (1996) 1293-1298; C.A., 126 (1997) 168566h - a review with 13 refs.

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

- 3368 Brooks, S.A., Lachno, D.R. and Obermeyer, B.D.: Automated high-performance liquid chromatographic method for the a.alysis of two novel ergoline compounds in human plasma. *J. Chromatogr. B*, 691 (1997) 383-388.
- 3369 Ishida, J., Takada, M. and Yamaguchi, M.: 3,4-Dimethoxybenzylamine as a sensitive pre-column fluorescence derivatization reagent for the determination of serotonin in human platelet-poor plasma. *J. Chromatogr. B*, 692 (1997) 31-36.
- 3370 Itoh, M.T., Hattori, A. and Sumi, Y.: Hydroxyindole-O-methyl-transferase activity assay using high-performance liquid chromatography with fluorometric detection: determination of melatonin enzymatically formed from N-acetylserotonin and S-adenosyl-L-methionine. *J. Chromatogr. B*, 692 (1997) 217-221.
- 3371 Jaton, J.-C., Roulin, K., Rose, K., Sirotak, F.M., Lewenstein, A., Brunner, G., Fankhauser, C.P. and Burger, U.: The secalosides, novel tumor cell growth inhibitory glycosides from a pollen extract. *J. Natural Prod.*, 60 (1997) 356-360.
- 3372 Kobayashi, H., Morisaki, N., Tago, Y., Hashimoto, Y., Iwasaki, S., Kawachi, E., Nagata, R. and Shudo, K.: Structural identification of a major cytokinin in coconut milk as 14-O-{3-O-[β -D-galactopyranosyl-(1 \rightarrow 2)- α -D-galactopyranosyl-(1 \rightarrow 3)- α -L-arabinofuranosyl]-4-O-(α -L-arabinofuranosyl)- β -D-galactopyranosyl}-transzeatin riboside. *Chem. Pharm. Bull.*, 45 (1997) 260-264.
- 3373 Mazur, H., Kosakowska, A. and Pazdro, K.: Determination of indole-3-acetic acid in the Gulf of Gdansk by high-performance liquid chromatography of its 4-methyl-7-methoxycoumarin derivative. *J. Chromatogr. A*, 766 (1997) 261-266.
- 3374 Nirde, P. and Nagel, N.: Microanalysis of serotonin by high pressure liquid chromatography with electrochemical detection. *C.R. Acad. Sci., Ser. III*, 319 (1996) 249-255; C.A., 126 (1997) 246884b.
- 3375 Ramaiya, A. and Karnes, H.T.: Simultaneous measurement of serotonin and paroxetine in rat brain microdialysate by a single-pump column-switching technique. *J. Chromatogr. B*, 691 (1997) 119-129.

For additional information see C.A.:
126 (1997) 109003z.

See also 3006, 3619.

23d. *Pyridine derivatives*

See 2649, 2774, 2780.

23e. *Other N-heterocyclic compounds*

- 3376 Baranowska, L. and Swierczek, S.: Analysis of azines and diazines by HPLC on bonded alkyl stationary phases. Pyridine and quinoline in environmental samples. *Chromatographia*, 44 (1997) 253-256.
- 3377 Gutsche, B. and Herderich, M.: High-performance liquid chromatography-electrospray ionisation-tandem mass spectrometry for the analysis of 1,2,3,4-tetrahydro- β -carboline derivatives. *J. Chromatogr. A*, 767 (1997) 101-106.

- 3378 Hummert, C., Ritscher, M., Reinhardt, K. and Luckas, B.: Analysis of the characteristics PSE profiles of *Pyrodinium bahamense* and several stains of *Alexandrium* by HPLC based on ion-pair chromatographic separation, post column oxidation, and fluorescence detection. *Chromatographia*, 45 (1997) 312-316.
- 3379 Knize, M.G., Salmon, C.P., Hopmans, E.C. and Felton, J.S.: Analysis of foods for heterocyclic aromatic amine carcinogens by solid-phase extraction and high-performance liquid chromatography. *J. Chromatogr. A*, 763 (1997) 179-185.
- 3380 Moore, W.M., Schilling, J.B., Bavda, L.T., Domion-Turza, A. and Heard, B.M.: Formation of a vinyl alcohol derivative during sample preparation of 7-chloro-6,4'-difluoroquinolone for high performance liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 525-535.
- 3381 Rollag, J.G., Liu, T. and Hage, D.S.: Optimization of post-column chemiluminescent detection for low-molecular-mass conjugates of acridinium esters. *J. Chromatogr. A*, 765 (1997) 145-155.
- 3382 Seo, M.-K., Jeong, Y.-N., Kim, H.-J., Kim, I.-C. and Lee, Y.-H.: High-performance liquid chromatographic assay of a new fluoroquinolone, LB 20304a, in the plasma of rats and dogs. *Arch. Pharmacal Res.*, 19 (1996) 554-558; C.A., 126 (1997) 139428j.
- 3383 Stevenson, P.C., Kite, G.C. and Simmonds, M.S.J.: Pipelicolic acid methyl esters as artefacts from the ion-exchange chromatography of *Inga punctata* foliar extracts. *J. Chromatogr. A*, 766 (1997) 267-269.
- 3384 Taguchi, H., Yokoi, T. and Okada, Y.: Amino acids and peptides. XLVI. Introduction of carboxyl function into pyrazinone by using newly developed procedure for pyrazinone ring formation: observation of immediate decarboxylation. *Che. Pharm. Bull.*, 44 (1996) 2037-2041.
- 3385 Thomas, J., Adetchessi, O., Pehourcq, F., Dallet, P. and Jarry, C.: Determination of partition coefficients of 2-amino-2-oxazolines by RP-HPLC: application to hydrophobicity studies. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 671-679.
- 3386 Yu, Z., Hayton, W.L. and Chan, K.K.: Characterization of proflavine metabolites in rainbow trout. *Drug Metab. Disp.*, 25 (1997) 431-436.
- 3387 Zhou, C., Xiong, X., Wu, M. and Schwedt, G.: HPLC determination of collectors used for the flotation of heavy metal minerals. *Fresenius J. Anal. Chem.*, 357 (1997) 894-896.
- See also 2777, 2801, 3629, 3650, 3689, 3726.
24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)
- 3388 Elfakir, C., Xitra, S. and Dreux, M.: Comparison of a styrene-divinylbenzene copolymeric anion exchanger and a polymethacrylate copolymeric anion exchanger for glucosinolate separation. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 907-921.
- 3389 Feng, W. and Wu, Y.: (Determination of the metabolite of acrylonitrile, S-cyanoethyl mercapturic acid by high performance liquid chromatography). *Weisheng Yanjiu*, 25 (1996) 206-209; C.A., 126 (1997) 196153q.
- 3390 Haas, R. and Schmidt, T.C.: (Analysis of conversion products of sulfur lost (S-LOST)). *Umweltwiss. Schadst.-Forsch.*, 8 (1996) 241-242; C.A., 126 (1997) 140623a.
- 3391 Howard, A.G. and Russell, D.W.: An alternative approach to the measurement of dimethylsulphoniopropionate (DMSP) and other precursors of dimethyl sulphide. In: Kiene, R.P. (Editor), *Biol. Environ. Chem. DMSP Relat. Sulphonium Compd.*, 1st 1995, Plenum, London, 1996, pp. 65-75; C.A., 126 (1997) 128844r.
- 3392 Majcherczyk, A. and Hütermann, A.: Size-exclusion chromatography of lignin as ion-pair complex. *J. Chromatogr. A*, 764 (1997) 183-191.
- 3393 Rolfs, J. and Andersson, J.T.: (Selective detection of aromatic sulfur heterocycles). *GIT Labor-Fachz.*, 41 (1997) 16-21; C.A., 126 (1997) 232851b.
- 3394 Znybko, C.L., Fukuda, E.K. and Rosen, R.T.: Determination of glucosinolates in domestic and wild mustard by high-performance liquid chromatography with confirmation by electrospray mass spectrometry and photodiode-array detection. *J. Chromatogr. A*, 767 (1997) 43-52.
- See also 2686, 2897, 3017, 3130, 3395, 3707, 3717.
25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)
- 3395 Gao, R.Y., Yang, G.S., Yang, H.Z., Chen, Z.Y. and Wang, Q.S.: Enantioseparation of fourteen O-ethyl O-phenyl N-isopropyl phosphoroamidothioates by high-performance liquid chromatography on a chiral stationary phase. *J. Chromatogr. A*, 763 (1997) 125-128.
- 3396 Kalchenko, O.I., Lipkowski, J., Nowakowski, R., Kalchenko, V.I., Visotsky, M.A. and Markovsky, L.N.: Studies on the behavior of some phosphorus-contained calix/arennes in reversed-phase high-performance liquid chromatography. *J. Chromatogr. Sci.*, 35 (1997) 49-52.
- 3397 Li, J., Larocca, J.N., Rodriguez-Gabin, A.G. and Charron, M.J.: Expression and signal transduction of the glucagon receptor in β T3 cells. *Biochim. Biophys. Acta*, 1356 (1997) 229-236.
- 3398 Lynch, B.J., Muqit, M.M.K., Walker, T.R. and Chilvers, E.R.: $[^3\text{H}]$ inositol polyphosphate metabolism in muscarinic cholinceptor-stimulated airways smooth muscle: accumulation of $[^3\text{H}]$ inositol 4,5 bisphosphate via a lithium-sensitive inositol polyphosphate 1-phosphatase. *J. Pharmacol. Exp. Ther.*, 280 (1997) 974-982.
- 3399 Ridlen, J.S., Klopf, G.J. and Nieman, T.A.: Determination of glyphosate and related compounds using HPLC with tris(2,2'-bipyridyl)ruthenium(II) electrogenerated chemiluminescence detection. *Anal. Chim. Acta*, 341 (1997) 195-204.
- 3400 Windahl, K.L. and Cardwell, T.J.: Lability of zinc dialkylthiophosphates under reversed-phase high-performance liquid chromatography conditions. *J. Chromatogr. A*, 765 (1997) 181-186.
- See also 2763, 2942, 2944, 2951, 3030, 3057, 3068, 3095, 3495.

26. ORGANOMETALLIC AND RELATED COMPOUNDS

26a. *Organometallic compounds*

- 3401 Bermejo-Barrera, P., Soto-Ferreiro, R.M., Dominguez-Gonzalez, R. and Bermejo-Barrera, A.: Determination of tributyltin, dibutyltin and total tin in the Galicia estuaries by HPLC-ETAAS. *Ann. Chim. (Rome)*, 86 (1996) 495-508; C.A., 126 (1997) 152115z.
- 3402 Chau, Y.K., Yang, F. and Brown, M.: Evaluation of derivatization techniques for the analysis of organotin compounds in biological tissue. *Anal. Chim. Acta*, 338 (1997) 51-55.
- 3403 Eiden, R., Falter, R., Augustin-Castro, B. and Schöler, H.F.: Distillation, on-line RPC18 preconcentration and HPLC-UV-PCO-CVAAS as a new combination for the determination of methylmercury in sediments and fish tissue. *Fresenius J. Anal. Chem.*, 357 (1997) 439-441.
- 3404 Le, X.C. and Ma, M.: Speciation of arsenic compounds by using ion-pair chromatography with atomic spectrometry and mass spectrometry detection. *J. Chromatogr. A*, 764 (1997) 55-64.
- 3405 Palacios, M.A., Gómez, M., Cámaras, C. and López, M.A.: Stability studies of arsenate, monomethylarsonate, dimethylarsinate, arsenobetaine and arsenocholine in deionized water, urine and clean-up dry residue from urine samples and determination by liquid chromatography with microwave-assisted oxidation-hydride generation atomic absorption spectrometric detection. *Anal. Chim. Acta*, 340 (1997) 209-220.
- 3406 Pergantis, S.A., Cullen, W.R., Chow, D.T. and Eigendorf, G.K.: Liquid chromatography and mass spectrometry for the speciation of arsenic animal feed additives. *J. Chromatogr. A*, 764 (1997) 211-222.
- 3407 Suzuki, K.T. and Itoh, M.: Metabolism of selenite labelled with enriched stable isotope in the bloodstream. *J. Chromatogr. B*, 692 (1997) 15-22.

For additional information see C.A.:
126 (1997) 112515y.

See also 2882, 3794.

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

- 3408 Chen, Q.-C., Mou, S.-F., Hou, X.-P., Ni, Z.-M. and Zhang, S.-G.: Separation and determination of organogermanium compounds by ion chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 943-956.

26c. *Coordination compounds*

- 3409 Fagan, P.A. and Haddad, P.R.: Reversed-phase ion-interaction chromatography of Cu(I)-cyanide complexes. *J. Chromatogr. A*, 770 (1997) 165-174.
- 3410 Huang, Q., Paull, B. and Haddad, P.R.: Optimisation of selectivity in the separation of metallo-cyanide complexes by ion-interaction liquid chromatography. *J. Chromatogr. A*, 770 (1997) 3-11.

See also 3400, 3788.

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

- 3411 Bucco, R.A., Zheng, W.L., Davis, J.T., Sierra-Rivera, E., Osteen, K.G., Chaudhary, A.K. and Ong, D.E.: Cellular retinoic acid-binding protein(II) presence in rat uterine epithelial cells correlates with their synthesis of retinoic acid. *Biochemistry*, 36 (1997) 4009-4014.
- 3412 Bueno, M.P.: Collaborative study: determination of retinol and carotene by high-performance liquid chromatography. *Food Chem.*, 59 (1997) 165-170; C.A., 126 (1997) 276481k.
- 3413 Chou, R., Bürgin, H., Schmitt, G. and Eggers, H.: Absorption of tretinoin in rats and rabbits following oral and dermal application. *Arzneim.-Forsch.*, 47 (1997) 401-405.
- 3414 Cooper, J.D.H., Thadwal, R. and Cooper, M.J.: Determination of vitamin E in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 690 (1997) 355-358.
- 3415 Emenhiser, C., Simunovic, N., Sander, L.C. and Schwartz, S.J.: Separation of geometrical carotenoid isomers in biological extracts using a polymeric C₃₀ column in reversed-phase liquid chromatography. *J. Agric. Food Chem.*, 44 (1996) 3887-3893; C.A., 126 (1997) 17930w.
- 3416 Garcia, A., de Lucas, A., Rincón, J., Alvarez, A., Gracia, I. and Garcia, M.A.: Supercritical carbon dioxide extraction of fatty material from rice bran. *J. Am. Oil Chem. Soc.*, 73 (1996) 1127-1131.
- 3417 Gundersen, T.E., Lundanes, E. and Blomhoff, R.: Quantitative high-performance liquid chromatographic determination of retinoids in human serum using on-line solid-phase extraction and column switching. Determination of 9-cis-retinoic acid, 13-cis-retinoic acid, all-trans-retinoic acid, 4-oxo-all-trans-retinoic acid and 4-oxo-13-cis-retinoic acid. *J. Chromatogr. B*, 691 (1997) 43-58.
- 3418 Hibiya, M., Teradaira, R., Shimpo, K., Matsui, T., Sugimoto, T. and Nagatsu, T.: Interference of a methotrexate derivative with urinary oncopterin [N²-(3-aminopropyl)biotin] measurement by high-performance liquid chromatography with fluorimetric detection. *J. Chromatogr. B*, 691 (1997) 223-227.
- 3419 Huang, D.-Y. and Ichikawa, Y.: Purification and characterization of a novel cytosolic NAD(P)H-dependent retinol oxidoreductase from rabbit liver. *Biochim. Biophys. Acta*, 1338 (1997) 47-59.
- 3420 Indyk, H.E. and Woppard, D.C.: Vitamin K in milk and infant formulas: determination and distribution of phylloquinone and menaquinone-4. *Analyst (Cambridge)*, 122 (1997) 465-469.
- 3421 Khachik, F., Spangler, C.J., Smith, J.C., Jr., Canfield, L.M., Steck, A. and Pfander, H.: Identification, quantification and relative concentrations of carotenoids and their metabolites in human milk and serum. *Anal. Chem.*, 69 (1997) 1873-1881.
- 3422 Little, J.M., Lehman, P.A., Nowell, S., Samokyszn, V. and Radominska, A.: Glucuronidation of all-trans-retinoic acid and 5,6-epoxy-all-trans-retinoic acid. Activation of rat liver microsomal UDP-glucuronosyltransferase activity by alamethicin. *Drug Metab. Disp.*, 25 (1997) 5-11.
- 3423 Liu, Z., Li, T., Li, J. and Wang, E.: Detection of menadione sodium bisulfite (vitamin K₃) by reversed-phase high performance liquid chromatography with series dual-electrode amperometric detector. *Anal. Chim. Acta*, 338 (1997) 57-62.
- 3424 Margolis, S.A. and Schapira, R.M.: Liquid chromatographic measurement of L-ascorbic acid and D-ascorbic acid in biological samples. *J. Chromatogr. B*, 690 (1997) 25-33.

