

Planar Chromatography

1. REVIEWS AND BOOKS

- 213 Barcza, L.: (Molecular recognition and its relation to pharmaceutical analysis). *Gyogyszereszet*, 38 (1994) 477-484; C.A., 122 (1995) 17280b - a review with 18 refs.
- 214 Davis, J.M.: Statistical theories of peak overlap in chromatography. *Adv. Chromatogr. (N.Y.)*, 34 (1994) 109-176; C.A., 121 (1994) 238951c - a review with 52 refs.
- 215 Fried, B. and Sherma, J. (Editors): *Thin-Layer Chromatography: Techniques and Applications*, third-edition revised and expanded. In: *Chromatogr. Sci. Ser.*, 1994, Vol. 66, Dekker, New York, 1994, 451 pp.; C.A., 121 (1994) 270855k.
- 216 Kumar, M.: Recent trends in chromatographic procedures for separation and determination of rare earth elements. *Analyst (Cambridge)*, 119 (1994) 2013-2024.
- 217 Szepeszy, L.: (Development and importance of separation techniques in instrumental analysis). *Magy. Kem. Foly.*, 1100 (1994) 340-353; C.A., 121 (1994) 270751y - a review with 121 refs.

2. FUNDAMENTALS, THEORY AND GENERAL

2a. General

- 218 Nyiredy, S., Fatér, Z. and Szabady, B.: Identification in planar chromatography by use of retention data measured using characterized mobile phases. *J. Planar Chromatogr.*, 7 (1994) 406-409.
- 219 Rozylo, J.K., Janicka, M. and Siembida, R.: Advantages of TLC as a pilot technique for HPLC. *J. Liq. Chromatogr.*, 17 (1994) 3641-3653.

2b. Thermodynamics and theoretical relationships

- 220 Kunugi, A. and Tabei, K.: (Basic experiments on TLC. 1. Effect of temperature on R_f values). *Kagaku to Kyoiku*, 42 (1994) 206-210; C.A., 121 (1994) 270773g.

2c. Relationship between structure and chromatographic behaviour

- 221 Pyka, A.: A new stereoisomeric topological index (I_{SN}) for predicting the separation of stereoisomers in TLC. Part VII. *J. Planar Chromatogr.*, 7 (1994) 389-393.

See also 250, 302.

3. GENERAL TECHNIQUES

3a. Apparatus and accessories

- 222 Partney, D.W., Jr.: Apparatus for thin layer chromatography. U.S. US 5,350,510 (Cl. 210-198.3; B01D15/08), 27 Sep. 1994, Appl. 16,789, 11 Feb. 1993; 7 pp.; C.A., 121 (1994) 270730r.

See also 231.

3b. Detectors and detection reagents

- 223 Fijalek, Z. and Snycerski, A.: Electrochemical and TLC-densitometric analysis of chlorambucil and its decomposition product. *Acta Pol. Pharm.*, 50 (1993) 301-306; C.A., 121 (1994) 291623y.

See also 255, 261, 262, 296, 348, 351, 358.

3c. Sorbents and columns, packing procedures

- 224 Chowdary, K.P.R. and Rao, P.V.: Biopharmaceutical studies on solid dispersions of nalidixic acid in modified starches. *Drug Dev. Ind. Pharm.*, 20 (1994) 3015-3022; C.A., 121 (1994) 263486n.
- 225 Coman, V. and Marutoiu, C.: The preparation of *n*-octyl-bonded volcanic tuff as stationary phase for TLC. *J. Planar Chromatogr.*, 7 (1994) 450-452.
- 226 Hauck, H.E., Junker-Buchheit, A. and Wenig, R.: Reproducibility of Silica gel 60 precoated plates in TLC and HPTLC. *LC-GC Int.*, 8, No. 1 (1995) 34-38.
- 227 Kaku, S.: (Development of an optical immunoassay method). *SSM Tech. Rep.*, 5 (1993) 72-76; C.A., 121 (1994) 296463f.
- 228 Marutoiu, C. and Cenan, A.: (Production of cellulose triacetate). *Rom. RO 103,691 (Cl. C08B3/06)*, 15 Dec. 1993, Appl. 141,516, 08 Sep. 1989; 3 pp.; C.A., 121 (1994) 303354b.
- 229 Mudasingana, M.L., Noeva, V.A., Nechaeva, E.B., Prokof'eva, V.I. and Sokolova, T.M.: (Thin-layer chromatographic identification of phenothiazine derivatives on various sorbents). *Farmatsiya (Moscow)*, 42, No. 1 (1993) 58-59; C.A., 121 (1994) 263810p.

See also 213, 258, 303, 306, 337, 349, 397.

3d. Quantitative analysis

- 230 Kang, J.S.: (Normalization and search of the UV/VIS spectra measured from TLC/HPTLC). *Yakhak Hoechi*, 38 (1994) 366-371; C.A., 121 (1994) 250180h.

See also 350.

- 3e. *Preparative scale chromatography*
- 231 Läufer, K., Lehmann, J., Petry, S., Scheuring, M. and Schmidt-Schuchardt, M.: Simple, inexpensive system for using thin-layer chromatography for micro-preparative purposes. *J. Chromatogr. A*, 684 (1994) 370-373.
- See also 375.
- 3f. *Programmed temperature, pressure, vapors, gradients*
- See 220, 233.
- 3g. *High performance procedures*
- 232 Belay, M.: *Method Development and Solvent Optimization for the Separation of Pharmaceutically and Biologically Important Compounds by High-Performance Planar Chromatography and Automated Multiple Development*. Wayne State Univ., 1993, 221 pp.; C.A., 121 (1994) 270804t.
4. SPECIAL TECHNIQUES
- 4a. *Automation*
- See 347.
- 4b. *Computerization and modelling*
- 233 Qin-Sun, W., Bing-Wen, Y. and Zhi-Chao, Z.: Optimization of stepwise gradient HPTLC by statistical scanning. *J. Planar Chromatogr.*, 7 (1994) 477-480.
- 234 Wang, Q.-S. and Zhan, Z.-P.: A method for optimizing the HPTLC separation of a mixture of unknown composition. *J. Planar Chromatogr.*, 7 (1994) 394-398.
- See also 302, 357.
- 4c. *Combination with other physico-chemical techniques (MS, IR etc.)*
- 235 Van de Nesse, R.J., Vinkenburg, I.H., Jonker, R.H.J., Hoornweg, G.Ph., Gooijer, C., Brinkman, U.A.T. and Velthorst, N.H.: Fluorescence line-narrowing spectroscopy as an off-line identification method for narrow-bore column liquid chromatography. *Appl. Spectrosc.*, 48 (1994) 788-795; C.A., 121 (1994) 270838g.
- 236 Wollf, S.C. and Kovar, K.-A.: Direct HPTLC-FTIR measurement in combination with AMD. *J. Planar Chromatogr.*, 7 (1994) 344-348.
- See also 243, 281, 298.
- 4g. *Enantiomers, separation*
- 237 Aboul-Enein, J.Y. and Serignese, V.: Optical purity determination of thyroxine enantiomers in bulk materials by chiral thin layer chromatography. *Biomed. Chromatogr.*, 8 (1994) 317-318; C.A., 122 (1995) 17310m.
- 238 Lepri, L., Coas, V., Desideri, P.G. and Zocchi, A.: Reversed phase planar chromatography of enantiomeric compounds on triacetlycellulose. *J. Planar Chromatogr.*, 7 (1994) 376-381.
- See also 221, 305, 306.
- 4h. *Other special techniques*
- See 227, 359.
5. HYDROCARBONS AND HALOGEN DERIVATIVES
- 5b. *Cyclic hydrocarbons, fullerenes*
- See 390.
- 5d. *Complex hydrocarbon mixtures (incl. analysis of tars, bitumens and mineral oils)*
- 239 Dhole, V.R. and Ghosal, G.K.: Rapid detection and characterization of petroleum products and residues by TLC: Part I. *J. Planar Chromatogr.*, 7 (1994) 469-471.
- 240 Whittaker, M. and Pollard, S.J.T.: Characterization of refractory wastes at hydrocarbon-contaminated sites: 1. Rapid column fractionation and thin layer chromatography of reference oils. *J. Planar Chromatogr.*, 7 (1994) 354-361.
6. ALCOHOLS
- See 238.
7. PHENOLS
- See 238, 260, 394.
8. SUBSTANCES CONTAINING HETEROCYCLIC OXYGEN
- 241 Gizella, P., Krawczyk, U. and Agnes, Es Kery: (Spectrophotometric and chromatographic investigation of bilberry anthocyanins for qualification purposes). *Acta Pharm. Hung.*, 64 (1994) 117-122; C.A., 121 (1994) 308449w.
- 8a. *Flavonoids*
- 242 Costa, S.S., Jossang, A., Bodo, B., Souza, M.L.M. and Moraes, V.L.G.: Patuletin acetylramnosides from *Kalanchoe brasiliensis* as inhibitors of human lymphocyte proliferative activity. *J. Natural Prod.*, 57 (1994) 1503-1510.
- See also 394.

