



Bibliography of carbohydrate polymers

1 BOOKS, REVIEWS & SYMPOSIA

- Harding S, Berth G// Address not available.
Carbohydr Polym 1993 20 (1) 63
 Symposium on conformational studies of oligosaccharides, polysaccharides and glycoconjugates - Le Croisic, Loire-Atlantique, France, June - July 1992 (News and views)
- Hermansson K, Jansson PE*, Kenne L, Widmalm G, Lindh F// *Univ Stockholm, Arrhenius Lab, Dept Organ Chem, S-10691 Stockholm, Sweden
Carbohydr Res 1992 235 69
 A ^1H and ^{13}C NMR study of oligosaccharides from human milk - Application of the computer program CASPER
- Hirsh J// Hamilton Civ Hosp Res Ctr, Henderson Gen Div, 711 Concess St, Hamilton, Ontario, Canada L8V 1C3
Aust N Z J Med 1992 22 (5) 487
 Overview of low molecular weight heparins and heparinoids - Basic and clinical aspects (Review)
- Kubicek CP, Messner R, Gruber F, Mach RL, Kubicek-Pranz EM// TU Wien, Inst Biochem Technol & Mikrobiol, Mikrobielle Biochem Abt, Getreidemarkt 9, A-1060 Vienna, Austria
Enzyme Microb Technol 1993 15 (2) 90
 The *Trichoderma* cellulase regulatory puzzle - From the interior life of a secretory fungus (Review)
- Phillipp B, Stscherbina D// Max Planck Inst Colloid & Interface Res, Teltow, FRG
Acta Polym 1992 43 (5) 297
 Conference report on the round-table discussion of the cellulose chemists within the 87th general assembly of the German Association of the Pulp and Paper Chemists and Engineers June, 1992 in Baden-Baden, FRG
- Thomson JA// Univ Cape Town, Dept Microbiol, Rondebosch 7700, South Africa
FEMS Microbiol Rev 1993 104 (1-2) 65
 Molecular biology of xylan degradation (Review)
- Uchiyama T// Niigata Univ, Fac Agr, Dept Appl Biol 2, Ikarashi, Niigata 95021, Japan
Nippon Nogeikagaku Kaishi 1992 66 (12) 1788
 Extracellular polysaccharides produced by suspension-cultured plant cells (Minireview) (Japanese, English Abstract)
- Van Kuik JA, Hard K, Vliegthart JFG// *Univ Utrecht, Ctr Bijvoet, Dept Bioorgan Chem, POB 80075, 3508 TB Utrecht, The Netherlands
Carbohydr Res 1992 235 53
 A ^1H NMR database computer program for the analysis of the primary structure of complex carbohydrates
- Wong KKY, Saddler JN// Univ British Columbia, Fac Forestry, Dept Forest Prod Biotechnol, 270-2357 Main Mall, Vancouver, Brit Columbia, Canada V6T 1Z4
Crit Rev Biotechnol 1992 12 (5-6) 413
Trichoderma xylanases. Their properties and application (Review)

2 CELLULOSE

Akhmedov AM, Khafizov MM, Khasankhanova MN, Azlyarova MA, Muk-

- hamedov GI// Tashkent Agr Irrigat & Mech Engr Inst, Chair Phys, Res Lab, Tashkent, Uzbekistan
Izv Vyssh Uch Zav Khim Khim T 1992 35 (11-12) 66
 Cooperative interactions of carboxymethylcellulose and nitrous polymers (Russian)
- Aleksandrovich IF, Gusev SS, Danilov II, Lyubimova LN// Mogilev Khimvolokno Cooperat, Mogilev, Russia
Ind Lab-Engl Tr 1992 58 (6) 570
 A photometric method of determining water in cellulose hydrate films and shells
- Appel LE, Clair JH, Zentner GM// Interx Res Corp, MSDRL, 2201 W 21st St, Lawrence, Ks 66047, USA
Pharmaceut Res 1992 9 (12) 1664
 Formulation and optimization of a modified microporous cellulose acetate latex coating for osmotic pumps
- Arai K, Sano S, Satoh H// Gunma Univ, Fac Engr, Kiryu, Gunma 376, Japan
J Mater Chem 1992 2 (12) 1257
 Preparation of cellulose stilbene-4-carboxylate and its application to thin-layer chromatography
- Bhagwan J, Lal K*, Horrocks AR, Price D// *Kurukshetra Univ, Dept Chem, Kurukshetra 132119, Haryana, India
Polym Int 1993 30 (1) 33
 Thermal, spectral and morphological studies on cellulose, cellulose ethylthiophosphate and its metal complexes in air
- Brittain HG, Lewen G, Newman AW, Fiorelli K, Bogdanowich S// Bristol Myers Squibb, Pharmaceut Res Inst, POB 191, New Brunswick, NJ 08903, USA
Pharmaceut Res 1993 10 (1) 61
 Changes in material properties accompanying the National Formulary (NF) Identity Test for microcrystalline cellulose
- Buchanan CM, Gedon SC, White AW, Wood MD// Eastman Chem Co, Res Labs, POB 1972, Kingsport, Tn 37662, USA
Macromolecules 1992 25 (26) 7373
 Cellulose acetate butyrate and poly(hydroxybutyrate-co-valerate) copolymer blends
- Buschlediller G, Zeronian SH// *Univ Calif Davis, Div Text & Clothing, Davis, Ca 95616, USA
J Appl Polym Sci 1993 47 (8) 1319
 Photodegradation of oxidized cotton cellulose
- Chen Y, Yang HW// Natl Cheng Kung Univ, Dept Chem Engr, Ta Hsueh Rd, Tainan 70101, Taiwan
J Polym Sci A-Polym Chem 1992 30 (13) 2765
 Hydroxypropyl cellulose (HPC)-stabilized dispersion polymerization of styrene in polar solvents - Effect of reaction parameters
- Chyi YT, Levine AD// Iowa State Univ Sci & Technol, Dept Civil Engr, Ames, Ia 50011, USA
Water Sci Technol 1992 26 (9-11) 2421
 Solubilization of particulate cellulose using anaerobic acidogenesis
- Danjo K, Kamiya A, Ikeda E, Torii S, Sunada H, Otsuka A// Meijo Univ, Fac Pharm, 150 Yagotoyama, Tempaku ku, Nagoya, Aichi 468, Japan
Chem Pharm Bull Tokyo 1992 40 (9) 2505
 Influence of granulating fluids in hydroxypropylcellulose binder solution on physical properties of lactose granules
- Dave V, Glasser WG, Wilkes GL// *Virginia Polytech Inst & State Univ,