- 3425 Mizojiri, K., Okabe, H., Sugeno, K., Misaki, A., Ito, M., Komianami, G., Esumi, Y., Takaichi, M., Herado, T., Seki, H. and Inaba, A.: Studies on the metabolism and disposition of the new retinoid 4-[5,6,7,8-tetrahydro-5,8,8-tetramethyl-2-naphthyl]carbamoyl]benzoic acid. 4th Communication: Absorption, metabolism, excretion and plasma protein binding in various animals and man. *Arzneim.-Forsch.*, 47 (1997) 259-269.
- 3426 Schlotterbeck, G., Tseng, L.-H., Händel, H., Braumann, U. and Albert, K.: Direct on-line coupling of capillary HPLC with ^1H NMR spectroscopy for the structural determination of retinyl acetate dimers: 2D NMR spectroscopy in the nanoliter scale. *Anal. Chem.*, 69 (1997) 1421-1425.
- 3427 Schneiderman, M.A., Sharma, A.K. and Locke, D.C.: Determination of vitamin A palmitate in cereal products using supercritical fluid extraction and liquid chromatography with electrochemical detection. *J. Chromatogr. A*, 765 (1997) 215-220.
- 3428 Shimada, K., Mitamura, K. and Nakatani, I.: Characterization of monoglucuronides of vitamin D₂ and 25-hydroxyvitamin D₂ in rat bile using high-performance liquid chromatography-atmospheric pressure chemical ionization mass spectrometry. *J. Chromatogr. B*, 690 (1997) 348-354.
- 3429 Shimizu, M., Wang, X. and Yamada, S.: Fluorimetric assay of 1 α ,25-dihydroxyvitamin D₃ in human plasma. *J. Chromatogr. B*, 690 (1997) 15-23.
- 3430 Shin, T.-W., Lin, T.-H., Shealy, Y.-F. and Hill, D.L.: Nonenzymatic isomerization of *cis*-retinoic acid catalyzed by sulfhydryl compounds. *Drug Metab. Disp.*, 25 (1997) 27-32.
- 3431 Sierra, I. and Vidal-Valverde, C.: A simple method to determine free and glycosylated vitamin B₆ in legumes. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 957-969.
- 3432 Takeuchi, A., Ishida, Y., Sekimoto, H., Masuda, S., Okano, T., Nishiyama, S., Matsuda, I. and Kobayashi, T.: Simplified method for the determination of 25-hydroxy and 1 α ,25-dihydroxy metabolites of vitamins D₂ and D₃ in human plasma. Application to nutritional studies. *J. Chromatogr. B*, 691 (1997) 313-319.
- 3433 Xie, F., Kissinger, P.T. and Niwa, O.: Determination of tetrahydrobiopterin and its analogues in biological samples by microbore liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 825-837.
- For additional information see C.A.:
126 (1997) 203796g.
- See also 2915, 3480, 3537.
28. ANTIBIOTICS
- 3434 Adams, E., Dalle, J., de Bie, E., de Smedt, I., Roets, E. and Hoogmartens, J.: Analysis of kanamycin sulfate by liquid chromatography with pulsed electrochemical detection. *J. Chromatogr. A*, 766 (1997) 133-139.
- 3435 Adams, E., Schepers, R., Gathu, L.W., Kibaya, R., Roets, E. and Hoogmartens, J.: Liquid chromatographic analysis of a formulation containing polymyxin, gramicidin and neomycin. *J. Pharm. Biomed. Anal.*, 15 (1996) 505-511.
- 3436 Al-Saidan, S.M., Abdel-Hamid, M.E. and Abdel-Aziz, A.: Determination of chloramphenicol in pharmaceutical formulation using spectrophotometric full spectrum quantitation (FSQ) and high performance liquid chromatography (HPLC). *Alexandria J. Pharm. Sci.*, 10 (1996) 173-178; *C.A.*, 126 (1997) 109001x.
- 3437 Ang, C.Y.W. and Luo, W.: Rapid determination of ampicillin in bovine milk by liquid chromatography with fluorescence detection. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 25-30.
- 3438 Argekar, A.P. and Kunjir, S.S.: Simultaneous determination of sulbactam and ampicillin sodium in pharmaceutical preparation by high performance liquid chromatography-reverse phase (HPLC-RP). *Indian Drugs*, 33 (1996) 352-354; *C.A.*, 126 (1997) 79989f.
- 3439 Argekar, A.P., Raj, S.V. and Kapadia, S.U.: Simultaneous determination of cephalexin and carbocisteine from capsules by reverse phase high performance liquid chromatography (RP-HPLC). *Anal. Lett.*, 30 (1997) 821-831.
- 3440 Blanchflower, W.J., McCracken, R.J., Haggan, A.S. and Kennedy, D.G.: Confirmatory assay for the determination of tetracycline, oxytetracycline, chlortetracycline and its isomers in muscle and kidney using liquid chromatography-mass spectrometry. *J. Chromatogr. B*, 692 (1997) 351-360.
- 3441 Campbell, N.F., Hubbard, L.E., Mazenko, R.S. and Medina, M.B.: Development of a chromatographic method for the isolation and detection of hygromycin B in biological fluids. *J. Chromatogr. B*, 692 (1997) 367-374.
- 3442 Cheng, Y.-F., Phillips, D.J. and Neue, U.: Simple and rugged SPE method for the determination of tetracycline antibiotics in serum by HPLC using a volatile mobile phase. *Chromatographia*, 44 (1997) 187-190.
- 3443 Croubels, S.M., Vanoosthuyse, E.I. and van Peteghem, C.H.: Use of metal chelate affinity chromatography and membrane-based ion-exchange as clean-up procedure for trace residue analysis of tetracyclines in animal tissues and egg. *J. Chromatogr. B*, 690 (1997) 173-179.
- 3444 Dumitrescu, G., Lazar, L., Suciu, A. and Farca, A.: (Identification and assay of preservatives (parabens) from parenteral products with gentamicin using an HPLC method). *Farmacia (Bucharest)*, 44 (1996) 77-82; *C.A.*, 126 (1997) 176982f.
- 3445 Elkhaili, H., Linger, L., Monteil, H. and Jehl, F.: High-performance liquid chromatographic assay for ceferime in serum. *J. Chromatogr. B*, 690 (1997) 181-188.
- 3446 Fujita, K., Ito, K., Araki, E., Tanno, K., Murayama, M. and Saito, Y.: (Analytical method for residual oxytetracycline in livestock and marine products). *Shokuhin Eiseigaku Zasshi*, 38 (1997) 12-15; *C.A.*, 126 (1997) 250318n.
- 3447 Garcia-Capdevila, L., López-Calull, C., Arroyo, C., Moral, M.A., Mangues, M.A. and Bonal, J.: Determination of imipenem in plasma by high-performance liquid chromatography for pharmacokinetic studies in patients. *J. Chromatogr. B*, 692 (1997) 127-132.
- 3448 Graham, A.E., Speicher, E. and Williamson, B.: Analysis of gentamicin sulfate and a study of its degradation in dextrose solution. *J. Pharm. Biomed. Anal.*, 15 (1996) 537-543.
- 3449 Hanada, E., Ohtani, H., Kotaki, H., Sawada, Y. and Iga, T.: Determination of erythromycin concentrations in rat plasma and liver by high-performance liquid chromatography with amperometric detection. *J. Chromatogr. B*, 692 (1997) 478-482.

- 3450 Horan, A.C., Shearer, M.C., Hedge, V., Beyazova, M.L., Brodsky, B.C., King, A., Berrie, R., Cardaci, K. and Nimeck, M.: A family of novel macrocyclic lactones, the saccharocarcins produced by *Saccharothrix aerocolonigenes* subsp. *antibiotica*. *J. Antibiot.*, 50 (1997) 119-125.
- 3451 Ivanova, V.: New macrolactone of the desertomycin family from *Streptomyces spectabilis*. *Prepar. Biochem. Biotechnol.*, 27 (1997) 19-38.
- 3452 Kajimura, Y. and Kaneda, M.: Fusaricidins B, C and D, new depsipeptide antibiotics produced by *Bacillus polymyxa* KT-8: isolation, structure elucidation and biological activity. *J. Antibiot.*, 50 (1997) 220-228.
- 3453 Kijak, P.J., Jackson, J. and Shaikh, B.: Determination of gentamicin in bovine milk using liquid chromatography with post-column derivatization and fluorescence detection. *J. Chromatogr. B*, 691 (1997) 377-382.
- 3454 Koshy, K.T. and Cazers, A.R.: Controlled hydrolysis of ceftiofur sodium, a broad-spectrum cephalosporin; isolation and identification of hydrolysis products. *J. Pharm. Sci.*, 86 (1997) 389-395.
- 3455 Kurihara, K.-i., Kikuchi, N. and Ajito, K.: Cladinose analogues of sixteen-membered macrolide antibiotics III. Efficient synthesis of 4-O-alkyl-L-cladinose analogues: improved antibacterial activities compatible with pharmacokinetics. *J. Antibiot.*, 50 (1997) 32-44.
- 3456 Lee, E.D., Lee, S.D., Kim, W.B., Yang, J., Kim, S.H. and Lee, M.G.: Determination of a new carbapenem antibiotic, DA-1131, in rat plasma, urine, and bile by column-switching high-performance liquid chromatography. *Res. Commun. Mol. Pathol. Pharmacol.*, 94 (1996) 171-180; *C.A.*, 126 (1997) 139412z.
- 3457 Liu, L., Roets, E. and Hoogmartens, J.: Liquid chromatography of spiramycin on poly(styrene-divinylbenzene). *J. Chromatogr. A*, 764 (1997) 43-53.
- 3458 Moats, W.A.: Advances in determination of antibiotic residues. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 1-4.
- 3459 Morimura, T., Nobuhara, Y. and Matsukura, H.: Photodegradation products of a new antibacterial fluoroquinolone derivative, orbifloxacin, in aqueous solution. *Chem. Pharm. Bull.*, 45 (1997) 373-377.
- 3460 Nasr, M.M. and Tschappler, T.J.: High performance liquid chromatographic analysis of erythromycin and related impurities in pharmaceutical formulations. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 553-565.
- 3461 Paroni, R., Arcelloni, C., de Vecchi, E., Fermo, I., Mauri, D. and Colombo, R.: Plasma mitomycin C concentrations determined by HPLC coupled to solid-phase extraction. *Clin. Chem. (Washington)*, 43 (1997) 615-618.
- 3462 Siemann, M., Andersson, L.I. and Mosbach, K.: Separation and detection of macrolide antibiotics by HPLC using macrolide-imprinted synthetic polymers as stationary phases. *J. Antibiot.*, 50 (1997) 89-91.
- 3463 Srinivas, N.R., Papp, E.A., Shah, V.R. and Shyu, W.C.: A simple HPLC assay, with ultraviolet detection, for determination of a monobactam antibiotic. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1091-1101.
- 3464 Tanaka, Y., Yoshida, H., Enomoto, Y., Shiomi, K., Shinose, M., Takahashi, Y., Liu, J.-R. and Omura, S.: Nalolactomycins C and D, new 40-membered macrocyclics active against *Botryotis*. *J. Antibiot.*, 50 (1997) 194-200.
- 3465 Tay, L.-F., Khor, E. and Lee, K.-B.: High-performance liquid chromatography quantitation of gentamicin: optimization for routine analysis. *Bull. Singapore Natl. Inst. Chem.*, 23 (1995) 47-53; *C.A.*, 125 (1996) 96292v.
- 3466 Thoma, K. and Kübler, N.: Untersuchung fder Photostabilität von Antimykotika. 2. Mitteilung: Photostabilität von Polyanionen-antibiotika. *Pharmazie*, 52 (1997) 294-302.
- 3467 Ueda, S., Cook, M. and Alak, A.M.: *In-vitro* metabolic studies of tacrolimus using precision-cut rat and human liver slices. *J. Pharm. Biomed. Anal.*, 15 (1996) 349-357.
- 3468 Valvi, L., Alimonti, S., Alimenti, R., de Sena, C., Signoretti, E.C., Draisci, R. and Giannetti, L.: Investigation of a new amoxicillin sodium impurity unstable in solution. *J. Pharm. Biomed. Anal.*, 15 (1996) 487-493.
- 3469 Von Klementz, D. and Pestemer, W.: (Extraction, clean-up and HPLC determination of streptomycin in apple, honey and nectar. Preliminary data from field trials). *Nachrichtenbl. Dtsch. Pflanzenschutzdienstes (Braunschweig)*, 48 (1996) 280-284; *C.A.*, 126 (1997) 250314h.
- 3470 Webster, G.K., Luigs, E.S., Hearne, L.A., Pomeroy, M., Panozzo, L.A., Bell, J. and Mustapha, M.A.: Investigation of assay interference with microbiological determinations of chlortetracycline in feed grade and premix samples. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 298-301.
- 3471 Yongxin, Z., Roets, E., Bruzzii, A., Smelt, A.J.W., van der Vlies, C., Bettó, P., Moreno, M.L., Porqueras, E., Wendebourg, H.H., Sinvuovo, K. et al.: Interlaboratory study of the analysis of amoxicillin by liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3305-3314.
- 3472 Yoshioka, E., Morino, M., Tanaka, H. and Shinkai, H.: Manual and automatic extraction and high-performance liquid chromatographic determination of a spicamycin derivative, KRN5500, in rat plasma. *J. Chromatogr. B*, 691 (1997) 371-375.
- 3473 Yuan, Z., Russlie, H.Q. and Canafax, D.M.: High-performance liquid chromatographic analysis of amoxicillin in human and chinchilla plasma, middle ear fluid and whole blood. *J. Chromatogr. B*, 692 (1997) 361-366.

For additional information see *C.A.*:

126 (1997) 17960f, 44510r, 73882u, 109002y, 152348c, 229727k.

See also 2622, 3660, 3724.

29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

See 2817.

29a. General techniques

- 3474 Cappiello, A., Famiglini, G. and Berloni, A.: Large volume injection of acidic pesticides by reversed-phase micro high-performance liquid chromatography. *J. Chromatogr. A*, 768 (1997) 215-222.
- 3475 Di Muccio, A., Pelosi, P., Barbini, D.A., Generali, T., Ausili, A. and Vergori, F.: Selective extraction of pyrethroid pesticide residues from milk by solid-matrix dispersion. *J. Chromatogr. A*, 765 (1997) 51-60.

- 3476 Johnson, P.D., Rimmer, D.A. and Brown, R.H.: Adaptation and application of a multi-residue method for the determination of a range of pesticides, including phenoxy acid herbicides in vegetation, based on high-resolution gel permeation chromatographic clean-up and gas chromatographic analysis with mass-selective detection. *J. Chromatogr. A*, 765 (1997) 3-11.
- 3477 Katmeh, M.F., Godfrey, A.J.M., Stevenson, D. and Aherne, G.W.: Enzyme immunoaffinity chromatography - A rapid semi-quantitative immunoassay technique for screening the presence of isoproturon in water samples. *Analyst (Cambridge)*, 122 (1997) 481-486.
- 3478 Kim, H.S., Lee, S.K. and Lee, D.W.: Study of retention behavior of pesticides for reversed phase liquid chromatographic separation by quantitative structure-retention relationships. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 871-885.
- 3479 Lehota, S.J. and Valverde-García, A.: Evaluation of different solid-phase traps for automated collection and clean-up in the analysis of multiple pesticides in fruits and vegetables after supercritical fluid extraction. *J. Chromatogr. A*, 765 (1997) 69-84.
- 3480 Nakamura, Y., Tsumura, Y., Tonogai, Y. and Shibata, T.: (Elution patterns of pesticides, lipids, chlorophyll, and carotene in gel permeation chromatography (GPC) using 2 kinds of columns). *Shokuhin Eiseigaku Zasshi*, 37 (1996) 329-336; C.A., 126 (1997) 17961g.
- 3481 Sherma, J.: Current status of pesticide residue analysis. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 283-287.

See also 3767.

29c. Phosphorus insecticides

- 3482 Uygun, U.: Determination of organophosphorus pesticide residues in carrot using gel permeation chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 771-777.

29d. Carbamates

For additional information see C.A.:
126 (1997) 100617v.

29e. Herbicides

- 3483 Berger, B.: Improved chromatographic method for the simultaneous determination of ten phenylurea herbicides and some of their degradation products in soil. *J. Chromatogr. A*, 769 (1997) 338-342.
- 3484 Bossi, R., Spliid, N.H. and Streibig, J.C.: Analysis of sulphonylurea herbicides at ppt levels by liquid chromatography-mass spectrometry. In: Del Re, A.A.M. (Editor), *Environ Fate Xenobiotic, Proc. Symp. Pestic. Chem.*, 10th, Goliardica Pavese, Pavia, 1996, pp. 483-490; C.A., 126 (1997) 153944f.
- 3485 Conte, E., Milani, R., Morali, G. and Abbalie, F.: Comparison between accelerated solvent extraction and traditional extraction methods for the analysis of the herbicide diflufenican in soil. *J. Chromatogr. A*, 765 (1997) 121-125.
- 3486 García Sánchez, F., Navas Díaz, A., García Pareja, A. and Bracho, V.: Liquid chromatographic determination of asulam and amitrole with pre-column derivatization. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 603-615.