8b. *Aflatoxins and other mycotoxins*

- 243 Gelosa, M. and Buzzetti, I.: (Chromatographic techniques for aflatoxin determination in milk). *Ind. Aliment. (Pinerolo)*, 33 (1994) 315-317; C.A., 121 (1994) 229127m.

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

See 331.

9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

- 244 Li, G. and Zhen, H.: (Determination of hesperidin and total anthraquinones in Zhongxianglubailu tablets by dual-wavelength TLC scanning). *Zhongcaoyao*, 25 (1994) 359-361; C.A., 121 (1994) 263825x.
- 245 Wu, P.: (Thin layer chromatography and quantitative determination of total anthraquinone in Jierejin oral liquid). *Huaxue Yaoxue Zazhi*, 9 (1994) 165-168; C.A., 121 (1994) 213108v.

See also 378, 388.

10. CARBOHYDRATES

10a. *Mono and oligosaccharides. Structural studies*

- 246 Guo, X., Sun, H. and Yu, K.: (Determination of physical and chemical constants and separation as well as quantification of isosorbide nitrates). *Yaowu Fenxi Zazhi*, 14, No. 4 (1994) 37-41; C.A., 121 (1994) 213146f.
- 247 Taylor, W.G., Danielson, T.J. and Orcutt, R.L.: Thin-layer chromatographic detection of ivermectin in cattle serum. *J. Chromatogr. B*, 661 (1994) 327-333.

10c. *Glycoproteins and their constituents*

- 248 Cook, D.G., Fantini, J., Spitalnik, S.L. and Gonzales-Scarano, F.: Application of high-performance thin-layer chromatography to investigate interactions between human immunodeficiency virus type 1 glycoprotein gp 120 and galactosylceramide. *Methods Mol. Genet.*, (1994) 86-92; C.A., 121 (1994) 276116s.

11. ORGANIC ACIDS AND LIPIDS

11a. *Organic acids and simple esters*

- 249 Chen, G. and Wang, Q.: (TLC-UV method for quantitative determination of salicylic acid in Suxiaozhiyang tincture). *Zhongguo Yiyuan Yaoyue Zazhi*, 14 (1994) 271-272, 288; C.A., 121 (1994) 308514p.
- 250 Gocan, S., Cimpan, G. and Panea, T.: Normal phase TLC and reversed phase HPTLC of some plant growth stimulators. *J. Planar Chromatogr.*, 7 (1994) 435-439.
- 251 Herzog, R. and Leuschner, J.: Pharmacokinetic studies of benzalazine. *Arzneim.-Forsch.*, 44 (1994) 1381-1383.

- 252 Jung, S. and Hollingsworth, R.I.: Structures and stereochemistry of the very long α,ω -bifunctional alkyl species in the membrane of *Sarcina ventriculi* indicate that they are formed by tail-to tail coupling of normal fatty acids. *J. Lipid Res.*, 35 (1994) 1932-1945.

- 253 Li, Z., Wei, H., Liu, Y., Hao, C. and Fan, G.: (Quantitative determination of oleanolic acid in *Swertia pseudochinensis* Hara by TLC-densitometry method). *Hebei Yixueyuan Xuebao*, 15 (1994) 68-71; C.A., 121 (1994) 213084j.

- 254 Mueller, V., Peterhänsel, M. and von Lengeeken, J.: (A rapid method for the semiquantitative determination of unwanted fermentation acids in siliges). *Agribiol. Res.*, 46 (1993) 340-345; C.A., 121 (1994) 253988p.

- 255 Nikolova-Damyanova, B., Christie, W.W. and Herslof, B.: Improved separation of some positional isomers of monounsaturated fatty acids, as their phenacyl derivatives, by silver-ion thin layer chromatography. *J. Planar Chromatogr.*, 7 (1994) 382-385.

- 256 Suzuki, M. and Ishihara, K. and Takitani, S.: (Study on purity test of isocitric acid in citric acid by thin-layer chromatography). *Iyakuhi Kenkyo*, 25 (1994) 202-204; C.A., 121 (1994) 213114u.

- 257 Ueda, N., Yamamoto, K., Yamamoto, S., Tokunaga, T., Shirakawa, E., Shinkai, H., Ogawa, M., Sato, T., Kudo, I., Inoue, K., Takizawa, H., Nagano, T. et al.: Lipoxygenase-catalyzed oxygenation of arachidonylethanolamide, a cannabinoid receptor agonist. *Biochim. Biophys. Acta*, 1254 (1995) 127-134.

- 258 Vulimiri, S.V., Smith, C.V., Randerath, E. and Randerath, K.: 32 P-Postlabeling of bile components: bulky adduct-like behavior in polyethyleneimine-cellulose thin layer chromatography. *Carcinogenesis*, 15 (1994) 2061-2064; C.A., 121 (1994) 248156m.

- 259 Wolff, R.L.: *Cis-trans* isomerization of octadecatrienoic acids during heating. Study of pinolenic (*cis*-5,*cis*-9,*cis*-12 18:3) acid geometrical isomers in heated pine seed oil. *J. Am. Oil Chem. Soc.*, 71 (1994) 1129-1134.