As a service to subscribers, each issue of the Journal contains a bibliography of newly published material in the field of carbohydrate polymers. The bibliography is divided into ten sections: 1 Books, Reviews & Symposia; 2 Cellulose; 3 Cellulose-degrading Enzymes; 4 Cyclodextrins; 5 Lignin; 6 Polysaccharides - Named; 7 Polysaccharides - Other; 8 Lipopolysaccharides; 9 Starch; 10 Starch-degrading Enzymes. Within each section, articles are listed in alphabetical order with respect to author. When there are no publications to appear under one of these headings, that section will be omitted.

- Dept Wood Sci & Forests Prod, Ctr Biobased Mat, Blacksburg, Va 24061, USA
Polym Bull 1992 **29** (5) 565
 Evidence for cholesteric morphology in films of cellulose acetate butyrate by transmission electron microscopy
 Ferrier RJ, Severn WB, Furneaux RH, Miller IJ// Victoria Univ Wellington, Dept Chem, POB 600, Wellington, New Zealand
Carbohydr Res 1992 **237** 79
 The products of the zinc chloride-promoted decomposition of cellulose in aqueous phenol at 350°C
 Fink HP, Philipp B, Zschunke C, Hayn M// Fraunhofer Inst Appl Polymer Res, Kantstr 55, O-1530 Teltow, FRG
Acta Polym 1992 **43** (5) 270
 Structural changes of LODP cellulose in the original and mercerized state during enzymatic hydrolysis
 French AD, Miller DP, Aabloo A// Sthn Reg Res Ctr, POB 19687, New Orleans, La 70179, USA
Int J Biol Macromol 1993 **15** (1) 30
 Miniature crystal models of cellulose polymorphs and other carbohydrates
 Gelhaye E, Petitdemange H*, Gay R// *Univ Nancy 1, Chim Biol Lab 1, BP 239, F-54506 Vandoeuvre Nancy, France
Res Microbiol 1992 **143** (9) 891
 Characteristics of cellulose colonization by a mesophilic, cellulolytic *Clostridium* (strain C401)
 Ghareib M, Youssef KA, El-Dein MMN// Ain Shams Univ, Fac Educ, Dept Biol, Cairo, Egypt
Zbl Mikrobiol 1992 **147** (8) 551
 Effect of alkali pretreatment on degradation of some cellulosic wastes by *Aspergillus sydowii*
 Gumerov FM, Arhmadeev IR, Sopin VF, Marchenko GN// Kazan Chem, Prod Res Inst, Kazan, Russia
Vysokomol Soedin Ser A SSSR 1992 **34** (11) 119
 Study of phase equilibria in solutions of oxypropyl cellulose in ethanol and dimethylacetamide by the spin probe method
 Hanley SJ, Giasson J, Revol JF, Gray DG// *Pulp & Paper Res Inst Canada, 3420 Univ St, Montreal, Quebec, Canada H3A 2A7
Polymer 1992 **33** (21) 4639
 Atomic force microscopy of cellulose microfibrils - Comparison with transmission electron microscopy
 Helmy SA// Cairo Univ, Fac Sci, Dept Chem, Giza, Egypt
Polym Degrad Stabil 1993 **39** (2) 155
 Effect of refining with sodium hydroxide urea solution on the acetylation behaviour of cellulosic fibres
 Helmy SA// Cairo Univ, Fac Sci, Dept Chem, Giza, Egypt
Polym Degrad Stabil 1993 **39** (2) 159
 Studies on the alkaline degradation of cellulose. 2. Effect of the supermolecular structure of the pulp
 Huang CC, Ger MD, Lin YC, Chen SI// Chung Cheng Inst Technol, Dept Appl Chem, Taoyuan, Taiwan
Thermochim Acta 1992 **208** 147
 Thermal decomposition of mixtures containing nitrocellulose and pentaerythritol tetranitrate
 Huh H, Lee SH, Lee YM*, Kim KY, Kim JI// *Hangyang Univ, Coll Engr, Dept Ind Chem, Seoul 133791, South Korea
J Appl Polym Sci 1993 **47** (5) 917
 Preparation and permeability of solutes through acrylic acid-G-methylcellulose copolymer membranes
 Hutter JM, Clarke MT, Just EK, Lichtin JL, Sakr A// Helene Curtis Ind, 4401 West Nth Ave, Bldg 3E, Chicago, IL 60639, USA
J Soc Cosmet Chem 1992 **43** (5) 229
 The influence of nonionic cellulosic polymers on the uptake of poly-quaternium-10 by bleached hair
 Iannuccelli V, Forni F, Vandelli MA, Bernabei MT*// *Univ Modena, Dept Pharmaceut Sci, via G Campi 183, I-41100 Modena, Italy
J Control Release 1993 **23** (1) 13
 Effect of the loading method on the drug release from cross-linked carboxymethylcellulose beads
 Juvancz Z, Grolimund K, Francotte E*// *Ciba Geigy AG, Div Pharmaceut, CH-4002 Basel, Switzerland
Chirality 1992 **4** (7) 459
 Use of cellulose-based stationary phases for chiral separation in open tubular column
 Karsakova NA, Ivanov AV, Tsvetkov VG// Nizhnii Novgorod Agr Inst, Chair Chem, Nizhnii Novgorod, Russia
Izv Vyssh Uch Zav Khim Khim T 1992 **35** (9) 49
 Enthalpies of cellulose interaction with aqueous trifluoroacetic-nitric acid mixtures (Russian)
 Kasai S, Sawa M, Nishida Y, Onodera K, Hirai S, Yamamoto T, Mito M// Asahikawa Med Coll, Dept Surg 2, 4-5 Nishikagura, Asahikawa 078, Hokkaido, Japan
Transplant Proc 1992 **24** (6) 2933
 Cellulose microcarrier for high-density culture of hepatocytes
 Kiso Y, Kitao T, Jinno K, Miyagi M// Toyohashi Univ Technol, Sch Reg Planning, Tempaku cho, Toyohashi, Aichi 440, Japan
J Membrane Sci 1992 **74** (1-2) 95
 The effects of molecular width on permeation of organic solute through cellulose acetate reverse osmosis membranes
 Koelsch CM, Labuza TP*// *Univ Minnesota, Dept Food Sci & Nutr, 1334 Eckles Ave, St Paul, Mn 55108, USA
Food Sci Technol-Lebensm Wiss 1992 **25** (5) 404
 Functional, physical and morphological properties of methyl cellulose and fatty acid-based edible barriers
 Kragten EA, Kamerling JP, Vliegthart JFG*// *Univ Utrecht, Dept Bioorgan Chem, Ctr Bijvoet, POB 80075, 3508 TB Utrecht, The Netherlands
J Chromatogr 1992 **623** (1) 49
 Composition analysis of carboxymethylcellulose by high pH anion-exchange chromatography
 Kumar V, Banker GS// Univ Iowa, Coll Pharm, Iowa City, Ia 52242, USA
Drug Develop Ind Pharm 1993 **19** (1-2) 1
 Chemically-modified cellulosic polymers
 Leavitt SW, Danzer SR// Univ Arizona, Tree Ring Res Lab, Tucson, Az 85721, USA
Anal Chem 1993 **65** (1) 87
 Method for batch processing small wood samples to holocellulose for stable-carbon isotope analysis
 Lenz J, Schurz J, Wrentschur E// Lenzing Ag, A-4860 Lenzing, Austria
Acta Polym 1992 **43** (6) 307
 Comparative characterization of solvent spun cellulose and high wet modulus viscose fibres by their long periods
 Lin MS, Chen AJ// Natl Chiao Tung Univ, Dept Appl Chem, Hsinchu 300, Taiwan
Polymer 1993 **34** (2) 389
 Preparation and characterization of water soluble and crosslinkable cellulose acrylate
 Lisperguer J, Solis M, Vergara E, Rodriguez-Baeza M// Univ Bio Bio, Fac Ciencias, Dept Quim, Casilla 5-C, Concepcion, Chile
Bol Soc Chil Quim 1992 **37** (4) 299
 Thermoset resins based on tannins and lignocellulosic compounds with toluene diisocyanate (Spanish, English Abstract)
 Li TQ, Henriksson U, Klason T, Odberg L// Royal Inst Technol, Dept Phys Chem, S-10044 Stockholm 70, Sweden
J Colloid Interface Sci 1992 **154** (2) 305
 Water diffusion in wood pulp cellulose fibers studied by means of the pulsed gradient spin-echo method
 Lopatenko LM// Kirovograd Agr Machinery Inst, Kirovograd, Ukraine
Ukr Khim ZH SSSR 1992 **58** (2) 140
 Swelling and dissolution of hydrate cellulose films in amide systems (Russian)
 Ludwig M, Fengel D// Univ Munich, Inst Holzforsch, Winzererstr 45, W-8000 Munich 40, FRG
Acta Polym 1992 **43** (5) 261
 Micro-FTIR studies on cellulose nitrate fibres of different degrees of substitution
 Lund PJ, Fritz TA, Unger EC, Hunt RK, Fuller E// Univ Arizona, Arizona Hlth Sci Ctr, Dept Radiol, 501 N Campbell Ave, Tucson, Az 85724, USA
Radiology 1992 **185** (3) 783
 Cellulose as a gastrointestinal US contrast agent
 Mansour OY// Natl Res Ctr, Dept Cellulose & Paper, Cairo, Egypt
J Appl Polym Sci 1993 **47** (5) 839
 Lignocellulose polymer composite. 3.
 Maranon E, Sastre H*// *Univ Oviedo, ETSII, Dept Chem Engr, Gijon, Spain
React Polym 1992 **18** (2) 173