- 3487 Hidalgo, C., Sancho, J.V. and Hernández, F.: Trace determination of triazine herbicides by means of coupled-column liquid chromatography and large volume injection. *Anal. Chim. Acta*, 338 (1997) 223-229.
- 3488 Ibanez, M., Picó, Y. and Manaes, J.: On-line determination of bipyridilyium herbicides in water by HPLC. *Chromatographia*, 45 (1997) 402-407.
- 3489 Krynetsky, A.J.: Determination of sulfonylurea herbicides in water by capillary electrophoresis and by liquid chromatography/mass spectrometry. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 392-400.
- 3490 Martin-Esteban, A., Kwaskowski, P.P. and Stevenson, D.: Immunoaffinity-based extraction of phenylurea herbicides using mixed antibodies against isoproturon and chlortoluron. *Chromatographia*, 45 (1997) 364-368.
- 3491 Mougin, C., Dubroca, J. and Barriuso, E.: On-line supercritical fluid extraction and high performance liquid chromatography for determination of triazine compounds in soil. *J. High Resolut. Chromatogr.*, 19 (1996) 700-702.
- 3492 Nakashita, H., Watanabe, K., Hara, O., Hidaka, T. and Seto, H.: Studies on the biosynthesis of bialophos. Biochemical mechanism of C-P bond formation: discovery of phosphonopyruvate decarboxylase which catalyzes the formation of phosphonoacetaldehyde from phosphonopyruvate. *J. Antibiot.*, 50 (1997) 212-219.
- 3493 Ruiz de Erenchun, N., Goicolea, M.A., Gomez de Balugera, Z., Portela, M.J. and Barrio, R.J.: Determination of herbicides by reductive amperometric detection in liquid chromatography. *J. Chromatogr. A*, 763 (1997) 227-235.
- 3494 Stout, S.J., DaCunha, A.R. and Safarpour, M.M.: Simplified determination of imidazoline herbicides in soil at parts-per-billion level by liquid chromatography/electrospray ionization tandem mass spectrometry. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 426-432.
- 3495 Sundaram, K.M.S. and Curry, J.: A comparison of UV and fluorescence detectors in the liquid chromatographic analysis of glyphosate deposits after post-column derivatization. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 511-524.
- 3496 Xu, W.: Determination of herbicides atrazine and butachlor in soil by high performance liquid chromatography. *J. Environ. Sci. (China)*, 8 (1996) 504-506; C.A., 126 (1997) 71508c.

For additional information see C.A.:
126 (1997) 100619x.

See also 2655, 2716, 2761, 3474, 3476, 3498.

29f. Fungicides

- 3497 Garrido, J., de Alba, M., Jimenez, I., Casado, E. and Folgueiras, M.L.: Chromatographic analysis of imazalil and carbendazim in fruits. Method validation and residue monitoring program 1995. *J. Chromatogr. A*, 765 (1997) 91-97.
- 3498 Parrilla, P., Martinez Galera, M., Garrido Frenich, A. and Martinez Vidal, J.L.: Determination of folpet, procymidone, and triazophos in groundwater by HPLC using partial least squares and principal component regression. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 425-442.

29g. Other types of pesticides and various agrochemicals

- 3499 Hormazábal, V. and Yndestad, M.: Determination of diflubenzuron and teflubenzuron in fish feed by high performance liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1115-1121.
- 3500 Modeste, F., Caude, M. and Devaux, P.: On-line coupling of liquid chromatography and capillary gas chromatography for the determination of a trace pyrethroid insecticide in fruit extracts. *J. High Resolut. Chromatogr.*, 19 (1996) 535-542.
- 3501 Skorczynski, S.S.: Determination of dislodgeable residues of N-4-chlorobenzoyl-N'-benzoyl-N'-tert.-butylhydrazine (RH-0345) from grass by liquid chromatography. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 418-425.
- 3502 Wang, I.-H., Moorman, R. and Burleson, J.: Simultaneous determination of dipropyl pyridine-2,5-dicarboxylate, N-octyl bicycloheptene dicarboximide, piperonyl butoxide, and pyrethrins in pet shampoo by reversed phase high performance liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3293-3304.
- 3503 Wang, I.-H., Subramanian, V., Moorman, R., Burleson, J. and Ko, J.: Direct determination of pyrethrins in pyrethrum extracts by reversed-phase high-performance liquid chromatography with diode-array detection. *J. Chromatogr. A*, 766 (1997) 277-281.

See also 3669.

30. SYNTHETIC AND NATURAL DYES**30a. Synthetic dyes**

- 3504 Carvalho, P.R.N. and Collins, C.H.: HPLC determination of carminic acid in foodstuffs and beverages using diode array fluorescence detection. *Chromatographia*, 45 (1997) 63-66.
- 3505 Gennaro, M.C., Gioannini, E., Angelino, S., Aigotti, R. and Giacosa, D.: Identification and determination of red dyes in confectionery by ion-interaction high-performance liquid chromatography. *J. Chromatogr. A*, 767 (1997) 87-92.
- 3506 Rastogi, S.C., Barwick, V.J. and Carter, S.V.: Identification of organic colourants in cosmetic by HPLC-iodine array detection. *Chromatographia*, 45 (1997) 215-228.
- 3507 Soubayrol, P., Dana, G., Bolbach, G. and Tabet, J.C.: (Mass spectrometry and liquid chromatography in complex leaches of alizarin dyes). *Analisis*, 24 (1996) M34-M-36; C.A., 126 (1997) 76036g.
- 3508 Turnipseed, S.B., Roubal, J.E., Plakas, S.M., Pfennig, A.P., Hurlbut, J.A. and Long, A.R.: Determination of methylene blue in channel catfish (*Ictalurus punctatus*) by liquid chromatography with visible detection. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 31-35.

For additional information see C.A.:

126 (1997) 46990w, 103198v, 156520a.

See also 2677, 3513, 3821.

30b. Chloroplast and other natural pigments

- 3509 Delgado-Vargas, F. and Parades-Lopez, O.: Correlation of HPLC and AOAC methods to assess the all-trans-lutein content in marigold flowers. *J. Sci. Food Agric.*, 72 (1996) 283-290; C.A., 126 (1997) 1793z.
- 3510 Gibbs, P.J., Seddon, K.R., Brovenko, N.M., Petrosyan, Y.A. and Barnard, M.: Analysis of ancient dyed chinese papers by high-performance liquid chromatography. *Anal. Chem.*, 69 (1997) 1965-1969.
- 3511 Kull, D.R. and Pfander, H.: Isolation and structure elucidation of carotenoid glycosides from the thermoacidophilic archaea *Sulfolobus shibatae*. *J. Natural Prod.*, 60 (1997) 371-374.
- 3512 Mackey, M.D., Mackey, D.J., Higgins, H.W. and Wright, S.W.: CHEMTEX - a program for estimating class abundances from chemical markers: application to HPLC measurements of phytoplankton. *Mar. Ecol.: Prog. Ser.*, 144 (1996) 265-283; C.A., 126 (1997) 197088.
- 3513 Nowik, W.: (Application of liquid-phase chromatography in identification of natural dyes in ancient textiles). *Analisis*, 24 (1996) M37-M40; C.A., 126 (1997) 143730u.
- 3514 Oster, U., Bauer, C.E. and Rüdiger, W.: Characterization of chlorophyll a and bacteriochlorophyll a synthases by heterologous expression in *Escherichia coli*. *J. Biol. Chem.*, 272 (1997) 9671-9676.
- 3515 Strohschein, S., Schlotterbeck, G., Richter, J., Pursch, M., Tseng, L.-H., Händel, H. and Albert, K.: Comparison of the separation of *cis/trans* isomers of tretinoin with different stationary phases by liquid chromatography-nuclear magnetic resonance coupling. *J. Chromatogr. A*, 765 (1997) 207-214.
- 3516 Trubetskoi, O.A., Trubetskaya, O.E., Afanas'eva, G.V., Reznikova, O.I. and Saiz-Jimenez, C.: Polyacrylamide gel electrophoresis of soil humic acid fractionated by size-exclusion chromatography and ultrafiltration. *J. Chromatogr. A*, 767 (1997) 285-292.
- 3517 Woelki, G., Friedrich, S., Hanschmann, G. and Salzer, R.: HPLC fractionation and structural dynamics of humic acid. *Fresenius J. Anal. Chem.*, 357 (1997) 548-552.
- 3518 Yesilada, E., Sezik, E., Aslan, M. and Yesilada, A.: Quantitative analysis of the enantiomeric naphthaquinone derivatives from boraginaceous roots by high performance liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3369-3381.

For additional information see C.A.:
126 (1997) 196988r.

See also 2794, 3412, 3417, 3480.

31. PLASTICS AND THEIR INTERMEDIATES

- 3519 Cook, S.D. and Sible, V.S.: Detector response as a function of molecular weight and its effect on size-exclusion chromatography molecular weight determination of polymer distributions. *Eur. Polym. J.*, 33 (1997) 163-168; C.A., 126 (1997) 172132f.

- 3520 El'tekova, N.A. and El'tekov, Yu.A.: (Negative adsorption and liquid chromatography of polystyrene on silica). *Izv. Akad. Nauk, Ser. Khim.*, (1996) 2204-2208; C.A., 126 (1997) 104663e.
- 3521 Guttman, C.M., di Marzio, E.A. and Douglas, J.F.: Influence of polymer architecture and polymer-surface interaction on the elution chromatography of macromolecules through a micro-porous media. *Macromolecules*, 29 (1996) 5723-5733; C.A., 125 (1996) 87698e.
- 3522 Hilgers, H. and Riester, M.: (Analysis of solid polymers). *Nachr. Chem. Tech. Lab.*, 44(Suppl. 1) (1996) S53-S59; C.A., 126 (1997) 144838x - a review with 30 refs.
- 3523 Okamoto, Y. and Yashima, E.: Chiral recognition by optically active polymers. *Plast. Eng. (N.Y.)*, 40(Macromolecular Design of Polymeric Materials) (1997) 731-746; C.A., 126 (1997) 171938m.
- 3524 Pasch, H.: Analysis of complex polymers by interaction chromatography. *Adv. Polym. Sci.*, 128 (1997) 1-45; C.A., 126 (1997) 47725a - a review with 101 refs.
- 3525 Pasch, H., Deffieux, A., Heuze, I., Schappacher, M. and Rique-Lubet, L.: Analysis of macrocyclic polystyrenes. 1. Liquid chromatographic investigations. *Macromolecules*, 29 (1996) 8776-8782; C.A., 126 (1997) 19515p.
- 3526 Podzimek, S.: (Characterization of polymers by a combination of gel permeation chromatography (GPC) and multiangle laser light scattering (MALLS)). *Plasty Kauc.*, 33 (1996) 300-304; C.A., 126 (1997) 47762k.
- 3527 Sidwell, J.: Identification of additives in rubber and plastic materials by combined liquid chromatography/infrared spectroscopy. *Enhancing Polym. Using Addit. Modif. II, One-Day Symp.*, Rapra Technology, Shrewsbury, 1996, Paper 9, 6 pp.; C.A., 126 (1997) 226369j.
- 3528 Trathnigg, B. and Kollroser, M.: Liquid chromatography of polyethers using universal detectors. V. Quantitative aspects in the analysis of low-molecular-mass poly(ethylene glycols) and their derivatives by reversed-phase high-performance liquid chromatography with an evaporative light scattering detector. *J. Chromatogr. A*, 768 (1997) 223-238.
- 3529 Venema, E., de Leeuw, P., Kraak, J.C., Poppe, H. and Tijssen, R.: Polymer characterization using on-line coupling of thermal field flow fractionation and hydrodynamic chromatography. *J. Chromatogr. A*, 765 (1997) 135-144.
- For additional information see C.A.:
126 (1997) 132045y, 132115w, 172152n, 278267u.
- See also 2668, 2708, 3781.
- ### 32. DRUG ANALYSIS
- 32a. Drug analysis, general techniques**
- 3530 Bowers, G.D., Clegg, C.P., Hughes, S.C., Harker, A.J. and Lambert, S.: Automated SPE and tandem MS without HPLC columns for quantifying drugs at the picogram level. *LC-GC*, 15 (1997) 48-53; C.A., 126 (1997) 139413a.
- 3531 Bunnel, R.D.: Using computer simulated results of a bulk drug substance assay to determine acceptance criteria for method validation. *Pharm. Res.*, 14 (1997) 156-163; C.A., 126 (1997) 229723f.
- 3532 Everett, S.A., Dennis, M.F., Patel, K.B., Wardman, P. and Stratford, M.R.L.: High-performance ion chromatography applied to free-radical mechanisms in drug design. The problem of ion analysis at high ionic strengths. *J. Chromatogr. A*, 770 (1997) 273-279.
- 3533 Fish, B.J.: Separation and quantification of geometric isomers in a leukotriene antagonist using cyclodextrins in capillary electrophoresis. Comparison to high-performance liquid chromatographic methods. *J. Chromatogr. A*, 768 (1997) 81-87.
- 3534 Francotte, E.R. and Richert, P.: Applications of simulated moving-bed chromatography to the separation of the enantiomers of chiral drugs. *J. Chromatogr. A*, 769 (1997) 101-107.
- 3535 Gerstner, J.: Cleaner separations. *Chem. Br.*, 33 (1997) 40-42; C.A., 126 (1997) 176986k.
- 3536 Herre, S. and Pragst, F.: Shift of the high-performance liquid chromatographic retention times of metabolites in relation to the original drug on an RP8 column with acidic mobile phase. *J. Chromatogr. B*, 692 (1997) 111-126.
- 3537 Karlsson, L., Tortensson, A. and Taylor, L.T.: The use of supercritical fluid extraction for sample preparation of pharmaceutical formulations. *J. Pharm. Biomed. Anal.*, 15 (1996) 601-611.
- 3538 Malavasi, B. and Ascalone, V.: Suitability of automated capillary and micro liquid chromatography for routine determination of drugs in human plasma samples from clinical pharmacokinetic investigations. *J. High Resolut. Chromatogr.*, 19 (1996) 503-510.
- 3539 Massolini, G., Lorenzi, E.D., Ponci, M.C. and Caccialanza, G.: Comparison of drug binding sites on rat and human serum albumins using immobilized-protein stationary phases as a tool for the selection of suitable animal models in pharmacological studies. *Boll. Chim. Farm.*, 135 (1996) 382-386; C.A., 126 (1997) 42176n.
- 3540 Olah, T.V., McLoughlin, D.A. and Gilbert, J.D.: The simultaneous determination of mixtures of drug candidates by liquid chromatography/atmospheric pressure chemical ionization mass spectrometry as an *in vivo* drug screening procedure. *Rapid Commun. Mass Spectrom.*, 11 (1997) 17-23; C.A., 126 (1997) 194798e.
- 3541 Salminen, T., Pulli, A. and Taskinen, J.: Relationship between immobilised artificial membrane chromatographic retention and the brain penetration of structurally diverse drugs. *J. Pharm. Biomed. Anal.*, 15 (1996) 469-477.
- 3542 Vervoort, R.J.M., Derkx, M.W.J. and Debets, A.J.J.: Monitoring of new silica-based reversed-phase stationary phases for the liquid chromatographic analysis of basic pharmaceuticals using principal components analysis. *J. Chromatogr. A*, 765 (1997) 157-168.
- 3543 Wang, H., Zou, H., Feng, A. and Zhang, Y.: Binding of sulfamethoxazole to human serum albumin studied by a combined technique of microdialysis with liquid chromatography. *Anal. Chim. Acta*, 342 (1997) 159-165.
- 3544 Waterworth, J.P.: Validation of ion chromatographic methods for the trace analysis of ions in pharmacopeial grades of water. *J. Chromatogr. A*, 770 (1997) 99-104.

- 3545 Wieboldt, R., Zweigenbaum, J. and Henion, J.: Immunoaffinity ultrafiltration with ion spray HPLC/MS for screening small-molecule libraries. *Anal. Chem.*, 69 (1997) 1683-1691.
- 3546 Yamasaki, H., Kitamura, T. and Moriyama, H.: (Simultaneous determination of drugs in biological fluids using the column switching HPLC technique). *Toso Kenkyu Hokoku*, 40 (1996) 65-74; C.A., 126 (1997) 168602s.

For additional information see C.A.:
126 (1997) 194849x, 203789g.

See also 2618, 2623, 2687, 2713, 2714, 2724, 2736, 2772, 2787, 2796, 3000, 3760.