- 260 Zhou, W.: (Determination of water-soluble phenolic acid in Danshen oral liquid by TLC-densitometry). *Zhongcaoyao*, 25 (1994) 460-461; C.A., 122 (1995) 17291f.

- 261 Zou, Z., Wang, H., Zhang, A. and Qiao, X.: (Stable new fluorescent reagent CGE(N) used to determine *p*-aminosalicylic acid by TLC with fluorimetric detection). *Huaxi Yaoyue Zazhi*, 8 (1993) 70-73; C.A., 121 (1994) 263812r.

11b. *Prostaglandins*

- 262 Bruno, P., Caselli, M., Mangone, A., Traini, A. and Trisolini, C.: OPLC separation and quantitative determination of fluorescent derivatives of prostaglandins at picogram level. *J. Planar Chromatogr.*, 7 (1994) 362-367.

11c. *Lipids and their constituents*

- 263 Ariga, T., Kasai, N., Miyoshi, I., Yamawaki, M., Scarsdale, J.N., Yu, R.K., Kasama, T. and Taki, T.: Accumulation of isogloboside and ganglio-N-tetraosyl ceramide having blood group B determinant in the hepatomas of female LEC rats. *Biochim. Biophys. Acta*, 1254 (1995) 257-266.

- 264 Bonte, F., Pinguet, P., Chevalier, J.M. and Meybeck, A.: Analysis of all stratum corneum lipids by automated multiple development high-performance thin-layer chromatography. *J. Chromatogr. B*, 664 (1995) 311-316.
- 265 Boumendjel, A. and Miller, P.F.: Synthesis of sphingosine-1-phosphate and dihydro sphingosine-1-phosphate. *J. Lipid Res.*, 35 (1994) 2305-2311.
- 266 Brailoiu, E., Sails, L., Huhurez, G., Costuleanu, M., Filipeanu, C.M., Slatineanu, S., Cotrutz, C. and Branisteanu, D.D.: TLC-a rapid method for liposome characterization. *Biomed. Chromatogr.*, 8 (1994) 193-195; C.A., 121 (1994) 199949m.
- 267 Damiani, P., Santinelli, F., Simonetti, M.S., Castellini, M. and Rosi, M.: Comparison between two procedures for stereospecific analysis of thiacylglycerols from vegetable oils - I: olive oil. *J. Am. Oil Chem. Soc.*, 71 (1994) 1157-1162.
- 268 Engelmann, B., Bräutigam, C. and Thier, J.: Plasmalogen phospholipids as potential protectors against lipid peroxidation of low density lipoproteins. *Biochem. Biophys. Res. Commun.*, 204 (1994) 1235-1242.
- 269 Field, F.J., Born, E., Chen, H., Murthy, S. and Mathur, S.N.: Lysophosphatidylcholine increases the secretion of cholesteryl ester-poor triacylglycerol-rich lipoproteins by CaCo-2 cells. *Biochem. J.*, 304 (1994) 35-42.
- 270 Freeman, E.J. and Tallant, E.A.: Vascular smooth-muscle cells contain A₁ angiotensin receptors coupled to phospholipase D activation. *Biochem. J.*, 304 (1994) 543-548.
- 271 Furuya, S., Irie, F., Hashikawa, T., Nakazawa, K., Kozakai, A., Hasegawa, A., Sudo, K. and Hirabayashi, Y.: Ganglioside GD_{1a} in cerebellar Purkinje cells. Its specific absence in mouse mutants with Purkinje cell abnormality and altered immunoreactivity in response to conjunctive stimuli causing long term desensitization. *J. Biol. Chem.*, 269 (1994) 32418-32425.
- 272 Hartmann, S., Mallet, A.I., Minnikin, D.E. and Ridell, M.: Thin-layer chromatography and mass spectrometry of pentafluorobenzylidene derivatives of members of the phthiocerol family from *Mycobacterium tuberculosis* and *Mycobacterium marinum*. *Biochim. Biophys. Acta*, 1201 (1994) 129-134.
- 273 Huang, K. and Akoh, C.C.: Lipase-catalyzed incorporation of n-3 polyunsaturated fatty acids into vegetable oils. *J. Am. Oil Chem. Soc.*, 71 (1994) 1277-1280.
- 274 Kagehara, M., Tachi, M., Harii, K. and Iwamori, M.: Programmed expression of cholesterol sulfotransferase and transglutaminase during epidermal differentiation of murine skin development. *Biochim. Biophys. Acta*, 1215 (1994) 183-189.
- 275 Lanne, B., Schierbeck, B. and Karlsson, K.-A.: On the role of the carboxyl group of sialic acid in binding of cholera toxin to the receptor glycosphingolipid, GM1. *J. Biochem. (Tokyo)*, 116 (1994) 1269-1274.
- 276 Matsuda, K., Kasama, T., Ishizuka, I., Handa, S., Yamamoto, N. and Taki, T.: Structure of a novel phosphocholine-containing glycosphingolipid from *Mycoplasma fermentans*. *J. Biol. Chem.*, 269 (1994) 33123-33128.
- 277 Mordarska, H. and Pasciak, M.: A simple method for differentiation of *Propionibacterium acnes* and *Propionibacterium propionicum*. *FEMS Microbiol. Lett.*, 123 (1994) 325-330; C.A., 121 (1994) 296310d.
- 278 Nores, G.A., Mizutamari, R.K. and Kremer, D.M.: Chromatographic tank designed to obtain highly reproducible high-performance thin-layer chromatograms of gangliosides and neutral glycosphingolipids. *J. Chromatogr. A*, 686 (1994) 155-157.
- 279 Perez, M.K., Fried, B. and Sherma, J.: Comparison of mobile phases and HPTLC qualitative and quantitative analysis, on preadsorbent silica gel plates, of phospholipids in *Biomphalaria glabrata* (gastropoda) infected with *Echinostoma caproni* (trematoda). *J. Planar Chromatogr.*, 7 (1994) 340-343.
- 280 Rabkin, S.W.: Effect of hypoxia on choline metabolism and phosphatidylcholine biosynthesis in isolated adult rat ventricular myocytes: effects of trifluoperazine. *Biochem. Cell Biol.*, 72 (1994) 289-296.
- 281 Sallin, C., Sieber, R., Bosset, J.O. and Tabacchi, R.: (Oxidized cholesterol determination in milk and milk products. Part 2. Possibilities and limits of TLC). *Mitt. Geb. Lebensmittelunters. Hyg.*, 84 (1993) 566-580; C.A., 121 (1994) 253984j.
- 282 Steele, W. and Banks, W.: Triglyceride distribution in hydrogenated milk fat and its effects on separation by thin-layer chromatography. *Milchwissenschaft*, 49 (1994) 372-376; C.A., 121 (1994) 299572b.
- 283 Sugita, M., Hayata, C., Yoshida, T., Suzuki, M., Suzuki, A., Takeda, T., Hori, T. and Nakatani, F.: A novel fucosylated glycosphingolipid from the millipede, *Parafontaria laminata armiagera*. *Biochim. Biophys. Acta*, 1215 (1994) 163-169.
- 284 Taki, T., Kasama, T., Handa, S. and Ishikawa, D.: A simple and quantitative purification of glycosphingolipids and phospholipids by thin-layer chromatography blotting. *Anal. Biochem.*, 223 (1994) 232-238.
- 285 Tercé, F., Brun, H. and Vance, D.E.: Requirement of phosphatidylcholine for normal progression through the cell cycle in C3H/10T 1/2 fibroblasts. *J. Lipid Res.*, 35 (1994) 2130-2142.
- 286 Watarai, S., Kiura, K., Shigeto, R., Shibayama, T., Kimura, I. and Yasuda, T.: Establishment of monoclonal antibodies specific for ganglioside GM1: detection of ganglioside GM1 in small cell lung carcinoma cell lines and tissues. *J. Biochem. (Tokyo)*, 116 (1994) 948-954.
- 287 Weete, J.D.: Preferential degradation of noncholine phosphatides in soybean lecithin by thermalization. *J. Am. Oil Chem. Soc.*, 71 (1994) 1195-1199.
- 288 Zlatanov, M.: Untersuchungen über die Phospholipidzusammensetzung der Glyceridöle einiger Vertreter der Familie Apiaceae. *Fat. Sci. Technol.*, 96 (1994) 456-457.