Behaviour of lignocellulosic apple residues in the sorption of trace metals in packed beds

Marchal R, Ropars M, Pourquie J, Fayolle F, Van de Casteele JP*// *Inst Francais Petr, F-92506 Rueil, Malmaison, France
Bioresource Technol 1992 **42** (3) 205

Large-scale enzymatic hydrolysis of agricultural lignocellulosic biomass. 2. Conversion into acetone-butanol

Marianiova D, Lapcik L, Pisarcik M// Slovak Tech Univ, Fac Chem Technol, Radlinskeho 9, CS-81237 Bratislava, Czechoslovakia
Acta Polym 1992 **43** (6) 303

Study of the electric properties of cellulose derivatives

Matsumoto T, Zenkoh H// Kyoto Univ, Dept Polymer Chem, Kyoto 606, Japan
Food Hydrocolloids 1992 **6** (4) 379

A new molecular model for complexation between carboxymethylcellulose and alkaline earth metal ions in aqueous systems

Moldenhauer MG, Nairn JG*// *Univ Toronto, Fac Pharm, Toronto, Ontario, Canada M5S 2S2
J Control Release 1992 **22** (3) 205

The control of ethylcellulose microencapsulation using solubility parameters

Morgenstern B, Kammer HW, Berger W, Skrabal P// Tech Univ Dresden, Inst Makromolek Chem & Text Chem, Mommsenstr 13, O-8027 Dresden, FRG
Acta Polym 1992 **43** (6) 356

⁷Li-NMR study on cellulose/LiCl/N,N-dimethylacetamide solutions

Mustafa MB, Tipton DL, Barkley MD, Russo PS*, Blum FD// *Louisiana State Univ, Dept Chem & Macromolec Studies Grp, Baton Rouge, La 70803, USA
Macromolecules 1993 **26** (2) 370

Dye diffusion in isotropic and liquid crystalline aqueous (hydroxypropyl)cellulose

Nessim RI, Botros MG, Saad GR, Shalaby MM// Cairo Univ, Fac Sci, Dept Chem, Giza, Egypt
Angew Makromol Chem 1993 **204** 51