32b. Antirheumatics and antiinflammatory drugs

- 3547 Boisvert, J., Caillé, G., McGilveray, I.J. and Qureshi, S.A.: Quantification of ketoprofen enantiomers in human plasma based on solid-phase extraction and enantioselective column chromatography. *J. Chromatogr. B*, 690 (1997) 189-193.
- 3548 Daview, N.M.: Methods of analysis of chiral non-steroidal anti-inflammatory drugs. *J. Chromatogr. B*, 691 (1997) 229-261 - a review with 157 refs.
- 3549 Foulda, H.G., Avery, M.J., Dalvie, D., Falkner, F.C., Melvin, L.S. and Ronfeld, R.A.: Disposition and metabolism of tenidap in the rat. *Drug Metab. Disp.*, 25 (1997) 140-148.
- 3550 Fukushima, T., Santa, T., Homma, H., Al-kindy, S.M. and Imai, K.: Enantiomeric separation and detection of 2-arylpropionic acids derivatized with [(N,N-dimethylamino)sulfonyl]benzofuran reagents on a modified cellulose stationary phase by high-performance liquid chromatography. *Anal. Chem.*, 69 (1997) 1793-1799.
- 3551 Haney, P.W. and Dash, A.K.: Simple liquid chromatographic method for the analysis of 5-aminosalicylic acid and its degradation product. *J. Chromatogr. A*, 765 (1997) 233-239.
- 3552 Hirai, T., Matsumoto, S. and Kishi, I.: Simultaneous analysis of several non-steroidal anti-inflammatory drugs in human urine by high-performance liquid chromatography with normal solid-phase extraction. *J. Chromatogr. B*, 692 (1997) 375-388.
- 3553 Marzo, A., Monti, N., Ripamonti, M., Marzo, P., Wool, C., Cerutti, R. and Maggi, G.C.: Comparative bioavailability study of naproxen betaine sodium salt monohydrate and naproxen sodium salt in healthy volunteers. *Arzneim.-Forsch.*, 47 Z(1997) 385-389.
- 3554 Marzo, A., Ripamonti, M., Benatti, P., Marzo, P., Wool, C., Cerutti, R. and Reiner, V.: Absorption and distribution of naproxen in rats orally treated with naproxen betaine sodium salt monohydrate. Comparison with naproxen. *Arzneim.-Forsch.*, 47 (1997) 381-384.
- 3555 Parimoo, P., Bharathi, A. and Atul, B.V.: Determination of propyphenazone and ketoprofen in drug formulations by high performance liquid chromatography. *Indian J. Pharm. Sci.*, 58 (1996) 205-207; C.A., 126 (1997) 22943g.
- 3556 Sato, J., Amizuka, T., Niida, Y., Umetsu, M. and Ito, K.: Simple, rapid and sensitive method for the determination of indometacin in plasma by high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 692 (1997) 241-244.

- 3557 Squella, J.A., Lemus, I., Sturm, J.C. and Nunez-Vergara, L.J.: Voltammetric behaviour of ketorolac and its HPLC-EC determination in tablets. *Anal. Lett.*, 30 (1997) 553-564.
- 3558 Türck, D., Busch, W., Heinzel, G. and Narjes, H.: Clinical pharmacokinetics of meloxicam. *Arzneim.-Forsch.*, 47 (1997) 253-258.

For additional information see C.A.:
126 (1997) 148597r, 162360q, 229710z.

See also 2665, 2772.

32c. Autonomic and cardiovascular drugs

- 3559 Amderson, M.A., Wachs, T. and Henion, J.D.: Quantitative ion spray liquid chromatographic/tandem mass spectrometric determination of reserpine in equine plasma. *J. Mass Spectrom.*, 32 (1997) 152-158; C.A., 126 (1997) 153727n.
- 3560 Begona Barroso, M., Jiménez, R.M. and Alonso, R.M.: High performance liquid chromatography-electrochemical detection applied to monitoring clopamide in human urine and pharmaceutical formulations. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 637-650.
- 3561 Cai, J. and Henion, J.: Quantitative multi-residue determination of β -agonists in bovine urine using on-line immunoaffinity extraction-coupled column packed capillary liquid chromatography-tandem mass spectrometry. *J. Chromatogr. B*, 691 (1997) 357-370.
- 3562 Chiu, F.C.K., Zhang, J.N., Li, R.C. and Raymond, K.: Efficient assay for the determination of atenolol in human plasma and urine by high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 691 (1997) 473-477.
- 3563 El-Walili, A.-F.M.K.: First-derivative UV spectroscopy capillary gas liquid and high performance liquid chromatographic methods for the simultaneous assay of nifedipine and atenolol in pharmaceutical capsules. *Bull. Fac. Pharm. (Cairo)*, 34 (1996) 65-70; C.A., 126 (1997) 135735j.
- 3564 Ellis, J.D., Hand, E.L. and Gilbert, J.D.: Use of LC-MS to cross-validate a radioimmunoassay for the fibrinogen receptor antagonist, Aggrastat (tirofiban hydrochloride) in human plasma. *J. Pharm. Biomed. Anal.*, 15 (1996) 561-569.
- 3565 Ghanem, R., Bello, M.A., Callejón, M. and Guirau, A.: Determination of beta-blocker drugs in pharmaceutical preparations by non-supressed ion chromatography. *J. Pharm. Biomed. Anal.*, 15 (1996) 383-388.
- 3566 Kal'chenko, O.I., Zaitsev, L.M., Klebanov, B.M., Krasavtsev, I.I., Korotkii, Yu.V. and Lozinskii, M.O.: (Method for determination of nicorandil in rat blood serum by HPLC). *Khim.-Farm. Zh.*, 30 (1996) 54-55; C.A., 125 (1996) 157655q.
- 3567 Kern, R.: Internally standardized simultaneous assay of gallopamil enantiomers in human plasma by means of high performance liquid chromatography. *Methods Find. Exp. Clin. Pharmacol.*, 18 (1996) 279-285; C.A., 125 (1996) 131525x.
- 3568 Läer, S., Scholz, H., Uebeler, P., Neumann, J. and Zimmermann, N.: Quantitation of diltiazem in human cardiac tissue using high-performance liquid chromatography. *J. Chromatogr. Sci.*, 35 (1997) 93-96.

- 3569 Lau, Y., Wagner, C.A., Hanson, G.D. and Borlak, J.: Determination of 1-(5-(3,4-dimethoxyphenyl)-pyrazol-3-yl-oxypropyl)-3-[N-methyl-N-2-(3,4-dimethoxyphenyl)ethyl-amino]propane hydrochloride and its two metabolites in dog plasma by high performance liquid chromatography with fluorescence detection. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3279-3292.
- 3570 Marquer, C. and Bressolle, F.: High-performance liquid chromatographic determination of the conjugate metabolites of moxislyte in human plasma and urine. *J. Chromatogr. B*, 691 (1997) 389-396.
- 3571 Moussa, C., Houziaux, P., Danree, B. and Azerad, R.: Microbial models of mammalian metabolism. Fungal metabolism of phenolic and nonphenolic *p*-cymene-related drugs and prodrugs. II. Metabolites of nonphenolic derivatives. *Drug Metab. Disp.*, 25 (1997) 311-316.
- 3572 Moussa, C., Houziaux, P., Danree, B. and Azerad, R.: Microbial models of mammalian metabolism. Fungal metabolism of phenolic and nonphenolic *p*-cymene-related drugs and prodrugs. I. Metabolites of thymoxamine. *Drug Metab. Disp.*, 25 (1997) 301-310.
- 3573 Narazaki, R., Harada, K., Sugii, A. and Otagiri, M.: Kinetic analysis of the covalent binding of captopril to human serum albumin. *J. Pharm. Sci.*, 86 (1997) 215-219.
- 3574 Olori, L., Pierini, N., Spagnoli, M.A. and Tranfo, G.: Determination of impurities in bulfomedil hydrochloride by HPLC. *Boll. Chim. Farm.*, 135 (1996) 342-350; C.A., 126 (1997) 109011a.
- 3575 Owens, P.K., Fell, A.F., Coleman, M.W. and Berridge, J.C.: Method development in liquid chromatography with a charged cyclodextrin additive for chiral resolution of rac-amlodipine utilizing a central composite design. *Chirality*, 8 (1996) 466-476; C.A., 126 (1997) 148584j.
- 3576 Posyniak, A., Niedzielska, J., Semeniuk, S. and Zmudzki, J.: Determination of β -agonists in biological samples by thin-layer and liquid chromatographic methods. *Pol. J. Environ. Stud.*, 5 (1996) 33-36; C.A., 126 (1997) 71323p.
- 3577 Rapado-Martínez, I., García-Alvarez-Coque, M.C. and Vilanueva-Cañadas, R.M.: Liquid chromatographic procedure for the evaluation of β -blockers in pharmaceuticals using hybrid micellar mobile phases. *J. Chromatogr. A*, 765 (1997) 221-231.
- 3578 Romeijn, S.G., Marttin, E., Verhoef, J.C. and Merkus, F.W.H.M.: Simplified solid-phase extraction method for determination of dihydroergotamine in rabbit and human serum using high-performance liquid chromatography with fluorescence detection. *J. Chromatogr. B*, 692 (1997) 227-232.
- 3579 Rosing, H., van Gijn, R., ten Bokkel Huinink, W.W. and Beijnen, J.H.: High performance liquid chromatographic analysis of the cardioprotective agent dextrazoxane in human plasma and urine. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 583-601.
- 3580 Saris, L.A., Brekelmans, G.J.F., van der Linden, G.J., Rademaker, R.V. and Edelbroek, P.M.: High-performance liquid chromatographic determination of carbamazepine and metabolites in human hair. *J. Chromatogr. B*, 691 (1997) 409-415.
- 3581 Thomare, P., Dutertre, J.P., Iraki, L., Hakkou, F. and Diquet, B.: (Rapid liquid-chromatographic assay for the determination of debrisoquine and 4-hydroxydebrisoquine in human urine after solid-phase extraction). *J. Pharm. Clin.*, 15 (1996) 15-20; C.A., 125 (1996) 184749e.
- 3582 Toreson, H. and Eriksson, B.-M.: Liquid chromatographic determination of fluvastatin and its enantiomers in blood plasma by automated solid-phase extraction. *Chromatographia*, 45 (1997) 29-34.
- 3583 Van der Stel, D.J.K., van Amsterdam, P.H., Bijnholdt-Sierat, K., Jochem, E., Leeflang, G.P.D., Middlekoop, C.M. and van Schie, H.J.C.: A sensitive, specific and rugged determination of flesinoxan in plasma by HPLC-EC. *Methodol. Surv. Bioanal. Drugs*, 24(Biofluid Assay for Peptide-Related and Other Drugs) (1996) 105-117; C.A., 125 (1996) 264834u.
- 3584 Wu, S.T., Chang, Y.P., Gee, W.L., Benet, L.Z. and Lin, E.T.: Stereoselective high-performance liquid chromatography determination of propranolol and 4-hydroxypropranolol in human plasma after pre-column derivatization. *J. Chromatogr. B*, 692 (1997) 133-140.
- 3585 Yeganeh, M.H. and Ramzan, I.: Determination of propofol in rat whole blood and plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 478-482.
- 3586 Yesilada, A., Gokhan, N., Yilmaz, M.A. and Ertan, M.: High performance liquid chromatographic identification of napazoline and its degradation product in nasal preparations. *Acta Pharm. Turc.*, 38 (1996) 101-106; C.A., 126 (1997) 51064b.
- 3587 Zhang, J., Miller, R.B. and Jacobus, R.: Development and validation of a stability-indicating HPLC method for the determination of degradation products in dipyridamole injection. *Chromatographia*, 44 (1997) 247-252.
- For additional information see C.A.:
126 (1997) 75124x, 98781y, 100614s.
- See also 2772, 2782, 2789, 3086, 3318, 3556, 3602, 3639.
- 32d. Central nervous system drugs**
- 3588 Abdel-Moety, E.M. and Al-Deeb, O.A.: Stability-indicating liquid chromatographic determination of trifluoperazine hydrochloride in bulk form and tablets. *Eur. J. Pharm. Sci.*, 5 (1997) 1-5; C.A., 126 (1997) 203797h.
- 3589 Bagli, M., Rao, M.L., Sobanski, T. and Laux, G.: Determination of fluvoxamine and paroxetine in human serum with high-performance liquid chromatography and ultraviolet detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 283-295.
- 3590 Blanco, M., Coello, J., Elaamrani, M., Iturriaga, H. and Maspoch, S.: Partial least-squares regression for the quantitation of pharmaceutical dosages in control analyses. *J. Pharm. Biomed. Anal.*, 15 (1996) 329-338.
- 3591 Borner, K., Borner, E. and Lode, H.: Quantitative determination of lansoprazole in human serum by HPLC. *Chromatographia*, 45 (1997) 450-452.
- 3592 Chavez-Eng, C.M., Constanzer, M.L. and Matuszewski, B.K.: Picogram determination of a novel dopamine D₄ receptor antagonist in human plasma and urine by liquid chromatography with atmospheric pressure chemical ionization tandem mass spectrometry. *J. Chromatogr. B*, 691 (1997) 77-85.
- 3593 Cimarik, J., Lehotay, J. and Hromuláková, K.: Study of local anesthetics. Part 133. Determination of diperodon in blood serum *in vitro* by the HPLC method. *Acta Pol. Pharm.*, 53 (1996) 167-169; C.A., 126 (1997) 69682m.

- 3594 Cizmarik, J., Lehotay, J., Hromulakova, K., Pokorna, M. and Lacuska, M.: HPLC separation of enantiomers of carbisocaine. Study of local anaesthetics, part 138. *Pharmazie*, 52 (1997) 402-403.
- 3595 Colgan, S.T., Reed, R.H., Dumont, M.L. and Haggan, G.R.: Assay and purity evaluation of CP-93,393-1 by reversed-phase liquid chromatography. A snapshot of current practices for liquid chromatography methods development and validation. *J. Chromatogr. A*, 764 (1997) 233-241.
- 3596 De Cazanove, F., Kinowski, J.-M., Audran, M., Rochette, A. and Bressolle, F.: Determination of nalbuphine in human plasma by high-performance liquid chromatography with electrochemical detection. Application to a pharmacokinetic study. *J. Chromatogr. B*, 690 (1997) 203-210.
- 3597 De Maeseneire, J., Perez, S., Imai, K. and Abeger, A.: Amphetamine enantiomers separation by HPLC. *Acta Technol. Legis Med.*, 6 (1995) 264-268; *C.A.*, 126 (1997) 22936g.
- 3598 Dethy, S., Laute, M.A., van Blercom, N., Damhaut, P., Goldman, S. and Hildebrand, J.: Microdialysis-HPLC for plasma levodopa and metabolites monitoring in parkinsonian patients. *Clin. Chem. (Washington)*, 43 (1997) 740-744.
- 3599 Drewe, J., Rufer, S., Huwyler, J. and Küsters, E.: High-performance liquid chromatographic method for an automated determination of local anaesthetics in human plasma. *J. Chromatogr. B*, 691 (1997) 105-110.
- 3600 Ebete, K.O. and Koudourellis, J.E.: Rapid and sensitive procedure for the quantitation of pimethixene in human milk and plasma by solid phase extraction (SPE) using HPLC. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 789-796.
- 3601 Freeman, D.J., Li, M.C. and Oyewumi, K.: Solid-phase extraction and high-performance liquid chromatographic analysis of clozapine and norclozapine in human plasma. *Ther. Drug Monit.*, 18 (1996) 688-692; *C.A.*, 126 (1997) 42190n.
- 3602 Fujiwara, M., Toshihiro, K. and Hatakenaka, K.: (Analytical method of lidocaine in external preparation by high performance liquid chromatography). *Yamaguchi-ken Eisei Kogai Kenkyu Senta Gyoseki Hokoku*, 17 (1996) 12-14; *C.A.*, 126 (1997) 255570y.
- 3603 Gennaro, M.C., Giacosa, D., Gioannini, E. and Angelino, S.: Hallucinogenic species in *Amanita muscaria*. Determination of muscimol and ibotenic acid by ion-interaction HPLC. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 413-424.
- 3604 Guittot, C., Kinowski, J.-M., Aznar, R. and Bressolle, F.: Determination of clozapine and its major metabolites in human plasma and red blood cells by high-performance liquid chromatography with ultraviolet absorbance detection. *J. Chromatogr. B*, 690 (1997) 211-222.
- 3605 Guo, Y., Chu, Q. and Jiang, Y.: (Simultaneous determination of methaqualone and its 2'-hydroxymethyl metabolite in biological material by HPLC). *Shanghai Yike Daxue Xuebao*, 23 (1996) 43-45; *C.A.*, 125 (1996) 184765g.
- 3606 Handa, A.K., Shedalkar, V.P. and Bhalla, H.L.: Stability-indicating HPLC method for carbamazepine. *Indian Drugs*, 33 (1996) 559-562; *C.A.*, 126 (1997) 255574c.
- 3607 Hankins, D.C. and Kharasch, E.D.: Determination of the halothane metabolites trifluoroacetic acid and bromide in plasma and urine by ion chromatography. *J. Chromatogr. B*, 692 (1997) 413-418.
- 3608 Hoja, H., Marquet, P., Verneuil, B., Lotfi, H., Dupuy, J.-L. and Lachâtre, G.: Determination of LSD and N-demethyl-LSD in urine by liquid chromatography coupled to electrospray ionization mass spectrometry. *J. Chromatogr. B*, 692 (1997) 329-335.
- 3609 Hrdlicka, A., Durdova, Z. and Hadasova, E.: Solid-phase extraction of perphenazine from blood serum for high performance liquid chromatographic analysis. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 935-942.
- 3610 Jitsufuchi, N., Kudo, K., Tokunaga, H. and Immura, T.: Selective determination of sultopride in human plasma using high-performance liquid chromatography with ultraviolet detection and particle beam mass spectrometry. *J. Chromatogr. B*, 690 (1997) 153-159.
- 3611 Johansen, K., Krogh, M. and Rasmussen, K.E.: Automated online dialysis, trace enrichment and high-performance liquid chromatography. Inhibition of interaction with the dialysis membrane and disruption of protein binding in the determination of clozapine in human plasma. *J. Chromatogr. B*, 690 (1997) 223-231.
- 3612 Jung, F., Richardson, T.H., Raucy, J.L. and Johnson, E.F.: Diazepam metabolism by cDNA-expressed human 2C P450s. Identification of P4502C18 and P4502C19 as low K_m diazepam N-demethylases. *Drug Metab. Disp.*, 25 (1997) 133-139.
- 3613 Kassahun, K., Mattiuz, E., Nyhart, E., Jr., Obermeyer, B., Gillespie, T., Murphy, A., Goodwin, R.M., Tupper, D., Callaghan, J.T. and Lemberger, L.: Disposition and biotransformation of the antipsychotic agent olanzapine in humans. *Drug Metab. Disp.*, 25 (1997) 81-93.
- 3614 Kintz, P., Cirimele, V., Gosselin, O., Edel, Y. and Mangin, P.: Testing human hair for clozapine. *Ann. Biol. Clin.*, 54 (1996) 317-318; *C.A.*, 126 (1997) 15620w.
- 3615 Kintz, P., Eser, H.P., Tracqui, A., Moeller, M., Cirimele, V. and Mangin, P.: Enantioselective separation of methadone and its main metabolite in human hair by liquid chromatography/ion spray-mass spectrometry. *J. Forensic Sci.*, 42 (1997) 291-295; *C.A.*, 126 (1997) 273328e.
- 3616 Liu, L., Cheng, H., Zhao, J.J. and Rogers, J.D.: Determination of montelukast (MK-476) and its S-enantiomer in human plasma by stereoselective high-performance liquid chromatography with column-switching. *J. Pharm. Biomed. Anal.*, 15 (1996) 631-638.
- 3617 Londero, D. and Greco, P.L.: New micromethod for the determination of lamotrigine in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 139-144.
- 3618 Maggs, J.L., Pirmohamed, M., Kitteringham, N.R. and Park, B.K.: Characterization of the metabolites of carbamazepine in patients urine by liquid chromatography/mass spectrometry. *Drug Metab. Disp.*, 25 (1997) 275-280.
- 3619 Manabe, S., Gao, Q., Yuan, J., Takahashi, T. and Ueki, A.: Determination of isatin in urine and plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 197-202.
- 3620 Mascher, H., Göd, B. and Kikuta, C.: Determination of desmethylselegiline, metamphetamine and amphetamine - the main metabolites of selegiline in plasma by HPLC after derivatization. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 797-809.