See also 289, 330.

11d. Lipoproteins and their constituents

- 289 Nilsson, Å., Chen, Q. and Dahlman, E.: Metabolism of chylomicron phosphatidylinositol in the rat: fate *in vivo* and hydrolysis with lipoprotein lipase and hepatic lipase *in vitro*. *J. Lipid Res.*, 35 (1994) 2151-2160.

13. STEROIDS

13a. General techniques

- 290 Vanoosthuyze, K., Daeseleire, E., van Overbehe, A., van Peteghem, C. and Ermens, A.: Survey of hormones used in cattle fattening based on the analysis of belgian injection sites. *Analyst (Cambridge)*, 119 (1994) 2655-2658.

See also 226.

13b. *Pregnane and androstane derivatives*

- 291 Agarwal, A.K., Pampori, N.A. and Shapiro, B.H.: Thin-layer chromatographic separation of regioselective and stereospecific androgen metabolites. *Anal. Biochem.*, 224 (1995) 455-457.
- 292 Auricchio, M.T., Markman, B.E.O. and Batistic, M.A.: (Detection of the presence of corticosteroids in alternative pharmaceutical preparations used for bronchial asthma and bronchitis treatment). *Rev. Inst. Adolfo Lutz*, 53, No. 1-2 (1993) 37-40; *C.A.*, 121 (1994) 18799u.
- 293 Richardson, T.H. and Johnson, E.F.: Alterations of the regioselectivity of progesterone metabolism by the mutagenesis of two key amino acid residues in rabbit cytochrome P450 2C3v. *J. Biol. Chem.*, 269 (1994) 23937-23943.
- 294 Smets, F., Pottie, G., de Brabander, H.F., Batjoens, P., Hendriks, L. and Courtheyn, D.: By-products of steroid synthesis: a cause of interferences in thin-layer chromatography. *Analyst (Cambridge)*, 119 (1994) 2571-2575.

13d. *Sterols*

- 295 Johnson, K.A., Morrow, C.J., Knight, G.D. and Scallen, T.J.: *In vivo* formation of 25-hydroxycholesterol from endogenous cholesterol after a single meal, dietary cholesterol challenge. *J. Lipid Res.*, 35 (1994) 2241-2253.
- 296 Wardas, W. and Pyka, A.: Visualizing agents for cholesterol in TLC. *J. Planar Chromatogr.*, 7 (1994) 440-443.

13e. *Bile acids and alcohols*

- 297 Roda, A., Pellicciari, R., Cerre, C., Polimeni, C., Sadeghpour, B., Marinozzi, M., Forti, G.C. and Sapigni, E.: New 6-substituted bile acids: physico-chemical and biological properties of 6 α -methyl ursodeoxycholic acid and 6 α -methyl-7-epicholic acid. *J. Lipid Res.*, 35 (1994) 2268-2279.

14. STEROID GLYCOSIDES AND SAPONINS

- 298 Zhongping, Y., Guoqiao, L., Hanhui, W., Weide, H., Shankai, Z. and Wenmei, H.: Determination of the glycosyl sequence of glycosides by enzymatic hydrolysis followed by TLC-FABMS. *J. Planar Chromatogr.*, 7 (1994) 410-412.

See also 376, 385.

15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

15a. *Terpenes*

- 299 Ando, M., Arai, K., Kikuchi, K. and Isogai, K.: Synthetic studies of sesquiterpenes with a *cis*-fused decalin system. 4. Synthesis of (+)-5 β H-eudesma-3,11-diene, (-)-5 β H-eudesmane-4 β ,11-diol, and (+)-5 β H-eudesmane-4 α ,11-diol, and structure revision of a natural eudesmane-4,11-diol isolated from *Pluchea arguta*. *J. Natural Prod.*, 57 (1994) 1189-1199.

15b. *Essential oils*

See 388.

16. NITRO AND NITROSO COMPOUNDS

- 300 Miszcak, M. and Bladek, J.: Investigation of double-base propellants' compositions. *Int. Annu. Conf. ICT*, 25th (Energetic Materials-Analysis Characterization and Test Techniques), (1994) 57 (1-57) 10; *C.A.*, 121 (1994) 304145w.
- 301 Zou, H., Zhou, S., Hu, X., Zhang, Y. and Lu, P.: Identification of 2,4,6-trinitrotoluene and its biodegradation products by thin layer chromatography. *J. Planar Chromatogr.*, 7 (1994) 461-463.

See also 246, 363.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17a. *Amines and polyamines*

- 302 Bazylak, G.: Chemometrically aided description of imino-diethanol retention on hydrocarbonaceous silica and cellulose layers. *J. Planar Chromatogr.*, 7 (1994) 428-434.

See also 301.

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

See 257, 393.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

18a. *Amino acids and their derivatives*

- 303 Bhushan, R. and Parshad, V.: TLC of amino acids on thin silica gel layers impregnated with transition metal ions and their anions. *J. Planar Chromatogr.*, 7 (1994) 480-484.
- 304 DeSilva, K., Strojek, J. and Kuwana, T.: Dual wavelength excitation method for the off-line liquid chromatographic analysis of derivatized amino acids. *Anal. Sci.*, 10 (1994) 573-578; *C.A.*, 122 (1995) 22830k.
- 305 Golkiewicz, W. and Polak, B.: Relationship between capacity factors and mobile phase composition in thin layer ligand exchange chromatography of the enantiomers of some amino acids. *J. Planar Chromatogr.*, 7 (1994) 453-457.
- 306 Mathur, V., Kanoongo, N., Mathur, R., Narang, C.K. and Mathur, N.K.: Resolution of amino acid racemates on borate-gelled guaran-impregnated silica gel thin-layer chromatographic plates. *J. Chromatogr. A*, 685 (1994) 360-364.
- 307 Morioka, M., Muraoka, H., Yamamoto, K. and Ishikawa, H.: An endosymbiont chaperonin is a novel type of histidine protein kinase. *J. Biochem. (Tokyo)*, 116 (1994) 1075-1081.