Frequency dependence of the complex dielectric constant of sodium carboxymethyl cellulose

Nirmal JD, Pandya VP, Desai NV*, Rangarajan R// *Cent Salt & Marine Chem Res Inst, Bhavnagar 364002, Gujarat, India
Separ Sci Technol 1992 **27** (15) 2083

Cellulose triacetate membrane for application in plating, fertilizer, and textile dye industry wastes

Nishitani T, Tsuji M, Ogura H// Suzuki Coll Technol, Dept Appl Mech, Suzuka 51002, Japan
J Mater Sci 1992 **27** (24) 6770

Cyclic tensile creep behaviour of cellulose nitrate and evaluation of constitutive equations

Okiyama A, Shirae H, Kano H, Yamanaka S// Ajinomoto Co Inc, Food Res & Dev Labs, 1-1 Suzuki cho, Kawasaki, Kanagawa 210, Japan
Food Hydrocolloid 1992 **6** (5) 471

Bacterial cellulose. 1. 2-stage fermentation process for cellulose production by *Acetobacter aceti*

Okiyama A, Motoki M, Yamanaka S// Ajinomoto Co Inc, Food Res & Dev Labs, 1-1 Suzuki cho, Kawasaki, Kanagawa 210, Japan
Food Hydrocolloid 1992 **6** (5) 479

Bacterial cellulose. 2. Processing of the gelatinous cellulose for food materials

Parkhomenko VV, Tretinnik VY, Timokhin IM, Kudra LA// AV Dumanskii Colloid Chem & Water Chem Inst, Kiev, Ukraine
Izv Vyssh Uch Zav Khim Khim T 1992 **35** (10) 63

Rheology and structure of mineral dispersion compositions with cellulose water-soluble ethers

Polavka J, Lapcik L// Slovak Tech Univ, Fac Chem Technol, Dept Phys Chem, CS-81237 Bratislava, Czechoslovakia
Chem Pap-Chem Zvesti 1992 **46** (5) 343

Photooxidation of hydroxyethylcellulose changes in physical properties due to corona discharge

Poole DM, Hazlewood GP, Huskisson NS, Virden R, Gilbert HJ*// *Univ Newcastle upon Tyne, Dept Biol & Nutr Sci, Newcastle upon Tyne NE1 7RU, England
FEMS Microbiol Lett 1993 **106** (1) 77

The role of conserved tryptophan residues in the interaction of a bacterial cellulose binding domain with its ligand

Ropars M, Marchal R, Pourquie J, Van de Casteele JP*// *Inst Francais Petr,

F-92506 Rueil, Malmaison, France

Bioresource Technol 1992 **42** (3) 197

Large-scale enzymatic hydrolysis of agricultural lignocellulosic biomass. 1. Pretreatment procedures

Rorrer GL, Hawley MC// Oregon State Univ, Dept Chem Engr, Corvallis, Or 97331, USA
Bioresource Technol 1993 **43** (3) 185

Solvolysis of lignocellulose by anhydrous hydrogen fluoride vapor - Yield comparisons from 4 cellulosic substrates

Rowe RC// ICI Pharmaceut Plc, Macclesfield SK10 2NA, England

Int J Pharm 1992 **88** (1-3) 405

Molecular weight dependence on the properties of ethyl cellulose and hydroxypropyl methylcellulose films

Rusig I, Dedier J, Filliatre C, Godhino MH, Varichon L, Sixou P// Address not available. *J Polymer Sci A-Polym Chem* 1993 **31** (2) 595

Effect of degradation on thermotropic cholesteric optical properties of (2-hydroxypropyl) cellulose (HPC) esters (*J Polymer Sci A-Polym Chem* 1992, **30** 895) (Erratum)

Ryu HW, Chang YK, Kim SD*// *Korea Adv Inst Sci & Technol, Dept Chem Engr, 373-1 Kusung Dong, Yusung Gu, Taejon 307301, South Korea

Bioprocess Eng 1993 **8** (5-6) 271

Gas holdup and mass transfer characteristics of carboxymethyl cellulose solution in a bubble column with a radial gas sparger

Sadykova AY, Saykaeva AS, Kostochko AV, Glebov AN, Moozyukov VG// Kazan Chem & Photog Ind Technol & Design Res Inst, K Marx 68, Kazan 420015, Russia
Int J Quantum Chem 1992 **44** (6) 935

Magnetic susceptibility of some derivatives of cellulose and their mixtures - Theory and experiment

Said OB, Shalmor MB, Eglia JN*// *Fed Univ Technol, Yola Dept Chem, Yola, Nigeria
Bioresource Technol 1993 **43** (1) 63

A note on the binding of nickel and copper ions by cellulosic materials

Saksonova LR, Kononenko VI, Shubin AS, Remez VP, Schchetkina NI, Sinitsina TA, Lukin NV, Gridnevskii MV, Perminov SA// Russian Acad Sci, Inst Chem, Ekaterinburg 620169, Russia
Bull Russ Acad Sci Div Chem Sci-Engl Tr 1992 **41** (3) 446

Bond nature and structure of ferrocyanide-containing materials based on cellulose

Sato T, Tsujii Y, Fukuda T*, Miyamoto T// *Kyoto Univ, Inst Chem Res, Uji, Kyoto 611, Japan
Macromolecules 1992 **25** (22) 5970

Reversible gelation of short-chain O-(2,3-dihydroxypropyl)cellulose/borax solutions. 2. Sol-gel transition

Savarino P, Viscardi G, Quagliotto P, Barni E, Friberg SE// Univ Turin, Dipt Chim Gen & Organ Appl, Corso Massimo Dazeglio 48, I-10125 Turin, Italy
J Disper Sci Tech 1993 **14** (1) 17

The role of cosurfactant and oil in the dyeing of cellulose acetate

Saxena S, Bahadur J, Varma A*// *Jawaharlal Nehru Univ, Sci Life Sci, Microbiol Unit, New Delhi 110067, India
Biometals 1992 **5** (4) 209

Effect of cobalt and nickel on growth and carboxymethyl cellulase activity of *Cellulomonas* spp