- 3621 Maurizis, J.C., Madelmont, J.C., Rapp, M., Marijnen, C., Cerf, M.C., Gillardin, J.M., Lepage, F. and Veyre, A.: Disposition and metabolism of 2,6-dimethylbenzamide N-(5-methyl-3-isoxazolyl) (D2916) in male and female rats. *Drug Metab. Disp.*, 25 (1997) 33-39.
- 3622 McElvain, J.S., vandiver, V.J. and Eichmeier, L.S.: Validation of a reversed-phase HPLC method for directly quantifying the enantiomers of MDL 74156, the primary metabolite of dolasetron mesylate, in human plasma. *J. Pharm. Biomed. Anal.*, 15 (1996) 513-521.
- 3623 Miljkovic, B., Pokrajac, M., Timotijevic, I. and Varagic, V.: Solid-phase extraction and high performance liquid chromatographic determination of amitriptyline and nortriptyline in human plasma. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1067-1078.
- 3624 Morales Hernandez, J.M., Cook, H.J., Arguello, G.M.L. and Fuentes Noriega, I.: (Comparative dissolution of phenytoin using high-performance liquid chromatography and UV spectrophotometry). *Rev. Mex. Cienc. Farm.*, 26 (1995, Publ. 1996) 22-24; *C.A.*, 125 (1996) 150931t.
- 3625 Nicolle, E., Veitl, S., Guimier, C. and Bessard, G.: Modified method of nalbuphine determination in plasma: validation and application to pharmacokinetics of the rectal route. *J. Chromatogr. B*, 690 (1997) 89-97.
- 3626 Nishikawa, T., Hayashi, Y., Suzuki, S., Kubo, H. and Ohtani, H.: On-column enantioomerization of 3-hydroxybenzodiazepines during chiral liquid chromatography with optical rotation detection. *J. Chromatogr. A*, 767 (1997) 93-100.
- 3627 Okudzhava, V.M., Rukhadze, M.D. and Sebisveradze, M.V.: (Chromatographic separation of barbiturates using a micellar sodium cholate solution as a mobile phase). *Zh. Fiz. Khim.*, 70 (1996) 2076-2079; *C.A.*, 126 (1997) 135721b.
- 3628 Paibir, S.G. and Soine, W.H.: High-performance liquid chromatographic analysis of phenobarbital and phenobarbital metabolites in human urine. *J. Chromatogr. B*, 691 (1997) 111-117.
- 3629 Palagiano, F., Bonina, F.P., Montenegro, L., Biondi, A., Sorrentino, L., Capaso, A. and de Caprariis, P.: Synthesis, stability and anticonvulsant activity of two new GABA prodrugs. *Pharmazie*, 52 (1997) 272-276.
- 3630 Prakash, C., Kamel, A., Anderson, W. and Howard, H.: Metabolism and excretion of the novel antipsychotic drug ziprasidone in rats after oral administration of a mixture of ¹⁴C- and ³H-labeled ziprasidone. *Drug Metab. Disp.*, 25 (1997) 206-218.
- 3631 Shavington, L.A.: A quantitative simultaneous high performance liquid chromatographic determination of pseudoephedrine HCl, guaiifenesin and dextromethorphan HBr. *Anal. Lett.*, 30 (1997) 927-944.
- 3632 Shigematsu, N., Kayakiri, N., Okada, S. and Tanaka, H.: Total synthesis of WS9326A, a potent tachykinin antagonist from *Streptomyces violaceoniger*. *Chem. Pharm. Bull.*, 45 (1997) 236-242.
- 3633 Siluveru, M. and Stewart, J.T.: Stereoselective determination of mepivacaine in human serum using a brush-type chiral stationary phase and solid-phase extraction. *J. Chromatogr. B*, 690 (1997) 359-362.
- 3634 Siluveru, M. and Stewart, J.T.: Stereoselective determination of R(-)- and S(+) -prilocaine in human serum using a brush-type chiral stationary phase, solid-phase extraction and UV detection. *J. Pharm. Biomed. Anal.*, 15 (1996) 389-392.
- 3635 Simmons, B.R., Lush, R.M. and Figg, W.D.: A reversed-phase high performance liquid chromatography method using solid phase extraction to quantitate thalidomide in human serum. *Anal. Chim. Acta*, 339 (1997) 91-97.
- 3636 Takayama, N., Tanaka, S. and Hayakawa, K.: Determination of stimulants in a single human hair sample by high-performance liquid chromatographic method with chemiluminescence detection. *Biomed. Chromatogr.*, 11 (1997) 25-28; *C.A.*, 126 (1997) 140643g.
- 3637 Tanaka, E., Terada, M., Misawa, S. and Wakasugi, C.: Simultaneous determination of eight antiepileptic drugs in human serum using a new reversed-phase chromatographic column based on a 2-micrometer porous microspherical silica gel. *Jpn. J. Forensic Toxicol.*, 14 (1996) 182-190; *C.A.*, 126 (1997) 43676n.
- 3638 Tang, W. and Abbott, F.S.: A comparative investigation of 2-propyl-4-pentenoic acid (4-ene VPA) and its α -fluorinated analogue: phase II metabolism and pharmacokinetics. *Drug Metab. Disp.*, 25 (1997) 219-227.
- 3639 Ting, S.: Liquid chromatographic determination of scopolamine, hyoscymine, and phenobarbital in tablets. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 331-334.
- 3640 Tokunaga, H., Kudo, K., Jitsufuchi, N., Ohtsuka, Y. and Imaura, T.: Sensitive determination of sulpiride in human plasma by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 203-207.
- 3641 Tsina, I., Tam, Y.L., Boyd, A., Rocha, C., Massey, I. and Tarnowski, T.: An indirect (derivation) and a direct a direct HPLC method for the determination of the enantiomers of ketorolac in plasma. *J. Pharm. Biomed. Anal.*, 15 (1996) 403-417.
- 3642 Tugnait, M., Hawes, E.M., McKay, G., Rettie, A.E., Haining, R.L. and Midha, K.K.: N-Oxygenation of clozapine by flavin-containing monooxygenase. *Drug Metab. Disp.*, 25 (1997) 524-527.
- 3643 Venkateshwaran, T.G., Stewart, J.T. and King, D.T.: HPLC determinations of ondansetron with selected medications in 0.9% sodium chloride injection USP. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3355-3367.
- 3644 Wang, H.L., Zou, H.F. and Zhang, Y.K.: Determination of drug-protein interactions by combined microdialysis and high-performance liquid chromatography. *Chromatographia*, 44 (1997) 205-208.
- 3645 Watt, A.P., Verrier, H.M. and Rathbone, D.: Analytical and preparative enantiomeric separation of a series of C5-cycloalkylamine-1,4-benzodiazepin-2-one CCK_A receptor antagonists by chiral HPLC. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 111-121.
- 3646 Weinz, C., Blaschke, G. and Schiebel, H.-M.: Investigation of the stereoselective *in vitro* biotransformation of glutethimide by high-performance liquid chromatography and capillary electrophoresis. *J. Chromatogr. B*, 690 (1997) 233-242.
- 3647 Wolff, K., Garrett, D. and Hay, A.W.M.: Micro-extraction of commonly abused benzodiazepines for urinary screening by liquid chromatography. *Ann. Clin. Biochem.*, 34 (1997) 61-67; *C.A.*, 126 (1997) 194802b.
- 3648 Yan, J.-h., Hubbard, J.W., McKay, G. and Midha, K.K.: Stereoselective and simultaneous measurement of *cis*- and *trans*-isomers of doxepin and N-desmethyldoxepin in plasma or urine by high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 131-138.

- 3649 Zaghloul, I.Y. and Radwan, M.A.: High performance liquid chromatographic determination of tramadol in pharmaceutical dosage forms. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 779-787.

For additional information see C.A.:
126 (1997) 148589q.

See also 2630, 2724, 2772, 2788, 2789, 3353, 3375, 3537, 3545, 3555, 3752, 3753.

32e. Chemotherapeutics (exc. cytostatics and antibiotics)

- 3650 Agbaba, D., Mihajlovic, A., Beljanski, P., Zivanov-Stakic, D. and Vladimirov, S.: Determination of 8-hydroxyquinoline sulfate in tuberculin solutions by planar and high performance liquid chromatography. *Chromatographia*, 45 (1997) 145-148.
- 3651 Argekar, A.P. and Kunjir, S.S.: Quantitative estimation of sulfamycin p-toluenesulfonate in pharmaceutical preparations by reversed-phase high-performance liquid chromatography. *J. Pharm. Biomed. Anal.*, 15 (1996) 423-427.
- 3652 Augustijns, P.: Determination of chloroquine and desethylchloroquine in biological samples using perfusion chromatography and fluorescence detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 1103-1113.
- 3653 Basci, N.E., Hanioglu-Kargi, S., Soysal, H., Bozkrt, A. and Kayaalp, S.O.: Determination of ofloxacin in human aqueous humour by high-performance liquid chromatography with fluorescence detection. *J. Pharm. Biomed. Anal.*, 15 (1996) 663-666.
- 3654 Bergh, J.J., Breytenbach, J.C. and Breet, E.L.J.: Kinetics and pH profile of thermal decomposition of trimethoprim in aqueous solution. *Pharmazie*, 52 (1997) 290-294.
- 3655 Chang, M., Sood, V.K., Wilson, G.J., Kloosterman, D.A., Sanders, P.E., Hauer, M.J. and Fagerness, P.E.: Metabolism of the human immunodeficiency virus type 1 reverse transcriptase inhibitor delavirdine in rats. *Drug Metab. Disp.*, 25 (1997) 228-242.
- 3656 Cui, L., Locatelli, L., Xie, M.-Y. and Sommadossi, J.-P.: Effect of nucleoside analogs on neurite regeneration and mitochondrial DNA synthesis in PC-12 cells. *J. Pharmacol. Exp. Ther.*, 280 (1997) 1228-1234.
- 3657 Dawson, V.K. and Davis, R.A.: Liquid chromatographic determination of chloramine-T and its primary degradation product, p-toluenesulfonamide, in water. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 313-318.
- 3658 Enos, T.A., Simmonds, R.J., Long, J.M., Speed, W., Dervan, J.J. and James, C.A.: LC-MS-MS assay of fenticonazole in human plasma. *Methodol. Surv. Bioanal. Drugs*, 24(Biofluid Assay for Peptide-Related and Other Drugs) (1996) 126-127; C.A., 125 (1996) 264836w.
- 3659 Ericsson, Ö., Schweda, E.K.H., Bronner, U., Rombo, L., Fridén, M. and Gustafsson, L.L.: Determination of melarsoprol in biological fluids by high-performance liquid chromatography and characterisation of two stereoisomers by nuclear magnetic resonance spectroscopy. *J. Chromatogr. B*, 690 (1997) 243-251.
- 3660 Faulkner, A.J., Wang, Q., DeMontigny, P. and Murphy, J.S.: Stability studies and high-performance liquid chromatographic procedures for L-648,548 and its major degradates in an animal health formulation. *J. Pharm. Biomed. Anal.*, 15 (1996) 523-536.
- 3661 Ferretti, R., Gallinella, B., la Torre, F. and Turchetto, L.: Liquid chromatographic separation of the enantiomers of beclconazole and its potential impurities. *J. Chromatogr. A*, 769 (1997) 231-238.
- 3662 Fitzsimmons, M.E. and Collins, J.M.: Selective biotransformation of the human immunodeficiency virus protease inhibitor saquinavir by human small-intestinal cytochrome P4503A4. Potential contribution to high first-pass metabolism. *Drug Metab. Disp.*, 25 (1997) 256-266.
- 3663 Galeano Diaz, T., Guiberteau Cabanillas, A., Acedo Valenzuela, M.I., Correa, C.A. and Salinas, F.: Determination of nitrofurantoin, furazolidone and furaltadone in milk by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. A*, 764 (1997) 243-248.
- 3664 Huelsewede, J.W. and Dermoumi, H.: Serum level determination of fluconazole by high-performance liquid chromatography and bioassay. *Zentralbl. Bakteriol.*, 283 (1996) 492-496; C.A., 125 (1996) 75222g.
- 3665 Jayaraman, S.D., Ismail, S., Nair, N.K. and Navaratnam, V.: Determination of pyronaridine in blood plasma by high-performance liquid chromatography for application in clinical pharmacological studies. *J. Chromatogr. B*, 690 (1997) 253-257.
- 3666 Karbwang, J., Na-Bangchang, K., Molunto, P., Banmairuoi, V. and Congpuong, K.: Determination of artemether and its major metabolite, dihydroartemisinin, in plasma using high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 690 (1997) 259-265.
- 3667 Krishna, D.R., Mamidi, R.N.V.S., Hofmann, U. and Prabhakar, C.M.: Characterization of clofazimine metabolites in humans by HPLC - electrospray mass spectrometry. *Arzneim.-Forsch.*, 47 (1997) 303-306.
- 3668 Lian, H.Z., Zhang, W.B., Miao, J., Jiang, Q., Mao, L., Zong, L., Li, L., Wu, X.X. and Cheng, R.M.: A study on the stability of bronopol in bronopol lotion by ion-paired reversed-phase high-performance liquid chromatography. *J. Pharm. Biomed. Anal.*, 15 (1996) 667-671.
- 3669 Lin, C.C., Matuszewski, B.K., Zagrobelny, J. and Dobrinska, M.R.: Picogram determination of an avermectin analog in dog plasma by high-performance liquid chromatography with fluorescence detection. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 443-458.
- 3670 Malan, C.E.P., de Villiers, M.M. and Lötter, A.P.: Application of differential scanning calorimetry and high performance liquid chromatography to determine the effects of mixture composition and preparation during the evaluation of niclosamide-excipient compatibility. *J. Pharm. Biomed. Anal.*, 15 (1996) 549-557.
- 3671 Martín Biosca, Y., Baeza Baeza J.J. and Ramis-Ramos, G.: Determination of clenbuterol in urine by azo-dye precolumn derivatization and micellar liquid chromatography. *Chromatographia*, 44 (1997) 145-150.
- 3672 Miyawa, J.H., Alasandro, M.S. and Riley, C.M.: Application of a modified central composite design to optimize the capillary electrochromatographic separation of related S-oxidation compounds. *J. Chromatogr. A*, 769 (1997) 145-153.
- 3673 Newman, R.A., Chen, W. and Madden, T.: HPLC measurement of the novel non-nucleoside anti-HIV agent, (+)-dihydrocalanolide A. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 651-659.