- 308 Nakamura, F. and Suyama, K.: Analysis of aldosing, an amino acid derived from aldol crosslink of elastin and collagen by high-performance liquid chromatography. *Anal. Biochem.*, 223 (1994) 21-25.
- 309 Roten, C.-A.H., Pagni, M., Margot, P., Touri, F. and Karamata, D.: Specific labeling of diaminopimelate: a radioassay for the determination of the peptidoglycan cross-linking index. *Anal. Biochem.*, 223 (1994) 208-211.
- 310 Sakakibara, Y., Suiko, M. and Liu, M.-C.: *De novo* sulfation of L-tyrosine in HepG2 human hepatoma cells and its possible functional implication. *Eur. J. Biochem.*, 226 (1994) 293-301.
- 311 Vladimirova, N.M., Potapenko, N.A., Sachs, G. and Modyanov, N.N.: Determination of the sidedness of the carboxy-terminus of the Na⁺/K⁺-ATPase α -subunit using lactoperoxidase iodination. *Biochim. Biophys. Acta*, 1233 (1995) 175-184.
- See also 237, 238, 330.
- 18b. *Peptides, peptidic and proteinous hormones, growth factors*
- 312 Guesdon, F., Waller, R.J. and Saklatvala, J.: Specific activation of β -casein kinase by the inflammatory cytokines interleukin 1 and tumour necrosis factor. *Biochem. J.*, 304 (1994) 761-768.
- 313 Jahnen-Dechent, W., Trindl, A., Godovac-Zimmermann, J. and Müller-Esterl, W.: Posttranslational processing of human α_2 -HS glycoprotein (human fetuin). Evidence for the production of a phosphorylated single-chain form by hepatoma cells. *Eur. J. Biochem.*, 226 (1994) 59-69.
- 314 Suzuki, M., Oda, K., Takatudi, T. and Takitani, S.: (Study on purity test for related compounds in liothyronine sodium and levothyroxine sodium by thin-layer chromatography). *Iyakuhin Kenkyu*, 25 (1994) 205-209; *C.A.*, 121 (1994) 213115v.
- 315 Walaas, S.I., Czernik, A.J., Olstad, O.K., Sletten, K. and Walaas, O.: Protein kinase C and cyclic AMP-dependent protein kinase phosphorylate phospholemman, and insulin and adrenaline-regulated membrane phosphoprotein, at specific sites in the carboxy terminal domain. *Biochem. J.*, 304 (1994) 635-640.
19. PROTEINS
- 19e. *Proteins of blood, serum and blood cells*
- 316 Li, H. and Zhang, R.X.: Measurement of platelet-activating factor in human blood by high performance thin layer chromatography and its clinical application. *J. Tongji Med. Univ.*, 13 (1993) 226-230; *C.A.*, 121 (1994) 199938g.
21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS
- 21a. *Purines, pyrimidines, nucleosides, nucleotides*
- 317 Faraone-Mennella, M.R., de Lucia, F., de Maio, A., Gambacorta, A., Quesada, P., de Rosa, M., Nicolaus, B. and Farina, B.: ADP-ribosylation reactions in *Sulfolobus solfataricus*, a thermoacidophilic archaeon. *Biochim. Biophys. Acta*, 1246 (1995) 151-159.
- 318 Salvadori, M.C., Rieser, E.M., Neto, L.M.R. and Nascimento, E.S.: Determination of xanthines by high-performance liquid chromatography and thin-layer chromatography in horse urine after ingestion of guarana powder. *Analyst (Cambridge)*, 119 (1994) 2701-2703.
- See also 335, 350.
- 21c. *Nucleic acids, DNA*
- 319 Park, W.J. and Adler, P.N.: Thin layer chromatography assay for the incorporation of digoxigenin into nucleic acid. *BioTechniques*, 17 (1994) 656-657; *C.A.*, 121 (1994) 275692q.
- 21d. *Structural studies on RNA and RNA mapping*
- 320 Selvamurugan, N., Nag, M.K. and Eliceiri, G.L.: Intron-encoded small nucleolar RNAs: new RNA sequence variants and genomic loci. *Biochim. Biophys. Acta*, 1260 (1995) 230-234.
22. ALKALOIDS
- 321 Bah, M., Bye, R. and Pereda-Miranda, R.: Biologically active natural products from Mexican medicinal plants. Part III. Hepatotoxic pyrrolizidine alkaloids in the Mexican medicinal plant *Packera candidissima* (Asteraceae: Senecioneae). *J. Ethnopharmacol.*, 43 (1994) 19-30; *C.A.*, 121 (1994) 212761r.
- 322 Liu, Y., Ye, G. and Qian, W.: (The effect on alkaloids in tincture *Leonuri sibirici* by irradiative sterilization and the study of sterilization effect). *Zhongguo Yaoxue Zazhi*, 29, 8, Suppl. (1994) 12-14; *C.A.*, 121 (1994) 308103d.
- 323 Papadoyannis, I.N.: Instrumental analytical techniques used for datura alkaloid analyses. *Instrum. Sci. Technol.*, 22 (1994) 241-258; *C.A.*, 122 (1994) 17282d.
- 324 Shao, S., Xu, L., Li, Y. and Ge, W.: (Determination of atropine in *gucilasungao* by dual wavelength TLC scanning). *Zhongcaoyao*, 25 (1994) 357-358; *C.A.*, 121 (1994) 263824w.
- 325 Shinde, V.M., Tendolkar, N.M. and Desai, B.S.: Simultaneous determination of theophylline and etophylline in pharmaceutical dosages by HPTLC. *Anal. Lett.*, 28 (1995) 45-58.
- 326 Yavich, P.A., Kakhtelidze, M.B. and Sarabunovich, A.G.: (Quantitative determination of berberine in *Phellodendron lavallei* bark). *Farmatsiya (Moscow)*, 42, No. 3 (1993) 49-50; *C.A.*, 121 (1994) 141848m.
- 327 Zhang, T., Zhang, S. and Wei, L.: (Determination of alkaloids in *Evodia rutaecarpa* (Juss.) Benth. and its processed products by TLC-densitometry). *Zhongguo Zhongyao Zazhi*, 19 (1994) 409-411; *C.A.*, 121 (1994) 213094n.
- See also 236, 402.

23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN

23a. Porphyrins and other pyrroles

- 328 Lai, C.-K., Lam, C.-W. and Chan, Y.-W.: High-performance thin-layer chromatography of free porphyrins for diagnosis of porphyria. *Clin. Chem. (Washington)*, 40 (1994) 2026-2029.

23b. Bile pigments

See 243.

23d. Pyridine derivatives

- 329 Baranowska, I. and Swierczek, S.: A study of the retention of azines and diazines in RP-TLC with bonded alkyl stationary phase. *J. Planar Chromatogr.*, 7 (1994) 399-405.