Scandola M, Ceccorulli G, Pizzoli M// Univ Bologna, Dipt Chim G Ciamician, Via Selmi 2, I-40126 Bologna, Italy
Macromolecules 1992 **25** (24) 6441

Miscibility of bacterial poly(3-hydroxybutyrate) with cellulose esters

Sharma AK, Ramu C// Sri Venkateswara Univ, Coll Engr, Dept Phys, Tirupati 517502, Andhra Pradesh, India
Mater Sci Eng B-Solid State 1992 **15** (3) 222

DC conductivity and I-V characteristics in Fe-doped cellulose acetate films

Shiba K, Ijitsu T, Hara H, Okada K// Nisshin Flour Milling Co Ltd, Food Res Ctr, 5-3-1 Turugaoka, Ohi machi, Iruma, Saitama 354, Japan
J Jpn Soc Food Sci Technol 1992 **39** (12) 1147

Preparation and characterization of water-soluble hemicellulose (arabinoxylan) from wheat bran (Japanese, English Abstract)

Shimizu T, Kudo K, Tanaka H, Nasu Y// Hokkaido Univ, Fac Engr, Dept Sanitary & Environm Engr, Kita 13, Nishi 8, Kita ku, Sapporo, Hokkaido 060, Japan
Hakkokogaku Kaishi 1992 **70** (6) 443

Cellulose digestion by an extremely thermophilic anaerobic bacterium (Japa-

nese, English Abstract)

Shternikova IN, Kolbina GF, Korneeva YV, Strelina IA, Shibaev VP, Yekaeva IV// Russian Acad Sci, Inst Macromolec Cpds, St Petersburg, Russia
Vysokomol Soedin Ser A SSSR 1992 **34** (12) 25

Conformational and optical properties of oxypropylcellulose butyrate molecules in solutions (Russian, English Abstract)

Singh A, Kumar PKR*, Schugerl K// *Minist Int Trade & Ind, Agcy Sci & Technol, Fermentat Res Inst, Dept Genet & Breeding, 1-1-3 Higashi, Tsukuba, Ibaraki 305, Japan

J Gen Appl Microbiol Tokyo 1992 **38** (3) 227

Direct fermentation of cellulosic materials by *Fusarium oxysporum* 841 - Acetic acid/ethanol production and tolerance

Sisson RA, Swift A, Wake GC, Gray BF// Univ London, Imperial Coll, Dept Math, London SW7 2BZ, England

IMA J Appl Math 1992 **49** (3) 273

The self-heating of damp cellulosic materials. 1. High thermal conductivity and diffusivity

Starichenko LV, Zakharov VI, Bushin SV, Smirnov KP, Astapenko EP// AA Blagonravov Mech Engr Inst, St Petersburg, Russia

Vysokomol Soedin Ser B 1992 **34** (10) 24

Hydrodynamic and conformational properties of cellulose glycerate nitrate molecules (Russian)

Tezuka Y, Yaegashi K, Yoshino M, Imai K// Nagaoka Univ Technol, Dept Mat Sci & Technol, Nagaoka, Niigata 94021, Japan

Kobunshi Ronbunshu 1992 **49** (10) 809

Grafting onto carboxymethylcellulose by the ion-coupling reaction with telechelic polymers having cyclic onium salt groups (Japanese, English Abstract)

Tirkkonen S, Paronen P// Univ Kuopio, Dept Pharmaceut Technol, POB 6, SF-70211 Kuopio, Finland

Int J Pharm 1992 **88** (1-3) 39

Enhancement of drug release from ethylcellulose microcapsules using solid sodium chloride in the wall

Tsvetkov NV, Marchenko GN, Bezrukova MA, Didenko SA, Tsvetkov VN// St Petersburg Univ, Phys Res Inst, St Petersburg, Russia

Dokl Akad Nauk 1992 **326** (4) 678

The influence of degree of substitution on optical and electrical properties of some aromatic cellulose esters in dioxane (Russian)

Wagenknecht W, Nehls I, Stein A, Klemm D, Philipp B// Fraunhofer Inst Appl Polymer Res, Kantstr 55, O-1530 Teltow, FRG

Acta Polym 1992 **43** (5) 266

Synthesis and substituent distribution on Na-cellulose sulphates via O-trimethylsilyl cellulose as intermediate

Wagenknecht W, Nehls I, Philipp B// *Max Planck Inst Colloid & Interface Res, Kantstr 55, O-1530 Teltow, FRG

Carbohydr Res 1992 **237** 211

The formation and stability of partially and completely substituted cellulose nitrate esters in dipolar aprotic solvents containing N₂O₄

Ward RA, Schaefer RM, Falkenhagen D, Joshua MS, Heidland A, Klinkmann H, Gurland HJ// Univ Louisville, Hlth Sci Ctr, Sch Med, Div Nephrol, Louisville, Ky 40202, USA

Nephrol Dialysis Transplant 1993 **8** (1) 47

Biocompatibility of a new high-permeability modified cellulose membrane for haemodialysis

Whang CW, Chen IC// Tunghai Christian Univ, Dept Chem, Taichung 40704, Taiwan

Anal Chem 1992 **64** (20) 2461

Cellulose acetate-coated porous polymer joint for capillary zone electrophoresis

Yamauchi J, Ando H, Yamaoka A// Kyoto Univ, Coll Liberal Arts & Sci, Kyoto 606, Japan

Makromol Chem-Rap Comm 1993 **14** (1) 13

Formation of free radicals in photoirradiated cellulose nitrate - Observation of nitroxide species in the degradation processes

Yang ST, Van Savage G, Weiss J, Ghebresellassie I// Warner Lambert Parke Davis, Parke Davis Pharmaceut Res Div, Morris Plains, NJ 07950, USA

Int J Pharm 1992 **86** (2-3) 247

The effect of spray mode and chamber geometry of fluid-bed coating equipment and other parameters on an aqueous-based ethylcellulose coating

Yasuda K, Saito M, Kamide K// *Asahi Chem Ind Co Ltd, Fundamental Res Lab Fiber & Fiber Forming Polymers, Osaka 569, Japan