- 3674 Okuyama, T. and Morino, A.: Pharmacokinetics of prulifloxacin. 3rd Communication: Metabolism in rats, dogs and monkeys. *Arzneim.-Forsch.*, 47 (1997) 293-298.
- 3675 Roston, D.A. and Sun, J.J.: Supercritical fluid extraction method development for extraction of an experimental HIV protease inhibitor drug from animal feed. *J. Pharm. Biomed. Anal.*, 15 (1996) 461-468.
- 3676 Song, D., Wientjes, M.G. and Au, J.L.-S.: Isocratic high-performance liquid chromatographic determination of thiacetazone by direct injection of plasma into an internal surface reversed-phase column. *J. Chromatogr. B*, 690 (1997) 289-294.
- 3677 Susanton, F. and Reinauer, H.: Screening an simultaneous quantitative measurement of six sulfonylurea in serum by liquid chromatography/mass spectrometry with atmospherical-pressure chemical ionization (APCI LC/MS). *Fresenius J. Anal. Chem.*, 357 (1997) 1202-1205.
- 3678 Takasawa, K., Terasaki, T., Suzuki, H. and Sugiyama, Y.: In vivo evidence for carrier-mediated efflux transport of 3'-azido-3'-deoxythymidine and 2',3'-dideoxyinosine across the blood-brain barrier via a probenecid-sensitive transport system. *J. Pharmacol. Exp. Ther.*, 281 (1997) 369-375.
- 3679 Thoma, K., Kübler, N. and Reimann, E.: Untersuchungen der Photostabilität von Antimykotika. 3. Mitteilung: Photostabilität lokal wirksamer Antimykotika. *Pharmazie*, 52 (1997) 362-373.
- 3680 Wallace, T.L., Bazemore, S.A., Holm, K., Markham, P.M., Shea, J.P., Chaudhary, N. and Cossum, P.A.: Pharmacokinetics and distribution of a ³³P-labeled anti-human immunodeficiency virus oligonucleotide (AR177) after single- and multiple-dose intravenous administration to rats. *J. Pharmacol. Exp. Ther.*, 280 (1997) 1480-1488.
- 3681 Woolf, E.J. and Matuszewski, B.K.: Simultaneous determination of unlabeled and deuterium-labeled indinavir in human plasma by high-performance liquid chromatography with tandem mass spectrometric detection. *J. Pharm. Sci.*, 86 (1997) 193-198.
- 3682 Zajac, M. and Stasiuk, E.: Stability of dithranol in the solid phase. *Pharmazie*, 52 (1997) 288-290.
- 3683 Zhen, Q.P., Chen, P., Fen, J.L. and Lai, T.B.: High performance liquid chromatographic determination of antituberculosis drugs in human body fluids. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 459-469.
- For additional information see C.A.:
126 (1997) 54278k, 109019j, 229726j.
- See also 2842, 3031, 3508, 3543.
- 32f. Cytostatics**
- 3684 Azuma, R. and Urakawa, A.: Simultaneous determination of a novel anticancer drug, TAS-103, and its N-demethylated metabolite in monkey plasma by high-performance liquid chromatography using solid-phase extraction. *J. Chromatogr. B*, 691 (1997) 179-185.
- 3685 Calabrese, C.R. and Loadman, P.M.: Analysis of the imidazolidinone C1311 by high-performance liquid chromatography. *J. Chromatogr. B*, 690 (1997) 275-281.
- 3686 Chiou, F.-Y., Kan, P., Chu, I.-M. and Lee, C.-J.: Separation of taxol and cephalomannine by countercurrent chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 57-61.
- 3687 El-Yazigi, A. and Legayada, E.: Direct liquid chromatographic micro-measurement of tamoxifen in plasma of cancer patients. *J. Chromatogr. B*, 691 (1997) 457-462.
- 3688 Etienne, M.C., Oster, W. and Milano, G.: Development and validation of a chiral high-performance liquid chromatography assay for rogletimide and rogletimide-N-oxide isomers in plasma. *Cancer Chemother. Pharmacol.*, 38 (1996) 343-348; C.A., 125 (1996) 211687s.
- 3689 Farid, N.A. and Coleman, N.L.: High-performance liquid chromatographic determination of the enantiomers of the benzooxolinone LY191704, a human type 1 5α-reductase inhibitor, in plasma. *J. Chromatogr. B*, 691 (1997) 212-216.
- 3690 Foxall, P.J.D., Lenz, E.M., Lindon, J.C., Neild, G.H., Wilson, I.D. and Nicholson, J.K.: Nuclear magnetic resonance and high-performance liquid chromatography-nuclear magnetic resonance studies on the toxicity and metabolism of ifosfamide. *Ther. Drug Monit.*, 18 (1996) 498-505; C.A., 125 (1996) 184845h.
- 3691 Fruitwala, M.A. and Sanghavi, N.M.: HPLC analysis and validation of 5-fluorouracil and its metabolites in rat plasma. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 471-480.
- 3692 Gliesing, S., de la Calle, D., Reichenbächer, M. and Böse, M.: HPLC-Bestimmung von Tamoxifendihydrogencitrat mit der basenselektiven Säule UltraSep ES Pharm RP8 in Tabletten. *Pharmazie*, 52 (1997) 399-401.
- 3693 Hegedus, L., Ford, H., Jr., Hartman, N.R. and Kelley, J.A.: Reversed-phase high-performance liquid chromatographic determination of the new antitumor agent cyclopentenyl cytosine in biological fluids. *J. Chromatogr. B*, 692 (1997) 169-179.
- 3694 Hemminki, K., Rajaniemi, H., Lindahl, B. and Moberger, B.: Tamoxifen-induced DNA adducts in endometrial samples from breast cancer patients. *Cancer Res.*, 56 (1996) 4374-4377.
- 3695 Hirai, T., Matsumoto, S. and Kishi, I.: Determination of methotrexate and its main metabolite 7-hydroxymethotrexate in human urine by high-performance liquid chromatography with normal solid-phase extraction. *J. Chromatogr. B*, 690 (1997) 267-273.
- 3696 Imai, T., Fujii, K., Shiraishi, S. and Otagiri, M.: Alteration of pharmacokinetics and nephrotoxicity of cisplatin by alginates. *J. Pharm. Sci.*, 86 (1997) 244-247.
- 3697 Joulia, J.M., Pinguet, F., Grosse, P.Y., Astre, C. and Bressolle, F.: Determination of 5-fluorouracil and its main metabolites in plasma by high-performance liquid chromatography: application to a pharmacokinetic study. *J. Chromatogr. B*, 692 (1997) 427-435.
- 3698 Kaijser, G.P., Beijnen, J.H., Bult, A., Keizer, H.J. and Underberg, W.J.M.: Chromatographic analysis of the enantiomers of ifosfamide and some of its metabolites in plasma and urine. *J. Chromatogr. B*, 690 (1997) 131-138.
- 3699 Kitamura, R., Bandoh, T., Tsuda, M. and Satoh, T.: Determination of a new podophyllotoxin derivative, TOP-53, and its metabolite in rat plasma and urine by high-performance liquid chromatography with electrochemical detection. *J. Chromatogr. B*, 690 (1997) 283-288.
- 3700 Kuan, H., Smith, D.E., Ensminger, W.D., Knol, J.A., DeRemer, S.J., Yang, Z. and Stetson, P.L.: Regional pharmacokinetics of 5-bromo-2'-deoxyuridine and 5-fluorouracil in dogs: hepatic arterial versus portal venous infusions. *Cancer Res.*, 56 (1996) 4724-4727.

- 3701 Matsushima, E., Yoshida, K., Kitamura, R. and Yoshida, K.-i.: Determination of S-1 (combined drug of tegafur, 5-chloro-2,4-dihydroxypyridine and potassium oxonate) and 5-fluorouracil in human plasma and urine using high-performance liquid chromatography and gas chromatography-negative ion chemical ionization mass spectrometry. *J. Chromatogr. B*, 691 (1997) 95-104.
- 3702 Miners, J.O., Valente, L., Lillywhite, K.J., Mackenzie, P.I., Burchell, B., Baguley, B.C. and Kestell, P.: Preclinical prediction of factors influencing the elimination of 5,6-dimethylxanthone-4-acetic acid, a new anticancer drug. *Cancer Res.*, 57 (1997) 284-289.
- 3703 Raynaud, F.I., Orr, R.M., Goddard, P.M., Lacey, H.A., Lancashire, H., Judson, I.R., Beck, T., Bryan, B. and Cotter, F.E.: Pharmacokinetics of G3139, a phosphorothioate oligodeoxynucleotide antisense to bcl-2, after intravenous administration or continuous subcutaneous infusion to mice. *J. Pharmacol. Exp. Ther.*, 281 (1997) 420-427.
- 3704 Rivory, L.P., Riou, J.-F., Haaz, M.-C., Sable, S., Vuilhorgne, M., Commercon, A., Pond, S.M. and Robert, J.: Identification and properties of a major plasma metabolite of irinotecan (CPT-11) isolated from the plasma of patients. *Cancer Res.*, 56 (1996) 3689-3694.
- 3705 Scott, M.G., Hock, K.G., Crimmins, D.L. and Fracasso, P.M.: HPLC method for monitoring SDZ PSC 833 in whole blood. *Clin. Chem. (Washington)*, 43 (1997) 505-510.
- 3706 Tassin, J.P., Dubois, J., Atassi, G. and Hanocq, M.: Simultaneous determination of cytotoxic (adriamycin, vincristine) and modulator of resistance (verapamil, S 9788) drugs in human cells by high-performance liquid chromatography and ultraviolet detection. *J. Chromatogr. B*, 691 (1997) 449-456.
- 3707 Walker, J.T., Paolini, D.L. and Segretario, J.: Quantitation of residual dimethylsulfoxide in a drug substance (bisnafide) by reversed-phase high-performance liquid chromatography. *J. Chromatogr. Sci.*, 34 (1996) 513-516.
- 3708 Warner, D.L. and Burke, T.G.: Simple and versatile high-performance liquid chromatographic method for the simultaneous quantitation of the lactone and carboxylate forms of camptothecin anticancer drugs. *J. Chromatogr. B*, 691 (1997) 161-171.
- 3709 Wattanatorn, W., McLeod, H.L., Cassidy, J. and Kindle, K.E.: High-performance liquid chromatographic assay of 5-fluorouracil in human erythrocytes, plasma and whole blood. *J. Chromatogr. B*, 692 (1997) 233-237.
- 3710 Waud, W.R., Tiwari, A., Schmid, S.M., Shih, T., Strong, J.M., Hartman, N.R., O'Reilly, S. and Struck, R.F.: 4-Demethylpenclomedine, an antitumor-active, potentially nonneurotoxic metabolite of penclomedine. *Cancer Res.*, 57 (1997) 815-817.
- See also 2669, 2746, 2967, 3461.
- 32g. Other drug categories
- 3711 Aswania, O.A., Corlett, S.A. and Chrystyn, H.: Development and validation of an ion-pair liquid chromatographic method for the quantitation of sodium cromoglycate in urine following inhalation. *J. Chromatogr. B*, 690 (1997) 373-378.
- 3712 Berger, B.J., Suskin, M., Dai, W.W., Cerami, A. and Ulrich, P.: Studies on the pharmacological properties of novel arylene bis(methylketone) compounds using solid-phase extraction and high-performance liquid chromatography. *J. Chromatogr. B*, 691 (1997) 433-440.
- 3713 Chen, H., Manouilov, K.K., Chu, C.K., Schinazi, R.F., McClure, H.M. and Boudinot, F.D.: High-performance liquid chromatographic determination of (-)- β -D-2-aminopurine dioxolane and (-)- β -D-2-amino-6-chloropurine dioxolane, and their metabolite (-)- β -D-dioxolane guanine in monkey serum, urine and cerebrospinal fluid. *J. Chromatogr. B*, 691 (1997) 425-432.
- 3714 Chernomorsky, S., Rancourt, R., Sahai, D. and Poretz, R.: Evaluation of commercial chlorophyllin copper complex preparations by liquid chromatography with photodiode array detection. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 433-435.
- 3715 Clauzing, P., Rushing, L.G., Newport, G.D. and Bowyer, J.F.: Determination of D-fenfluramine, D-norfenfluramine and fluoxetine in plasma, brain tissue and brain microdialysate using high-performance liquid chromatography after precolumn derivatization with dansyl chloride. *J. Chromatogr. B*, 692 (1997) 419-426.
- 3716 Crooks, S.R.H., Elliott, C.T., Thompson, C.S. and McCaughey, W.J.: Comparison and evaluation of the specificity and binding capacity of commercial and in house affinity columns used in sample preparation for analysis of growth-promoting drugs. *J. Chromatogr. B*, 690 (1997) 161-172.
- 3717 Fisher, D.H. and Szulc, M.E.: Reduction of panthethine in rabbit ocular lens homogenate. *J. Pharm. Biomed. Anal.*, 15 (1996) 653-662.
- 3718 Ge, W., Liu, L., Gao, Y., Zhou, Y.Y., Li, Z. and Xu, L.: (Reversed-phase HPLC determination of copper salicylaldehyde 2-furanthiocarboxyhydrazone dichloride in serum of rabbits). *Shandong Yike Daxue Xuebao*, 34 (1996) 255-257; C.A., 126 (1997) 166033h.
- 3719 Hagen, S.R., Thompson, J.D., Snyder, D.S. and Myers, K.R.: Analysis of a monophosphoryl lipid A immunostimulant preparation from *Salmonella minnesota* R595 by high-performance liquid chromatography. *J. Chromatogr. A*, 767 (1997) 53-61.
- 3720 Heggie, J.R., Wu, M., Burns, R.B., Ng, C.S., Fung, H.C., Knight, G., Barnett, M.J., Spinelli, J.J. and Embree, L.: Validation of a high-performance liquid chromatographic assay method for pharmacokinetic evaluation of busulfan. *J. Chromatogr. B*, 692 (1997) 437-444.
- 3721 Ho, Y.-P., Lin, G., Damani, L.A., Mitterhauser, M. and Zole, I.: Spectral and chromatographic properties of 2-methoxyphenylmetyrapone and its potential metabolites. *J. Pharm. Biomed. Anal.*, 15 (1996) 479-486.
- 3722 Jankowski, A., Skorek-Jankowska, A., Carda, L., Steinborn-Piotrkowska, M. and Lamparczyk, H.: Application of HPLC for bezafibrate determination in biological fluids. *Acta Chromatogr.*, 5 (1995) 151-157; C.A., 126 (1997) 98782z.
- 3723 Kawai, K., Kawasaki-Tokui, Y., Odaka, T., Tsuruta, F., Kazui, M., Iwabuchi, H., Nakamura, T., Konoshita, T., Ikeda, T., Yoshioka, T., Komai, T. et al.: Disposition and metabolism of the new oral antidiabetic drug troglitazone in rats, mice and dogs. *Arzneim.-Forsch.*, 47 (1997) 356-368.