23e. Other N-heterocyclic compounds

- 330 Babzhayev, M.A., Seguin, M.-C., Gueyne, J., Evstigneeva, R.P., Ageyeva, E.A. and Zheltukhina, G.A.: L-Carnosine (β -alanyl-L-histidine) and carcinine (β -alanylhistamine) act as natural antioxidants with hydroxyl-radical-scavenging and lipid-peroxidase activities. *Biochem. J.*, 304 (1994) 509-516.
- 331 Shirke, P., Patel, M.K., Tirodkar, V.B., Tamhane, V. and Sethi, P.D.: Simultaneous determination of furazolidone and metronidazole in their combined dosage form by HPTLC. *Indian J. Pharm. Sci.*, 56 (1994) 108-109; *C.A.*, 121 (1994) 308494g.
- 332 Wang, L. and Zhu, Q.: (Qualitative analysis of cuscohygrine and 1-methyl-2-pyrrolidone by TLC). *Huaxi Yixue Zazhi*, 9 (1994) 119; *C.A.*, 121 (1994) 187414v.

See also 229, 329, 366, 380.

24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)

- 333 Feng, Y., Zhang, S., Zhang, Y. and Shen, X.: (Simultaneous determination of three components of trimethoprim-sulfadiazine-sulfamethoxazole tablets by thin-layer chromatographic scanning). *Sepu*, 12 (1994) 364-366; *C.A.*, 121 (1994) 208505m.
- 334 Maslankiewicz, M.J. and Pluta, K.: TLC separation of β - and γ -quinolinyll sulfides. *J. Planar Chromatogr.*, 7 (1994) 484-486.

See also 329.

25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)

- 335 Guranowski, A., Starzynska, E., Sillero, G. and Sillero, A.: Conversion of adenosine(5') oligophospho(5') adenosines into inosine(5') oligophospho(5') inosines by non-specific adenylate deaminase from the snail *Helix pomatia*. *Biochim. Biophys. Acta*, 1243 (1995) 78-84.

- 336 Tusarova, I., Halamek, E. and Kobliha, Z.: Thin-layer chromatography of a new group of toxic dialkylaminoethyl dialkyl-amido fluorophosphates. *J. Planar Chromatogr.*, 7 (1994) 372-375.

See also 279, 312, 315.

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

- 337 Brushan, R. and Parshad, V.: Separation of vitamin B complex and folic acid using TLC plates impregnated with some transition metal ions. *Biomed. Chromatogr.*, 8 (1994) 194-198; *C.A.*, 121 (1994) 199950e.

See also 236.

28. ANTIBIOTICS

- 338 Funabashi, Y., Horiguchi, T., Iinuma, S., Tanida, S. and Harada, S.: TAN-1496 A, C and E, diketopiperazine antibiotics with inhibitory activity against mammalian DNA topoisomerase I. *J. Antibiot.*, 47 (1994) 1202-1218.
- 339 Ichihara, J., Shinohara, Y., Kogure, K. and Terada, H.: Nucleotide sequence of the 5'-flanking region of the rat type II hexokinase gene. *Biochim. Biophys. Acta*, 1260 (1995) 365-368.
- 340 Iwamoto, T., Fujie, A., Sakamoto, K., Tsurumi, Y., Shigematsu, N., Yamashita, S., Hashimoto, S., Okuhara, M. and Kohsaka, M.: WF 11899A, B and C, novel antifungal lipopeptides I. Taxonomy, fermentation, isolation and physico-chemical properties. *J. Antibiot.*, 47 (1994) 1084-1091.
- 341 Jindal, K.C., Chaudhary, R.S., Gangwal, S.S., Singla, A.K. and Khanna, S.: High-performance thin-layer chromatographic method for monitoring degradation products of rifampicin in drug excipient interaction studies. *J. Chromatogr. A*, 685 (1994) 195-199.
- 342 Khan, K., Paesen, J., Roets, E. and Hoogmartens, J.: Quantitative TLC of erythromycin - application to commercial bulk samples and biological samples. *J. Planar Chromatogr.*, 7 (1994) 349-353.
- 343 Medina, M.B. and Unruh, J.J.: Solid-phase clean-up and thin-layer chromatographic detection of veterinary aminoglycosides. *J. Chromatogr. B*, 663 (1995) 127-135.
- 344 Morino, T., Masuda, A., Yamada, M., Nishimoto, M., Nishikiori, T., Saito, S. and Shimada, N.: Stevastelins, novel immunosuppressants produced by *Penicillium*. *J. Antibiot.*, 47 (1994) 1341-1343.
- 345 Tammilehto, S., Salomies, H. and Torniaainen, K.: Qualitative and quantitative TLC for monitoring ciprofloxacin photodegradation in aqueous solutions. *J. Planar Chromatogr.*, 7 (1994) 368-371.
- 346 Wang, W., Lu, M. and Shen, L.: (Bioinactive impurities in ribostamycin). *Zhongguo Kangshengsu Zazhi*, 19 (1994) 219-220; *C.A.*, 121 (1994) 238259h.

29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

29a. General techniques

- 347 Butz, S. and Stan, H.-J.: Screening of 265 pesticides in water by thin-layer chromatography with automated multiple development. *Anal. Chem.*, 67 (1995) 620-630.

See also 233.

29d. Carbamates

- 348 Bose, D., Shivhare, P. and Gupta, V.K.: Thin layer chromatographic separation and determination of carbaryl and propxur. *J. Planar Chromatogr.*, 7 (1994) 415-418.

29e. Herbicides

- 349 Cserháti, T. and Forgács, E.: Retention of 4-cyanophenyl herbicides on water-insoluble β -cyclodextrin support. *J. Chromatogr. A*, 685 (1994) 295-302.
- 350 Tekel', J., Vaverkova, S., Kovacicova, J., Holla, M. and Havranek, E.: A screening method for the determination of the residues of racil herbicides in *Melissa officinalis* L. *Pharmazie*, 49 (1994) 899-901.

29g. Other types of pesticides and various agrochemicals

- 351 Sabato, R., Pierdominici, E., Achene, L. and Brambilla, G.: Presence of eleiophylin in "premixes" and feeds containing salinomycin by TLC and HPLC analysis. *Microbiol. Aliments. Nutr.*, 11 (1993) 429-432; *C.A.*, 121 (1994) 106782p.

See also 247, 348.

30. SYNTHETIC AND NATURAL DYES

30a. Synthetic dyes

- 352 Lenze, U. and Kallmayer, H.-J.: 4-[(4-Hydroxy-1-naphthyl)phenylmethylene]-1(4H)-naphthalinon - die Indikatorsubstanz des " α -Naphtholbenziens". *Pharmazie*, 50 (1995) 36-38.
- 353 Mariani, E., Bargagna, A., Longobardi, M. and Dorato, S.: Application of TLC and HPTLC in the analysis of semipermanent hair dyes. *Int. J. Cosmet. Sci.*, 16, No. 1 (1994) 17-27; *C.A.*, 121 (1994) 186750q.
- 354 Upadhyay, R.K., Sharma, R.K., Babu, G. and Mishra, G.: Chromatographic separation of thioindigoid thiazolidinones: Part I. *J. Planar Chromatogr.*, 7 (1994) 464-468.

See also 220.

30b. Chloroplast and other natural pigments

- 355 Minguéz-Mosquera, M.I. and Gandul-Rojas, B.: High-performance liquid chromatographic study of alkaline treatment of chlorophyll. *J. Chromatogr. A*, 690 (1995) 161-176.