Polym Int 1993 **30** (3) 393

Flow birefringence and viscosity of cellulose solutions in semi-dilute regime

Zilberman EN, Lerner F, Joseph HM, Grossman D, Alon M// Electrochem Ind Frutarom Ltd, Il-24102 Acre, Israel

Polym Int 1993 **30** (1) 89

Fractional composition of partly hydrolysed polyvinyl acetate and its compatibility with hydroxypropyl methylcellulose in aqueous solutions

Zimina TR, Petropavlovskii GA// Russian Acad Sci, Inst Macromolec Cpds, St Petersburg, Russia

J Appl Chem-Engl Tr 1992 **65** (4) 729

Swelling of cellulose in solutions of organic compounds containing an amido or amino group

3 CELLULOSE-DEGRADING ENZYMES

Acebes JL, Zarra I// *Univ Santiago de Compostela, Fac Biol, Fisiol Vegetal Lab, E-15706 Santiago de Compostela, Spain

Physiol Plant, 1992 **86** (3) 433

Cell wall glycanases and their activity against the hemicelluloses from pine hypocotyls

Ali MS, Akhand AA// Case Western Reserve Univ, Sch Med, Dept Biochem, Cleveland, Oh 44106, USA

J Basic Microb 1992 **32** (4) 259

Cellulase from *Trichoderma* isolate

Beguín P, Millet J, Aubert JP// *Inst Pasteur, Dept Biotechnol, CNRS, URA 130, Unite Physiol Cellulaire, 28 rue Dr Roux, F-75724 Paris 15, France

FEMS Microbiol Lett 1992 **100** (1-3) 523

Cellulose degradation by *Clostridium thermocellum* - From manure to molecular biology

Beran M, Paulicek V// Food Ind Res Inst, Radiova 7, CS-10231 Prague 10, Czechoslovakia

J Them Anal 1992 **38** (9) 1979

Flow microcalorimetric determination of enzymatic activities of the *Trichoderma viride* cellulase complex

Bouvier F, Entressangles B// Univ Bordeaux 1, ISTAB, Lipochim Alimentaire Lab, 1 Ave Fac, F-33405 Talence, France

Rev Fr Corps Gras 1992 **39** (9-10) 245

Using cellulases and pectinases in the production of palm oil (French, English Abstract)

Cailliez C, Benoit L, Gelhaye E, Petitdemange H, Raval G// Univ Nancy 1, Chim Biol Lab 1, BP 239, F-54506 Vandoeuvre Nancy, France

Bioresource Technol 1993 **43** (1) 77

Solubilization of cellulose by mesophilic cellulolytic clostridia isolated from a municipal solid-waste digester

Deshpande MV// Natl Chem Lab, Div Biochem Sci, Poona 411008, Maharashtra, India

Appl Biochem Biotech 1992 **36** (3) 227

Ethanol production from cellulose by coupled saccharification fermentation using *Saccharomyces cerevisiae* and cellulase complex from *Sclerotium rolfsii* UV-8 mutant

Dillon AJP, Paesitoresan SO, Barp LP// Univ Caxias Sul, Inst Biotechnol, Dept Ciencias Biol, Rua Francisco Getulio Vargas 1130, BR-95070 Caxias do Sul, RS, Brazil

Rev Brasil Genetica 1992 **15** (3) 491

Isolation of cellulase-producing mutants from a *Penicillium* sp strain denominated 3MUV24

Gama FM, Faro CJ, Teixeira JA, Mota M// *Univ Oporto, Ctr Engr Quim, INIC, Rua Bragas, P-4099 Oporto, Portugal

Enzyme Microb Technol 1993 **15** (1) 57

New methodology for the characterization of endoglucanase activity and its application on the *Trichoderma longibrachiatum* cellulolytic complex

Gokhale DV, Patil SG, Bastawde KB// Natl Chem Lab, NCIM, Div Biochem Sci, Poona 411008, Maharashtra, India

Appl Biochem Biotech 1992 **37** (1) 11

Protection of *Aspergillus niger* cellulases by urea during growth on glucose or glycerol supplemented media

Golovchenko NP, Kataeva IA, Akimenko VK// Russian Acad Sci, Inst Biochem & Physiol Microorganisms, Pushchino, Russia

Biochemistry-Eng Tr 1992 **57** (7) 710

Analysis of the pH dependence of the adsorption of *Clostridium thermocellum* endoglucanase on cellulose