- 3724 Khoschsorur, G., Semmelrock, H.J., Rödl, S., Auer, T., Petek, W., Iberer, F. and Tschiessnigg, K.H.: Rapid, sensitive high-performance liquid chromatographic method for the determination of cyclosporin A and its metabolites M1, M17 and M21. *J. Chromatogr. B*, 690 (1997) 367-372.
- 3725 Liu, J. and Stewart, J.T.: High-performance liquid chromatography determination of praziquantel enantiomers in human serum using a reversed-phase cellulose-based chiral stationary phase and disc solid-phase extraction. *J. Chromatogr. B*, 692 (1997) 141-147.
- 3726 McCracken, R.J. and Kennedy, D.G.: Determination of the furazolidone metabolite, 3-amino-2-oxazolidinone, in porcine tissues using liquid chromatography-thermospray mass spectrometry and the occurrence of residues in pigs produced in Northern Ireland. *J. Chromatogr. B*, 691 (1997) 87-94.
- 3727 Monji, H., Yamaguchi, M., Aoki, I. and Ueno, H.: Highly sensitive high-performance liquid chromatographic determination method for a new erythromycin derivative, EM523, and its major metabolites in human plasma and urine using postcolumn tris(2,2'-bipyridine) ruthenium(III) chemiluminescence detection. *J. Chromatogr. B*, 690 (1997) 305-313.
- 3728 Murayama, N. and Sudo, K.-i.: High-performance liquid chromatographic method for determination of DX-9065a, a novel anticoagulant, in human urine and feces using cation-exchange solid-phase extraction. *J. Chromatogr. B*, 692 (1997) 389-396.
- 3729 Navaratnam, V., Mordi, M.N. and Mansor, S.M.: Simultaneous determination of artesunic acid and dihydroartemisinin in blood plasma by high-performance liquid chromatography for application in clinical pharmacological studies. *J. Chromatogr. B*, 692 (1997) 157-162.
- 3730 Ono, I., Matsuda, K. and Kanno, S.: Determination of N-(trans-4-isopropylcyclohexanecarbonyl)-D-phenylalanine and its metabolites in human plasma and urine by column-switching high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 692 (1997) 397-404.
- 3731 Paris, S., Blaschke, G., Locher, M., Borbe, H.O. and Engel, J.: Investigation of the stereoselective *in vitro* metabolism of the chiral antiasthmatic/antiallergic drug flezelastine by high-performance liquid chromatography and capillary zone electrophoresis. *J. Chromatogr. B*, 691 (1997) 463-471.
- 3732 Placidi, L., Scott, E.C., de Sousa, G., Rahmani, R., Placidi, M. and Sommadossi, J.-P.: Interspecies variability of TNP-470 metabolism, using primary monkey, rat, and dog cultured hepatocytes. *Drug Metab. Disp.*, 25 (1997) 94-99.
- 3733 Ravi, S.K., Naidu, M.U.R., Sekhar, E.C., Rao, T.R.K., Shobha, J.C., Rani, P.U. and Surya, K.J.: Rapid and selective analysis of secnidazole in human plasma using high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 691 (1997) 208-211.
- 3734 Rühl, R. and Nau, H.: Determination of adapalene (CD271/Differin®) and retinol in plasma and tissues by on-line solid-phase extraction and HPLC analysis. *Chromatographia*, 45 (1997) 269-274.
- 3735 Salado C., S. and Vera-Avila, L.E.: On-line solid-phase extraction and high-performance liquid chromatographic determination of chlorthalidone in urine. *J. Chromatogr. B*, 690 (1997) 195-202.
- 3736 Sandrenan, N., Sioufi, A., Godbillon, J., Netter, C., Donker, M. and van Valkenburg, C.: Determination of artemether and its metabolite, dihydroartemisinin, in plasma by high-performance liquid chromatography and electrochemical detection in the reductive mode. *J. Chromatogr. B*, 691 (1997) 145-153.
- 3737 Simpson, R.C.: Quantitative determination of a nonpeptide anti-thrombotic in dog plasma by microbore high-performance liquid chromatography-tandem mass spectrometry utilizing pneumatically assisted electrospray ionization. *J. Am. Soc. Mass Spectrom.*, 7 (1996) 1238-1244; *C.A.*, 126 (1997) 69663f.
- 3738 Stopher, D.A. and Gage, R.: Determination of a new antifungal agent, voriconazole, by multidimensional high-performance liquid chromatography with direct plasma injection onto a size-exclusion column. *J. Chromatogr. B*, 691 (1997) 441-448.
- 3739 Svensson, J.-O., Barkholt, L. and Säwe, J.: Determination of acyclovir and its metabolite 9-carboxymethoxymethylguanine in serum and urine using solid-phase extraction and high-performance liquid chromatography. *J. Chromatogr. B*, 690 (1997) 363-366.
- 3740 Timm, U., Zumbrunnen, R., Erdin, R., Singer, M. and Steiner, B.: Oral platelet aggregation inhibitor Ro 48-3657: Determination of the active metabolite and its prodrug in plasma and urine by high-performance liquid chromatography using automated column switching. *J. Chromatogr. B*, 691 (1997) 397-407.
- 3741 Vargas, F. and Fuentes, A.: Evidence of formation and participation of singlet oxygen in the *in vitro* phototoxicity of the combined diuretic triamterene and hydrochlorothiazide. *Pharmazie*, 52 (1997) 328-330.
- 3742 Von Nicolai, H., Brückl, R., Eschey, H., Greischel, A., Heinzel, G., König, E., Limmer, J. and Rupprecht, E.: Duration of action and pharmacokinetics of the oral antidiabetic drug glibuidone in patients with non-insulin-dependent (type 2) diabetes mellitus. *Arzneim.-Forsch.*, 47 (1997) 247-252.
- 3743 Wu, S.T., Benet, L.Z. and Lin, E.T.: Determination of amiprilose in human plasma by high-performance liquid chromatography with fluorimetric detection. *J. Chromatogr. B*, 692 (1997) 149-156.
- 3744 Yan, J., Lu, Z., Walsh, G.M., Wheeler, R.H. and Diasio, R.B.: High-performance liquid chromatographic determination of 9-(3-pyridylmethyl)-9-deazaguanine (BCX-34) in biological fluids. *J. Chromatogr. B*, 690 (1997) 295-303.
- 3745 Zhou, X.-J. and Sommadossi, J.-P.: Rapid quantitation of (-)-2'-deoxy-3'-thiacytidine in human serum by high-performance liquid chromatography with ultraviolet detection. *J. Chromatogr. B*, 691 (1997) 417-424.

For additional information see *C.A.*:

126 (1997) 22945j, 43669n, 51053x, 139426g, 153729q.

See also 2777, 2882, 3439, 3551, 3671, 3763.

32h. Toxicological and forensic applications

- 3746 Aase, B. and Rogstad, A.: Optimization of sample cleanup procedure for determination of diarrhetic shellfish poisoning toxins by use of experimental design. *J. Chromatogr. A*, 764 (1997) 223-231.

3747 Gaillard, Y. and Pépin, G.: Use of high-performance liquid chromatography with photodiode-array UV detection for the creation of a 600-compound library. Application to forensic toxicology. *J. Chromatogr. A*, 763 (1997) 149-163.

3748 Hoja, H., Marquet, P., Verneuil, B., Lotfi, H., Penicaut, B. and Lachatre, G.: Applications of liquid chromatography-mass spectrometry in analytical toxicology: a review. *J. Anal. Toxicol.*, 21 (1997) 116-126; C.A., 126 (1997) 221481e - a review with 119 refs.

3749 Lai, C.-K., Lee, T., Au, K.-M. and Chan, A.Y.-W.: Uniform solid-phase extraction procedure for toxicological drug screening in serum and urine by HPLC with photodiode-array detection. *Clin. Chem. (Washington)*, 43 (1997) 312-325.

3750 Rivasseau, C., Hennion, M.-C. and Sandra, P.: Determination of microcystins in cyanobacterial samples using microlumn chromatography. *J. Microcolumn Sep.*, 8 (1996) 541-551; C.A., 126 (1997) 140634e.

3751 Sadeg, N., Francois, G., Petit, B., Dutertre-Catella, H. and Dumontet, M.: Automated liquid-chromatographic analyzer used for toxicology screening in a general hospital: 12 month's experience. *Clin. Chem. (Washington)*, 43 (1997) 498-504.

3752 Tanaka, E., Terada, M., Nakamura, T., Misawa, S. and Wakasugi, C.: Forensic analysis of eleven cyclic antidepressants in human biological samples using a new reversed-phase chromatographic column of 2 µm porous microspherical silica gel. *J. Chromatogr. B*, 692 (1997) 405-412.

3753 Zenkevich, I.G., Kazankov, S.P. and Kuz'minykh, K.S.: (Analytical parameters of natural and synthetic narcotic substances in reversed-phase HPLC). *Zh. Prikl. Khim. (S.-Peterburg)*, 69 (1996) 1712-1716; C.A., 126 (1997) 196151n.

See also 2970, 2972, 3389, 3390, 3615, 3853.

32i. Plant extracts

3754 Duret, P., Waechter, A.-I., Margraff, R., Foucault, A., Hochemiller, R. and Cavé, A.: High-speed countercurrent chromatography: a promising method for the separation of the annonaceous acetogenins. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 627-635.

3755 Haeberlein, H., Boonen, G. and Beck, M.A.: *Piper methysticum*. Enantiomeric separation of kavapyrones by high performance liquid chromatography. *Planta Med.*, 63 (1997) 63-65; C.A., 126 (1997) 255558a.

3756 He, X.G., Lin, L.Z. and Lian, L.Z.: Electrospray high performance liquid chromatography-mass spectrometry in phytochemical analysis of kava (*Piper methysticum*) extract. *Planta Med.*, 63 (1997) 70-74; C.A., 126 (1997) 255559b.

3757 Ku, Y.-R., Lin, Y.-T., Wen, K.-C., Lin, J.-H. and Liao, C.-H.: Determination of parishin, parishins B and C in traditional Chinese medicinal preparations by high performance liquid chromatography. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3265-3277.

3758 Lin, W.-C., Chuang, W.-C. and Sheu, S.-J.: HPLC separation of the major constituents in *Paeoniae radix*. *J. High Resolut. Chromatogr.*, 19 (1996) 530-533.

3759 Reich, E. and Sneden, A.T.: Normal- and bonded-phase liquid chromatography with photodiode array detection of maytansinoids. *J. Chromatogr. A*, 763 (1997) 213-219.

For additional information see C.A.:
126 (1997) 203788f, 203793d, 255555x, 282776b.

See also 2814, 2819, 2833, 2885, 2917, 2986, 3518.

33. CLINICO-CHEMICAL APPLICATIONS

33a. General papers and reviews

See 3203.

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

3760 Lundahl, P. and Beigi, F.: Immobilized liposome chromatography of drugs for model analysis of drug-membrane interactions. *Adv. Drug Delivery Rev.*, 23 (1997) 221-227; C.A., 126 (1997) 152256w - a review with 41 refs.

3761 Takatsu, A.: Determination of organic constituents in human serum by isotope dilution method using discharge-assisted thermospray liquid chromatography mass spectrometry. *J. Mass Spectrom. Soc. Jpn.*, 44 (1996) 625-639; C.A., 126 (1997) 128823h - a review with 43 refs.

See also 2810, 2886, 2892, 2912, 2925, 2964, 2967, 2973, 2974, 2981, 2983, 2995, 3002, 3005, 3009, 3019, 3020, 3028, 3035, 3042, 3060, 3069, 3091, 3202, 3209, 3210, 3211, 3273, 3303, 3317, 3318, 3331, 3366, 3369, 3432, 3433, 3816, 3823, 3824, 3829.

34. FOOD ANALYSIS

34a. General papers and reviews

See 3376.

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

3762 Hein, M. and Isengard, H.-D.: The use of high performance liquid chromatography for the quality survey of frying fats and oils. *Chromatographia*, 45 (1997) 373-377.

3763 Iwabuchi, H., Ishikawa, M. and Kohta, K.: (Analysis of antibacterial agents in meat by semi-micro HPLC combined with an automated online solid-phase extraction system). *Kuromatogurafu*, 17 (1996) 334-335; C.A., 126 (1997) 170565a.

3764 Khalil, M.A., Sobhy, I., Khattab, M. and Stino, G.: Identification of some stone fruit stocks by prevailing phenolic compounds in various parts of the plant. *Acta Hort.*, 409(Fourth International Symposium on Growing Temperate Zone Fruits in the Tropics and Subtropics, 1993) (1995) 215-222; C.A., 126 (1997) 274459k.

3765 Steinhart, H. and Biernoth, G.: Can food quality be enhanced by chromatography? *Chromatographia*, 45 (1997) 11-17.

See also 2816, 2822, 2823, 2828, 2829, 2837, 2912, 2993, 2998, 3039, 3052, 3420, 3431, 3470, 3475, 3479, 3482, 3497, 3499, 3833.

35. ENVIRONMENTAL ANALYSIS

35a. General papers and reviews

3766 Bartle, K.: Environmental chromatography. *LC-GC Int.*, 10 (1997) 214.

3767 Huang, E.B., Poole, G. and Chiu, C.: Isolation and determination of toxic congeners of polychlorinated biphenyls in environmental samples. *J. High Resolut. Chromatogr.*, 20 (1997) 1-9.

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

3768 Führer, U., Deissler, A., Schreitmüller, J. and Ballschmiter, K.: Analysis of halogenated methoxybenzenes and hexachlorobenzene (HCB) in the picogram m⁻³ range in marine air. *Chromatographia*, 45 (1997) 414-427 - a review with 41 refs.

See also 2716, 2801, 2803, 2808, 2906, 2907, 2992, 3495, 3853.

35c. Water pollution (complex mixtures; single compounds by cross-reference only)

3769 Brinkman, U.A.T.: Multidimensional gas and liquid chromatographic approaches to trace-level environmental analysis. *Chromatographia*, 45 (1997) 445-449.

3770 Gros, N. and Gorenc, B.: Performance of ion chromatography in the determination of anions and cations in various natural waters with elevated mineralization. *J. Chromatogr. A*, 770 (1997) 119-124.

3771 Heberling, S.S.: Assuring long-term integrity of steam generators and turbines by maintaining good control of chemistry with ion chromatography. *Off. Proc.-Int. Water Conf.*, 56th (1995) 52-61; *C.A.*, 126 (1997) 147969b - a review with many refs.

3772 Lewin, U., Wennrich, L., Efer, J. and Engewald, W.: Determination of highly polar components in water samples around former ammunition plants. *Chromatographia*, 45 (1997) 91-98.

3773 Renner, T., Baumgarten, D. and Unger, K.K.: Analysis of organic pollutants in water at trace levels using fully automated solid-phase extraction coupled to high-performance liquid chromatography. *Chromatographia*, 45 (1997) 199-205.

3774 Slobodnik, J., Louter, A.J.H., Vreuls, J.J., Liska, I. and Brinkman, U.A.T.: Monitoring of organic micropollutants in surface water by automated on-line trace-enrichment liquid and gas chromatographic systems with ultraviolet diode-array and mass spectrometric detection. *J. Chromatogr. A*, 768 (1997) 219-258.

3775 Vanatta, L.E. and Coleman, D.E.: Calculation of detection limits for a single-laboratory ion-chromatographic method to determine parts-per-trillion ions in ultrapure water. *J. Chromatogr. A*, 770 (1997) 105-114.

3776 Whitehead, P.: Ultra-pure water for ion chromatography. *J. Chromatogr. A*, 770 (1997) 115-118.

For additional information see *C.A.*:
126 (1997) 79634m, 79697j.

See also 2716, 2760, 2793, 2812, 2815, 2817, 2841, 2994, 3363, 3373, 3376, 3405, 3477, 3486, 3488, 3489, 3498, 3657, 3833, 3844, 3853.

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

3777 Vermillion, W.D. and Crenshaw, M.D.: In-line respeciation: an ion-exchange ion chromatographic method applied to the separation of degradation products of chemical warfare nerve agents in soil. *J. Chromatogr. A*, 770 (1997) 253-260.

See also 2716, 3403, 3483, 3485, 3491, 3494, 3496, 3501, 3778.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

36a. Surfactants

3778 Czerhati, T., Nemeth-Kiss, V. and Forgacs, E.: Use of thin-layer and high-performance liquid chromatography for the study of the adsorption of surfactants on a river sediment. *J. Biochem. Biophys. Methods*, 33 (1996) 81-88; *C.A.*, 126 (1997) 16366e.

3779 Mackay, L.G., Croft, M.Y., Selby, D.S. and Wells, R.J.: Determination of nonylphenol and octylphenol ethoxylates in effluent by liquid chromatography with fluorescence detection. *J. Assoc. Off. Anal. Chem.*, 80 (1997) 401-407.

36b. Antioxidants and preservatives

3780 Baldioli, M., Servili, M., Perretti, G. and Montedoro, G.F.: Antioxidant activity of tocopherols and phenolic compounds of virgin olive oil. *J. Am. Oil Chem. Soc.*, 73 (1996) 1589-1594.

3781 Jordan, S.L. and Taylor, L.T.: HPLC separation with solvent elimination FTIR detection of polymer additives. *J. Chromatogr. Sci.*, 35 (1997) 7-13.

3782 Méndez, V.M.R., Márquez-Ruiz, G. and Dobarganes, M.C.: Comparative performance of steam and nitrogen as stripping gas in physical refining of edible oils. *J. Am. Oil Chem. Soc.*, 73 (1996) 1641-1645.

See also 2823, 3444.

36c. Complex mixtures, technical products and unidentified compounds

3783 Hui, F., Machtaïère, G., Xie, J., Kolodziejczyk, H. and Rosset, R.: Isolation of polybutenylsuccinimide-type dispersants from multigrade lubricating oils by classical cation exchange chromatography. *Anal. Chim. Acta*, 339 (1997) 109-113.

3784 Johansen, S.L., Sivasathy, A., Dowd, M.K., Reilly, P.J. and Hammond, E.G.: Low-molecular weight organic composition of cottonseed soapstocks. *J. Am. Oil Chem. Soc.*, 73 (1996) 1273-1286.

3785 Schoenmakers, P., Blomberg, J. and Kerkvliet, S.: Sophisticated separation methods and the oil industry. *LC-GC*, 15 (1997) 28-33; *C.A.*, 126 (1997) 146050h.

For additional information see C.A.:
126 (1997) 226748g.

See also 2930, 3772.

37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES

- 3786 Eijkelhoff, C., van Roon, H., Boekema, E.J. and Dekker, J.P.: Analysis of the photosystem II reaction center and its complex with CP47 using gelfiltration chromatography and electron microscopy. In: Mathis, P. (Editor), *Photosynth.: Light Biosphere, Proc. Int. Photosynth. Congr., 10th 1995*, Kluwer, Dordrecht, 1995, pp. 499-502; C.A., 126 (1997) 223007d.

For additional information see C.A.:
126 (1997) 154638w, 250269x.

See also 3378, 3830.