31. PLASTICS AND THEIR INTERMEDIATES

- 356 Shi, Y., Zhou, H. and Wang, D.: (Study on the main component in the RTP [rosin diglycol plasticizer] plasticizer). *Linchan Huaxue Yu Gongye*, 12 (1992) 293-297; *C.A.*, 121 (1994) 281836f.

32. DRUG ANALYSIS

32a. Drug analysis, general techniques

- 357 Potuzak, M., Turan, J. and Matejek, S.: (Use of thin-layer chromatography for pharmaceutical analysis. III. Computing technology, radiochromatography). *Ceska Slov. Farm.*, 43 (1994) 245-251; *C.A.*, 122 (1995) 17286h.
- 358 Potuzak, M., Turan, J. and Matejek, S.: (Utilization of thin-layer chromatography in pharmaceutical control. II. The mobile phase, development of the chromatogram, detection). *Ceska Slov. Farm.*, 43 (1994) 171-178; *C.A.*, 121 (1994) 286686s.
- 359 Uneda, K., Ninomiya, S., Esumi, Y., Shimada, N. and Nagatsuka, S.: (Application of bioimage analyzer on drug metabolism studies using thin layer chromatography (II). Direct development of plasma samples containing [14 C]indomethacin and its metabolites). *Yakubutsu Dotai*, 8 (1993) 1273-1282; *C.A.*, 121 (1994) 98931u.

See also 213.

32b. Antirheumatics and antiinflammatory drugs

- 360 Sava, S., Curea, E. and Bojita, M.: (Piroxicam identity and purity using a thin layer chromatographic method). *Farmacia (Bucharest)*, 41, No. 3-4 (1993) 23-26; *C.A.*, 121 (1994) 308469c.

See also 238.

32c. Autonomic and cardiovascular drugs

- 361 Alton, K.B., Chan, T.-M. and Pramanik, B.N.: Urinary metabolites of (R),(R)-labetalol. *Drug Metab. Disp.*, 22 (1994) 866-872.
- 362 Chandrashekhar, T.G., Rao, P.S.N., Smrita, K., Vyas, S.K. and Dutt, C.: Analysis of amlodipine besylate by HPTLC with fluorimetric detection: a sensitive method for assay of tablets. *J. Planar Chromatogr.*, 7 (1994) 458-460.
- 363 Marciniak, B. and Rychcik, W.: Kinetic analysis of nifedipine photodegradation in the solid state. *Pharmazie*, 49 (1994) 894-897.

See also 365.

32d. Central nervous system drugs

- 364 Albert, K.: Identification test for methadone hydrochloride. *Pharm. Ztg.*, 139, No. 14 (1994) 42; *C.A.*, 121 (1994) 238171y.

- 365 Han, L., Li, X. and Liu, Y.: (Detection method for the related substances of encainide HCl). *Zhongguo Yaoxue Zazhi*, 29 (1994) 486-488; C.A., 121 (1994) 308473z.

See also 229, 236.

32e. *Chemotherapeutics (exc. cytostatics and antibiotics)*

- 366 Chervenkov, S.K., Pavlov, A.I. and Slavova, S.T.: IR-, ¹H-NMR and TLC examination of new styrylquinolines with antibacterial activity. *Anal. Lett.*, 28 (1995) 59-70.
- 367 Shearan, P. and O'Keefe, M.: Novel approach the "on-site" testing for sulfamethazine in pork carcasses. *Analyst (Cambridge)*, 119 (1994) 2761-2763.
- 368 Spell, J.C. and Stewart, J.T.: Quantitative analysis of para-aminosalicylic acid and its major impurity meta-aminophenol in para-aminosalicylic acid drug substance by HPLC and scanning densitometry. *J. Planar Chromatogr.*, 7 (1994) 472-473.

See also 247, 333, 393.

32f. *Cytostatics*

See 223.

32g. *Other drug categories*

- 369 Farina, A., Doldo, A., Cotichini, V., Gallo, F.R. and Calandra, S.: Assay and purity control of ticlopidine by thin layer chromatography. *J. Planar Chromatogr.*, 7 (1994) 386-388.
- 370 Ficarra, R., Ficarra, P., Tommasini, S., Carulli, M., Costantino, D. and Calabro, M.L.: Chromatographic investigations on brotizolam. *Farmaco*, 49 (1994) 437-440; C.A., 121 (1994) 308503j.
- 371 Liu, J., Tu, X., Chen, Y. and Wu, D.: (Films for the treatment of cough and asthma). *Zhongguo Yaoxue Zazhi*, 25 (1994) 218-220; C.A., 121 (1994) 238307x.
- 372 Mara, K.M. and Omar, F.A.: Spectrophotometric determination of piroxicam using 2,2-diphenyl-1-picrylhydrazyl. *Alexandria J. Pharm. Sci.*, 8, No. 1 (1994) 24-28; C.A., 121 (1994) 213164k.
- 373 Wahbi, Abdel-Aziz, M., El-Walily, A., Bedair, M., El-Gendy, A.: Determination of cinnarizine in the presence of its degradation products. *Egypt. J. Pharm. Sci.*, 34, No. 1-3 (1993) 35-46; C.A., 121 (1994) 308477d.

See also 332, 344, 364, 377.

32h. *Toxicological and forensic applications*

- 374 De Zeeuw, R.A., Franke, J.P., van Halem, M., Schaapman, S., Logawa, E. and Siregar, C.J.P.: Impact of hot and humid tropical conditions of Toxi-Lab® thin-layer chromatographic systems for the screening of basic and neutral drugs. *J. Anal. Toxicol.*, 18 (1994) 402-406.

See also 239, 350.