- Goto M, Furukawa K, Hayashida S*// *Kyushu Univ, Dept Agr Chem, Fukuoka 812, Japan
Biosci Biotechnol Biochem 1992 **56** (10) 1523
 An avicel-affinity site in an avicel-digesting exocellulase from a *Trichoderma viride* mutant
- Homma T, Fujii M*, Mori J, Kawakami T, Kuroda K, Taniguchi M// *Niigata Univ, Grad Sch Nat Sci & Technol, Niigata 95021, Japan
Biotechnol Bioeng 1993 **41** (4) 405
 Production of cellobiose by enzymatic hydrolysis - Removal of β -glucosidase from cellulase by affinity precipitation using chitosan
- Illgen A, Annemuller G, Muke O// Humboldt Univ, Fak Lebensmitteltechnol, Lehrstuhl Fachgebietes Garungstechnol, O-1040 Berlin, Germany
Monatssche Brauwissen 1992 **45** (11) 364-378
 Test for the application-oriented characterisation of cellulase preparations for making beer (German, English Abstract)
- Montero MA, Romeu A*// *Univ Barcelona, Dept Chem Engr & Biochem, Plaza Imperial Tarraco 1, E-43005 Tarragona, Spain
Appl Microbiol Biotechnol 1992 **38** (3) 350
 Kinetic study on the β -glucosidase-catalysed reaction of *Trichoderma viride* cellulase
- Murata M, Hishino E*, Yokosuka M, Suzuki A// *Kao Corp, Household Prod Res Labs, 1334 Minato, Wakayama 640, Japan
J Amer Oil Chem Soc 1993 **70** (1) 53
 New detergent mechanism using cellulase revealed by change in physicochemical properties of cellulose
- Ogawa R, Miura Y, Tokura S, Koriyama T// Hokkaido Univ, Fac Sci, Dept Polymer Sci, Sapporo, Hokkaido 060, Japan
Int J Biol Macromol 1992 **14** (6) 343
 Susceptibilities of bacterial cellulose containing N-acetylglucosamine residues for cellulolytic and chitinolytic enzymes
- Park CH, Orozco-Avila I// Univ Minnesota, Dept Agr Engr, St Paul, Mn 55108, USA
Biotechnol Progr 1992 **8** (6) 521
 Concentrating cellulases from fermented broth using a temperature-sensitive hydrogel
- Peterbauer CK, Heidenreich E, Baker RT, Kubicek CP*// *Vienna Tech Univ, Inst Biochem Technol & Mikrobiol, Mikrobielle Biochem, A-1060 Vienna, Austria
Can J Microbiol 1992 **38** (12) 1292
 Effect of benomyl and benomyl resistance on cellulase formation by *Trichoderma reesei* and *Trichoderma harzianum*
- Poole DM, Morag E, Lamed R, Bayer EA, Hazlewood GP, Gilbert HJ*// *Newcastle Univ, Dept Biol & Nutr Sci, Newcastle upon Tyne NE1 7RU, England
FEMS Microbiol Lett 1992 **99** (2-3) 181
 Identification of the cellulose-binding domain of the cellulosome subunit-S1 from *Clostridium thermocellum*
- Prasertsan P, Hkittikul A, Chitmanee B// Prince Songkla Univ, Fac Nat Resources, Dept Agroind, Hat Yai 90110, Thailand
World J Microbiol Biotechnol 1992 **8** (6) 614
 Isolation and selection of cellulolytic fungi from palm oil mill effluent
- Ramaiah N, Chandremohan D// Natl Inst Oceanog, Div Biol Oceanog, Panaji 403004, Goa, India
Aquat Bot 1992 **44** (1) 71
 Densities, cellulases, alginate and pectin lyases of luminous and other heterotrophic bacteria associated with marine algae
- Ramos LP, Breuil C, Saddler JN*// *Univ British Columbia, Fac Forestry, Dept Forest Prod Biotechnol, Vancouver, Brit Columbia, Canada V6T 1Z4
Enzyme Microb Technol 1993 **15** (1) 19
 The use of enzyme recycling and the influence of sugar accumulation on cellulose hydrolysis by *Trichoderma* cellulases
- Roseiro JC, Conceicao AC, Amaral-Collaco MT*// *Lab Nac Engr & Technol Ind, Dept Technol Ind Quim, Unidade Microbiol Ind Biotechnol, P-1699 Lisbon, Portugal
Bioresource Technol 1993 **43** (2) 155
 Membrane concentration of fungal cellulases
- Singh RP// Reg Res Lab, Div Biochem, Jorhat 785006, India
J Microbiol Biotechnol 1992 **7** (2) 19
 Degradation of crystalline cellulose by *Clostridium thermocellum* - A new enzyme coupled assay for cellulase
- Smith AE, Achremowicz B, Karkare MV, Tanner RD, Woodward J// Vanderbilt Univ, Nashville, Tn 37240, USA
J Microbiol Biotechnol 1992 **7** (1) 9
 Concentrating cellulase from a water solution onto water droplets in air
- Tian YC, Lian B, Li ZQ, Liang YQ, Lu L, Huang WY// Jilin Univ, Inst Theoret Chem, Changchun 130023, Peoples Rep China
J Chem Soc Chem Commun 1993 (1) 31
 Specific and non-specific interaction between double perfluoroalkyl-chain steroidal glycoside monolayers and cellulase at the air water interfaces
- Trudeau DG, Bernier RL, Gannon DJ, Forsberg CW*// *Univ Guelph, Dept Microbiol, Guelph, Ontario, Canada N1G 2W1
Can J Microbiol 1992 **38** (11) 1120
 Isolation of *Clostridium acetobutylicum* strains and the preliminary investigation of the hemicellulolytic activities of isolate 3BYR
- Tsygankov YF, Kurashov VI, Smetanina SE, Pobedimsky DG, Sinitsyn AP, Kirpichnikov PA// Russian Acad Sci, Inst Biol, Kazan, Russia
Dokl Akad Nauk 1992 **325** (4) 861
 Interconnection of the temperature dependences of the dielectric and biochemical characteristics of the *Trichoderma viride* cellulases (Russian)
- Tuka K, Zverlov VV*, Velikodvorskaya GA// *Russian Acad Sci, Inst Molec Genet, Kurchatov Sq 46, Moscow 123182, Russia
Appl Biochem Biotech 1992 **37** (2) 201
 Synergism between *Clostridium thermocellum* cellulases cloned in *Escherichia coli*
- Vazquez D, Lage MA, Parajo JC*, Alonso JL// *Univ Vigo, Fac Sci, Dept Chem Engr, Campus Orense, E-32004 Orense, Spain
Appl Biochem Biotech 1992 **37** (2) 123
 Empirical assessment on the cellulase digestibility of processed *Eucalyptus* wood
- Yang JL, Eriksson KEL// Univ Georgia, Dept Biochem, Athens, Ga 30602, USA
Holzforschung 1992 **46** (6) 481
 Use of hemicellulolytic enzymes as one stage in bleaching of Kraft pulps