38. INORGANIC COMPOUNDS

38a. Cations

- 3787 Anzalone, S., Bottari, E. and Festa, M.R.: Determination of oligoelements in wheat. *Anal. Chim. Acta*, 343 (1997) 241-249.
 3788 Ayres, D.M. and Davis, A.P.: Determination of cobalt(II)-EDTA, cobalt(III)-EDTA, and cobalt(II) in aqueous solution. *J. Environ. Qual.*, 25 (1996) 1446-1449; C.A., 126 (1997) 54213k.
 3789 Bagur, G., Sánchez-Viñas, M. and Gázquez, D.: Determination of titanium(IV) as an additive in organic matrices by reversed-phase high-performance liquid chromatography with 5,5'-methylenedisalicylohydroxamic acid. *J. Chromatogr. Sci.*, 35 (1997) 131-134.
 3790 Borges, C., Caetano, C., Costa Pessoa, J., Figueiredo, M.O., Lourenco, A., Malhoa Gomes, M., Silva, T.P. and Veiga, J.P.: Monitoring the removal of soluble salts from ancient tiles by ion chromatography. *J. Chromatogr. A*, 770 (1997) 195-201.
 3791 Cardelluccio, N., Ragone, P., Cavalli, S. and Riviello, J.: Use of ion chromatography for the determination of transition metals in the control of sewage-treatment-plant and related waters. *J. Chromatogr. A*, 770 (1997) 185-193.
 3792 Co, A.C., Ko, A.N., Ye, L. and Lucy, C.A.: Modification of 4-(2-pyridylazo)-resorcinol postcolumn reagent selectivity through competitive equilibria with chelating ligands. *J. Chromatogr. A*, 770 (1997) 69-74.
 3793 Ding, M., Chen, P. and Luo, G.: (Simultaneous determination of anions and cations by ion chromatography). *Fenxi Huaxue*, 25 (1997) 104-109; C.A., 126 (1997) 232712g - a review with 40 refs.
 3794 Feng, Y.Q., Shibukawa, M. and Oguma, K.: Equilibrium and kinetic studies of ligand-exchange reaction of aluminium(III)-5-sulfoquinoline-8-ol complex with phosphate ion by reversed-phase ion-pair liquid chromatography. *J. Chromatogr. Sci.*, 34 (1996) 425-430.

- 3795 Foltin, M., Megova, S., Prochazkova, T. and Steklac, M.: Speciation of mercury by ion chromatography with post-column derivatization. *J. Radioanal. Nucl. Chem.*, 208 (1996) 295-307; C.A., 126 (1997) 112456e.
 3796 Fujiwara, T., Kurahashi, K., Kumamaru, T. and Sakai, H.: Luminescence with heteropoly acids and its application to the determination of arsenate, germanate, phosphate and silicate by ion chromatography. *Appl. Organomet. Chem.*, 10 (1996) 675-681; C.A., 126 (1997) 152104v.
 3797 Gaspar, A., Posta, J. and Toth, R.: Online chromatographic separation and determination of chromium(III) and chromium(IV) with preconcentration of the chromium(III) using potassium hydrogen phthalate in various samples by flame atomic absorption spectrometry. *J. Anal. At. Spectrom.*, 11 (1996) 1067-1074; C.A., 126 (1997) 54193d.
 3798 Gautier, E.A., Gettar, R.T., Servant, R.E. and Batistoni, D.A.: Surfactant-sensitized post-column reaction with xylenol orange for the determination of lanthanides by ion chromatography. *J. Chromatogr. A*, 770 (1997) 75-83.
 3799 Geckeis, H., Hentschel, D., Jensen, D., Götzten, A. and Kerner, N.: Determination of Fe-55 and Ni-63 using semi-preparative ion chromatography - a feasible study. *Fresenius J. Anal. Chem.*, 357 (1997) 864-869.
 3800 Glennon, J.D., Lynch, B., Hall, K., Harris, S.J. and O'Sullivan, P.: Water-eluent based ion chromatography on silica bonded molecular baskets. *Spec. Publ.-R. Soc. Chem.*, 196 (Progress in Ion Exchange) (1997) 153-159; C.A., 126 (1997) 287225f.
 3801 Iqbal, J., Mirza, M.L. and Ghafoor, R.: Chromatographic separation of trace amount of alkaline earth metals from large amount of iron with zirconium phosphate as ion exchanger. *J. Res. (Sci.)*, 7 (1995) 5-8; C.A., 126 (1997) 112453b.
 3802 Ivask, J. and Pentchuk, J.: Analysis of ions in polar ice core samples by use of large injection volumes in ion chromatography. *J. Chromatogr. A*, 770 (1997) 125-127.
 3803 Jensen, D. and Boehling, S.: (Progress in analytical cation separation). *LaborPraxis*, 20 (1996) 48-52; C.A., 126 (1997) 112391e - a review with 17 refs.
 3804 Kim, J., Kim, J.-H. and Kim, S.-J.: (Separation of Pd(II) ion using the polymerized N_2O_2 mixed donor macrocycle). *J. Korean Chem. Soc.*, 41 (1997) 33-38; C.A., 126 (1997) 180484n.
 3805 Laborde, F., Vincente, M.V., Mir, J.M. and Castillo, J.R.: Evaluation of on-line size exclusion chromatography electrothermal atomic absorption spectrometry for selenium speciation. *Fresenius J. Anal. Chem.*, 357 (1997) 837-843.
 3806 Ma, Z. and Zheng, X.: Separation of lanthanides by high-speed countercurrent chromatography with organophosphate ester. *J. Liq. Chromatogr. Relat. Technol.*, 19 (1996) 3255-3263.
 3807 Ma, Z., Zhang, L. and Han, S.: Separation of samarium, gadolinium, terbium, dysprosium, erbium and ytterbium by high-speed countercurrent chromatography with organophosphate ester. *J. Chromatogr. A*, 766 (1997) 282-285.
 3808 Munaf, E., Zein, R., Takeuchi, T. and Miwa, T.: Application of a silica gel column for the simultaneous determination of alkali and alkaline-earth metal ions with indirect photometric detection using benzyltrimethylammonium chloride as visualization agent. *Anal. Chim. Acta*, 341 (1997) 225-228.
 3809 Nesterenko, P.N. and Jones, P.: First isocratic separation of fourteen lanthanides and yttrium by high-performance chelation ion chromatography. *Anal. Commun.*, 34 (1997) 7-8; C.A., 126 (1997) 232756z.

- 3810 Nesterenko, P.N. and Jones, P.: Single-column method of chelation ion chromatography for the analysis of trace metals in complex samples. *J. Chromatogr. A*, 770 (1997) 129-135.
- 3811 Ohta, K., Tanaka, K., Paull, B. and Haddad, P.R.: Retention behavior of alkali, alkaline earth and transition metal cations in ion chromatography with an unmodified silica gel column. *J. Chromatogr. A*, 770 (1997) 219-227.
- 3812 Oi, T., Odagiri, T. and Nomura, M.: Extraction of lithium from GSJ rock reference samples and determination of their lithium isotopic compositions. *Anal. Chim. Acta*, 340 (1997) 221-225.
- 3813 Padarauskas, A. and Judzentiene, A.: Comparison of ion pair chromatography and capillary electrophoresis for separation of Cr(VI), Mo(VI) and W(VI) oxoanions. *Chemija*, (1996) 51-56; C.A., 126 (1997) 28722c.
- 3814 Pin, C. and Zalduogui, J.F.S.: Sequential separation of light rare-earth elements, thorium and uranium by miniaturized extraction chromatography: application to isotopic analyses of silicate rocks. *Anal. Chim. Acta*, 339 (1997) 79-89.
- 3815 Porter, C.E., Riley, F.D., Jr., Vandergrift, R.D. and Felker, L.K.: Fermium purification using TEVA resin extraction chromatography. *Sep. Sci. Technol.*, 32 (1997) 83-92; C.A., 126 (1997) 283799y.
- 3816 Röllin, H. and Nogueira, C.M.C.A.: Identification of aluminium fractions in serum using the techniques of high-performance liquid chromatography, ultrafiltration and Zeeman atomic absorption spectrometry. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 215-222.
- 3817 Rucandio, I.: Cation-exchange isolation and ICP-AES determination of rare earth elements in geological silicate material. *Fresenius J. Anal. Chem.*, 357 (1997) 661-669.
- 3818 Schulte, L.D., McKee, S.D. and Salazar, R.R.: Application of extraction chromatography to actinide decontamination of hydrochloric acid effluent streams. In: *Proc. Embedded Top Meet DOE Spent Nud. Fuel. Fossile Mater. Manage.*, American Nuclear Society, La Grange Park, 1996, pp. 418-427; C.A., 125 (1996) 206704r.
- 3819 Shah, R. and Devi, S.: Preconcentration and separation of palladium(II) and platinum(IV) on a dithizone anchored poly(vinylpyridine)-based chelating resin. *Anal. Chim. Acta*, 341 (1997) 217-224.
- 3820 Shao, X., Tang, B., Liu, S. and Zhao, G.: Determination of rare earth by HPLC using factor analysis and wavelet analysis. *Kindorui*, 28 (1996) 174-175; C.A., 126 (1997) 54223p.
- 3821 Stephen, S.C. and Truslove, N.J.: Determination of ions in ink jet dyes by capillary electrophoresis and ion chromatography. *Spec. Publ.-R. Soc. Chem.*, 196(Progress in Ion Exchange) (1997) 124-132; C.A., 126 (1997) 287266v.
- 3822 Tao, X. and Zhang, X.: (Determination of transition metal ions by low pressure ion chromatography with electric conductivity detection). *Chengdu Keji Daxue Xuebao*, (1996) 18-22; C.A., 126 (1997) 180536f.
- 3823 Van Nuwenborg, J.E., Stöckl, D. and Thienpont, L.M.: Practical aspects of suppressed ion chromatography for cations in human serum. *J. Chromatogr. A*, 770 (1997) 137-141.
- 3824 Van Nuwenborg, J.E., Stöckl, D. and Thienpont, L.M.: State-of-the-art of serum total calcium measurement as investigated by split-sample measurement with an ion by candidate reference method. *Eur. J. Clin. Chem. Clin. Biochem.*, 35 (1997) 297-300.
- 3825 Wilhartitz, P., Kreer, S., Krismer, R. and Bobleter, O.: High performance ultra trace analysis in molybdenum and tungsten accomplished by online coupling of ion chromatography with simultaneous inductively coupled plasma atomic emission spectrometry (ICP-AES). *Mikrochim. Acta*, 125 (1997) 45-52; C.A., 126 (1997) 180553j.
- 3826 Yamagishi, I., Morita, Y. and Kubota, M.: Ion exchange selectivity for Am³⁺, Nd³⁺ and Eu³⁺ on titanium antimonate and their chromatographic separation. *Radiochim. Acta*, 75 (1996) 27-32; C.A., 126 (1997) 232754x.
- 3827 Yang, B., Li, Z. and Feng, Y.: (Application of heterocyclic azo reagents in HPLC-spectrophotometry for metals). *Yejin Fenxi*, 16 (1996) 30-36, 29; C.A., 126 (1997) 258067a.
- For additional information see C.A.:
126 (1997) 103218b, 139195f, 146513m, 148606t, 204698p, 287223d, 287279b.
- See also 2698, 2756, 2757, 2764, 3404, 3407, 3770.
- 38b. Anions*
- 3828 Achilli, M. and Romele, L.: Use of factorial experimental design for the rapid evaluation of main and interactive factors affecting linearity in calibration curves for sulfate analysis by ion chromatography. *J. Chromatogr. A*, 770 (1997) 29-37.
- 3829 Andersson, S. and Forsman, U.: Determination of total iodine in biological material by alkaline ashing and column-switching ion-pair liquid chromatography. *J. Chromatogr. B*, 692 (1997) 53-59.
- 3830 Athanasopoulou, A. and Karaiskakis, G.: Characterization of sulphides by gravitational field-flow fractionation. *J. Liq. Chromatogr. Relat. Technol.*, 20 (1997) 839-854.
- 3831 Blackwell, P.A., Cave, M.R., Davis, A.E. and Malik, S.A.: Determination of chlorine and bromine in rocks by alkaline fusion with ion chromatography detection. *J. Chromatogr. A*, 770 (1997) 93-98.
- 3832 Böhme, U., Schmidt, W., Dietrich, P.G., Matschi, A., Sacher, F. and Brauch, H.-J.: Trace analysis of bromate and bromide with ion chromatography on coated reversed phase materials. *Fresenius J. Anal. Chem.*, 357 (1997) 629-634.
- 3833 Dengler, C., Kolb, M. and Laebli, M.: (Ion chromatographic applications with single-column and suppressor technique). *GIT Fachz. Lab.*, 40 (1996) 1104-1109; C.A., 126 (1997) 139187e.
- 3834 Fagan, P., Paull, B., Haddad, P.R., Dunne, R. and Kamar, H.: Ion chromatographic analysis of cyanate in gold processing samples containing large concentrations of copper(I) and other metallo-cyanide complexes. *J. Chromatogr. A*, 770 (1997) 175-183.
- 3835 Gaucheron, F., le Graet, Y., Piot, M. and Boyaval, E.: Determination of anions of milk by ion chromatography. *Lait*, 76 (1996) 433-443; C.A., 126 (1997) 17932y.
- 3836 Haddad, P.R.: Ion chromatography and capillary electrophoresis for the determination of inorganic anions - current status and relative merits. *Spec. Publ.-R. Soc. Chem.*, 196(Progress in Ion Exchange) (1997) 115-123; C.A., 126 (1997) 287190r.
- 3837 Ito, K.: Separation behavior of inorganic anions on an octadecyl-bonded silica column coated with cetyltrimethylammonium by phthalate and salicylate eluents. *J. Chromatogr. A*, 764 (1997) 346-349.

- 3838 Jun, X., Lima, J.L.F.C. and Montenegro, M.C.B.S.M.: A study of a permanently coated polymeric column for simultaneous separation of inorganic anions and mono-carboxylic acids. *Anal. Chim. Acta.*, 339 (1997) 231-239.
- 3839 Manning, D.A.C. and Bewsher, A.: Determination of anions in landfill leachates by ion chromatography. *J. Chromatogr. A*, 770 (1997) 203-210.
- 3840 Miura, Y., Saitoh, A. and Koh, T.: Determination of sulfur oxy-anions by ion chromatography on a silica ODS column with tetrapropylammonium salt as an ion-pairing reagent. *J. Chromatogr. A*, 770 (1997) 157-164.
- 3841 Miyashita, M. and Yamashita, S.: (Study on iodinated compounds. IX. Solid-phase extraction for reversed-phase high-performance liquid chromatographic determination of iodide ion). *Bunseki Kagaku*, 46 (1997) 143-148; C.A., 126 (1997) 232757a.
- 3842 Monaghan, J.M., Cook, K., Gara, D. and Crowther, D.: Determination of nitrite and nitrate in human serum. *J. Chromatogr. A*, 770 (1997) 143-149.
- 3843 Nair, L.M. and Saari-Nordhaus, R.: Use of a conventional HPLC system for performance U.S. EPA method 300.0, determination of inorganic anions by ion chromatography. *Am. Lab. (Shelton)*, 29 (1997) 33FF, 33GG, 33HH, 33II, 33JJ, 33LL, 33MM; C.A., 126 (1997) 287205z.
- 3844 Novic, M., Leznik, B., Hudník, V. and Pihlar, B.: Carbonate interferences by ion chromatographic determination of anions in mineral waters. *J. Chromatogr. A*, 764 (1997) 249-256.
- 3845 Stratford, M.R.L., Dennis, M.F., Cochrane, R., Parkins, C.S. and Everett, S.A.: The role of nitric oxide in cancer. Improved methods for measurement of nitrite and nitrate by high-performance ion chromatography. *J. Chromatogr. A*, 770 (1997) 151-155.
- 3846 Suzuki, J., Okumoto, C., Katsuki, Y., Tomomatsu, T., Tamura, Y., Ito, Y., Ishiwata, H., Yamada, T. and Nishijima, M.: (Determination of residual chlorite in vegetables and eggs treated with sodium chlorite by UV-ion chromatography and effect of soaking in water). *Shokuhin Eiseigaku Zasshi*, 38 (1997) 22-26; C.A., 126 (1997) 250320g.
- 3847 Svoboda, L. and Schmidt, U.: Single-column ion chromatography of linear polyphosphates. *J. Chromatogr. A*, 767 (1997) 107-113.
- 3848 Taylor, G.E.: Determination of impurities in clodronic acid by anion-exchange chromatography. *J. Chromatogr. A*, 770 (1997) 261-271.
- 3849 Wang, P., Li, S.F.Y. and Lee, H.K.: Simultaneous determination of monofluorophosphate and fluoride in toothpaste by capillary electrophoresis. *J. Chromatogr. A*, 765 (1997) 353-359.
- 3850 Yu, H.: New approach to determining each component of a two-component overlapping peak by single-column anion ion chromatography. *J. Chromatogr. A*, 769 (1997) 333-337.
- 3851 Zein, R., Munaf, E., Takeuchi, T. and Miwa, T.: Application of microcolumn ion chromatography using octadecylsilica immobilized with bovine serum albumin as stationary phase for the determination of inorganic anions. *Fresenius J. Anal. Chem.*, 357 (1997) 466-468.
- See also 2646, 2756, 2757, 2900, 3770, 3775, 3776, 3777, 3790, 3793, 3796, 3802, 3821.
39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS
- 3852 Barrero Moreno, J.M., Garcia Alonzo, J.I., Arbore, P., Nicolau, G. and Koch, L.: Characterization of spent nuclear fuels by ion chromatography-inductively coupled plasma mass spectrometry. *J. Anal. At. Spectrom.*, 11 (1996) 929-935; C.A., 126 (1997) 26113j.
- 3853 Goldstein, S.J., Hensley, C.A., Armenta, C.E. and Peters, R.J.: Environmental and human monitoring of americium-241 utilizing extraction chromatography and α -spectrometry. *Anal. Chem.*, 69 (1997) 809-812.
- See also 3826.