32i. *Plant extracts*

- 375 Abdel Sattar, A., Bankova, V., Kujumgiev, A., Galabov, A., Agnatovala, A., Todorova, C. and Popov, S.: Chemical composition and biological activity of leaf exudates from some Lamiaceae plants. *Pharmazie*, 50 (1995) 62-65.
- 376 Barthomeuf, C., Chmielowiec, C. and Pourrat, H.: TLC - densitometry for quality control of *Hedera helix* L. (Araliaceae). *J. Planar Chromatogr.*, 7 (1994) 474-476.
- 377 Cai, M.: (Quantitative determination of arteannuin in liposomes and dextrans by TLC-scanning method). *Zhongcaoyao*, 25 (1994) 353-376; C.A., 121 (1994) 263804q.
- 378 Demirezer, L.Ö.: Quantitative determination of some Rumex species with regards of anthraquinone derivatives. *Pharmazie*, 49 (1994) 936-937.
- 379 Gao, B. and Wei, S.: (Determination method of jujuboside A in Suanzoren tea). *Hebeisheng Kexueyan Xuebao*, No. 4 (1992) 61-64; C.A., 122 (1995) 17289m.
- 380 Gorinsky, V.: Bisbenzylisoquinoline derivatives from *Ocotea rodiei* for pharmaceutical use. *Eur. Pat. Appl. EP 610,060 (Cl. C07D491/18)*, 10 Aug. 1994, GB App. 93/1,921, 01 Feb. 1993; 9 pp.; C.A., 121 (1994) 212962g.
- 381 Pal, S.K., Mukherjee, P.K. and Saha, B.P.: Co-chemical and thin-layer chromatographic characterization of the prepared tincture of *Moringa oleifera* Lam. (fac. *Moringaceae*). *Res. Ind.*, 39 (1994) 191-193; C.A., 122 (1995) 17296m.
- 382 Pietta, P.G., Mauri, P.L., Bruna, A. and Merfort, I.: MEKC as an improved method to detect falsification in the flowers of *Arnica montana* and *A. chamissonis*. *Planta Med.*, 60 (1994) 369-372; C.A., 121 (1994) 238499m.
- 383 Su, J., Wang, B. and Wang, G.: (Analysis of Guiqi mixture and its main ingredient *Astragalus* root). *Zhongguo Zhongyao Zazhi*, 19 (1994) 158-160; C.A., 121 (1994) 42864g.
- 384 Wu, S., Jiang, Y. and Wang, L.: (Preparation and criterion of Qiangliyoujizhe oral liquid). *Huaxi Yaoxue Zazhi*, 9 (1994) 91-93; C.A., 121 (1994) 187006p.
- 385 Xu, R., Han, G., Feng, L., Dai, J. and Wang, Y.: (Determination of lipophilic compositions in Taidangshen and cultivated Ludangshen of different ages). *Zhongguo Yaoxue Zazhi*, 29 (1994) 358-360; C.A., 121 (1994) 238495g.
- 386 Yang, G.: (Quality standard of Shenrongshanshen medicinal wine). *Zhongcaoyao*, 25 (1994) 458-458, 467; C.A., 121 (1994) 286700s.
- 387 Yang, H. and Yang, H.: (Comparative study with thin-layer chromatography on water and ethanol as extraction solvents for components of *Puerariae radix*). *Huaxi Yaoxue Zazhi*, 9, No. 1 (1994) 35-38; C.A., 121 (1994) 187392m.
- 388 Yoshizaki, F., Sakamoto, R., Ando, T. and Hisamichi, S.: (Simplified method to identify the crude drugs blended in Orengedokuto and Keishininjinto). *Annu. Rep. Tohoku Coll. Pharm.*, 40 (1993) 201-204; C.A., 121 (1994) 308442p.
- 389 Zhen, H., Chen, Y. and Zhong, X.: (Quality standards of Huan-glianjiadu pills). *Zhongguo Zhongyao Zazhi*, 19 (1994) 414-417; C.A., 121 (1994) 213095p.

See also 241, 253, 260, 321, 322, 326, 327.

33. CLINICO-CHEMICAL APPLICATIONS

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

See 316, 328.

34. FOOD ANALYSIS

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

See 254, 281, 282, 348, 393.

35. ENVIRONMENTAL ANALYSIS

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

390 Vorontsov, A.M.: (Continuous-flow thin-layer chromatography (FTLC) in analysis of ecotoxicants: method characteristics and result evaluation criteria). *Zh. Ekol. Khim.*, 1 (1993) 33-34; *C.A.*, 121 (1994) 237940m.

See also 301, 347, 348.

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

See 240.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

36a. *Surfactants*

391 Bratt, C.E. and Akerlund, H.E.: Quantification of *n*-octyl β -D-glucopyranoside and *n*-dodecyl β -D-maltoside in biological samples by thin layer chromatography. *Plant Physiol. Biochem. (Paris)*, 32 (1994) 313-315; *C.A.*, 121 (1994) 199910s.

36b. *Antioxidants and preservatives*

392 Ashida, S., Noguchi, S.F. and Suzuki, T.: Antioxidative components, xanthone derivatives, in *Swertia japonica*, Makino. *J. Am. Oil Chem. Soc.*, 71 (1994) 1095-1099.

393 Martin, E., Duret, M. and Vogel, J.: (Determination of sulfonamide residues in eggs). *Mitt. Geb. Lebensmittelunters. Hyg.*, 84 (1993) 274-280; *C.A.*, 121 (1994) 203609v.

394 Tian, L.L. and White, P.J.: Antioxidant activity of oat extract in soybean and cottonseed oils. *J. Am. Oil Chem. Soc.*, 71 (1994) 1079-1086.

See also 330.

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

395 Cheng, X. and Ma, H.: (Application of thin-layer chromatography to the synthesis of organometallic compounds). *Sepu*, 12 (1994) 222-223; *C.A.*, 121 (1994) 230961k.

See also 234, 336.

37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES

See 266, 277.

38. INORGANIC COMPOUNDS

38a. *Cations*

396 Leont'eva, L.B., Tselinskii, I.V., Boichinova, E.S., Manevskaya, R.S. and Gritsai, G.I.: (Determination of trace amount of Cd, Cu(II), and Pb by paper chromatography). *Zavod. Lab.*, 60 (1994) 7-8, 62-63; *C.A.*, 121 (1994) 270682b.

397 Mohammad, A., Ajal, M., Fatima, N. and Yousuf, R.: Chromatography of cations and anions on mixed sorbent layers developed with aqueous methanol containing tributyl phosphate and formic acid. *J. Planar Chromatogr.*, 7 (1994) 444-449.

398 Murinov, Yu.I., Starikova, L.I. and Ilyushina, N.N.: (Paper chromatographic study of aminoamide as an extraction reagent [for rare earth metals]). *Organ. Reagenty v Anal. Khimii, Perm. Gos. Un-t, Perm*, (1991) 88-92; *C.A.*, 121 (1994) 194441e.

399 Shimizu, T., Jindo, S., Satoh, M. and Mura, Y.: TLC of inorganic ions on trimethylhydroxypropylamine cellulose eluted with sulfuric acid - organic solvent mobile phases. *J. Planar Chromatogr.*, 7 (1994) 412-415.

400 Takeda, Y., Nagai, T. and Ishida, K.: Effects of amino-pretreatment of silica gel on the TLC behaviour of rare earths. *Fresenius J. Anal. Chem.*, 351 (1995) 186-189.

See also 216, 390.

38b. *Anions*

See 397.

39. RADIOACTIVE AND OTHER ISOTOPE COMPOUNDS

401 Gattavecchia, E., Tonelli, D., Breccia, A., Fini, A. and Ferri, E.: Radio TLC in quality control and development of radiopharmaceuticals. *J. Radioanal. Nucl. Chem.*, 181 (1994) 77-84; *C.A.*, 121 (1994) 238517r.

402 Huang, X.Y., Wang, Y. and De Lu, Z.: Isolation and preparation of ^3H -tetrandrine. *J. Labelled Compd. Radiopharm.*, 34 (1994) 899-903; *C.A.*, 121 (1994) 308101b.

403 Yoshino, T., Miyoshi, H., Kishi, T., Satoou, K. and Matumoto, T.: (Adsorption of ^{99m}Tc -labeled HMDP and MDP on hydroxyapatite). *Raidoisotopes*, 43 (1994) 609-612; *C.A.*, 121 (1994) 308267k.

See also 258, 309, 319, 357, 359.