4 CYCLODEXTRINS

- Abelyan VA, Avakyan ZG, Melkumyan AG, Balayan AM, Uzunyan LV, Gasparyan AV// Armenian Acad Sci, Inst Microbiol, Abovyan, Armenia
Biochemistry-Engl Tr 1992 **57** (3) 285
 Comparison of cyclodextrin glycosyltransferases from various groups of microorganisms
- Abelyan VA, Balayan AM, Avakyan ZG, Manukyan LS, Uzunyan LV// Armenian Acad Sci, Inst Microbiol, Abovyan, Armenia
Biochemistry-Engl Tr 1992 **57** (3) 292
 Intermolecular transglycosylation by various cyclodextrin glycosyltransferase
- Adachi H, Irie T, Uekama K*, Manako T, Yano T, Saita M// *Kumamoto Univ, Fac Pharmaceut Sci, 5-1 Oe-honmachi, Kumamoto 862, Japan
J Pharm Pharmacol 1992 **44** (12) 1033
 Inhibitory effect of prostaglandin E₁ on laurate-induced peripheral vascular occlusive sequelae in rabbits - Optimized topical formulation with β -cyclodextrin derivative and penetration enhancer HPE-101
- Amato ME, Djedaini-Pilard F, Perly B, Scarlata G// Univ Catania, Dipt Sci Chim, Viale A Doria 6, I-95125 Catania, Italy
J Chem Soc Perkin Trans II 1992 (11) 2065
 High field NMR techniques and molecular modelling study of the inclusion complexes of the nootropic drug tenilsetam (CAS-997) in cyclodextrins
- Amato ME, Djedaini F, Pappalardo GC, Perly B, Scarlata G// Univ Catania, Fac Farm, Cattedra Chim Gen 2, Dipt Sci Chim, Viale A Doria 6, I-95125 Catania, Italy
J Pharm Sci 1992 **81** (12) 1157
 Molecular modeling of β -cyclodextrin complexes with nootropic drugs
- Baer HH, Shen YP, Gonzalez FS, Berenguel AV, Garcia J// Univ Ottawa, Dept Chem, Ottawa, Ontario, Canada K1N 9B4
Carbohydr Res 1992 **235** 129
 Synthesis of a cycloheptaose consisting of (1-4)-linked 7-amino-6,7-dideoxy- α -D-glucopyranosyl units - A new analog of cyclomaltoheptaose
- Bellanger N, Perly B*// *CENS, Serv Chim Molec, F-91191 Gif sur Yvette, France
J Mol Struct 1992 **273** 215
 NMR investigations of the conformation of new cyclodextrin-based amphiphilic transporters for hydrophobic drugs - Molecular lollipop

- Bicchi C, Artuffo G, D'Amato A, Galli A, Galli M// Univ Turin, Dipt Sci & Tecnol Farmaco, via Pietro Giuria 9, I-10125 Turin, Italy
J High Res Chromatogr 1992 **15** (10) 655
 Cyclodextrin derivatives in the GC separation of racemic mixtures of volatile compounds. 4.
- Bicchi C, Artuffo G, D'Amato A, Manzin V, Galli A, Galli M// Univ Turin, Dipt Sci & Tecnol Farm, via Pietro Giuria 9, I-10125 Turin, Italy
J High Res Chromatogr 1992 **15** (11) 710
 Cyclodextrin derivatives in the GC separation of racemic mixtures of volatile compound. 5. Heptakis 2,6-dimethyl-3-pentyl- β -cyclodextrins
- Birlirakis N, Perly B*// *CENS, Serv Chim Molec, F-91191 Gif sur Yvette, France
Carbohydr Res 1992 **235** C1
 One-dimensional and 2-dimensional ^1H NMR investigations of the inclusion of the anti-cancer drug mitoxantrone in cyclomaltooligosaccharides
- Bradshaw JS, Yi GL, Rossiter BE, Reese SL, Petersson P, Markides KE, Lee ML// Bingham Young Univ, Dept Chem, Provo, Ut 84602, USA
Tetrahedron Lett 1993 **34** (1) 79
 Novel cyclodextrin-oligosiloxane copolymers and their use as stationary phases for separating enantiomers in open tubular column supercritical fluid chromatography
- Castelli F, Puglisi G, Giammona G, Ventura CA// Univ Catania, Dipt Sci Chim, Viale A Doria 6, I-95125 Catania, Italy
Int J Pharm 1992 **88** (1-3) 1
 Effect of the complexation of some nonsteroidal anti-inflammatory drugs with β -cyclodextrin on the interaction with phosphatidylcholine liposomes
- Choi HS// Kon Kuk Univ, Coll Anim Husb, Anim Resources Ctr, Seoul 133701, South Korea
Bull Kor Chem Soc 1992 **13** (5) 474
 Molecular recognition - α -cyclodextrin and aspirin inclusion complexation
- Choudhury S, Mitra AK// Univ Wyoming, Sch Pharm, Laramie, Wy 82071, USA
Pharmaceut Res 1993 **10** (1) 156
 Kinetics of aspirin hydrolysis and stabilization in the presence of 2-hydroxypropyl- β -cyclodextrin
- Ciucanu I, Negura S, Hirsch-Vogel W, Luca C// IECB Timisoara, Dept Nat Prod, Str Bocsei 6, R-1900 Timisoara, Romania
Rev Roum Chim 1992 **37** (7) 843
 Characterization of per-O-alkylated cyclodextrins by GC/MS as O-alkylated glucononitrile acetates
- Coleman AW, Ling CC, Miocque M// Univ Paris 11, Ctr Pharmaceut, Chim O'gan Lab, CNRS, F-92290 Chateaufort, France
Angew Chim Int Ed 1992 **31** (10) 1381
 Synthesis and complexation properties of a cyclodextrin-derived siderophore analogue
- Cserhati T, Fenyvesi E, Szejtli J// Hungarian Acad Sci, Cent Res Inst Chem, POB 17, H-1525 Budapest, Hungary
J Inclusion Phenom Mol Recogn 1992 **14** (2) 181
 Interaction of nonylphenyl and tributylphenyl ethylene oxide ionic surfactants with highly soluble cyclodextrin derivatives
- Cucinotta V, D'Alessandro F, Impellizzeri G, Vecchio G// Univ Catania, Dipt Sci Chem, Viale A Doria 8, I-95125 Catania, Italy
J Chem Soc Chem Commun 1992 **23** 1743
 The copper (II) complex with the imidazole-bound histamine derivative of β -cyclodextrin as a powerful chiral discriminating agent
- Dietrich A, Maas B, Brand G, Karl V, Kaunzinger A, Mosandl A// Univ Frankfurt, Inst Lebensmittelchem, Robert Mayer Str 7-9, W-6000 Frankfurt, FRG
J High Res Chromatogr 1992 **15** (11) 769
 Stereoisometric flavor compounds. 60. Diluted modified cyclodextrins as chiral stationary phases - The influence of the polysiloxane solvent
- Fronza G, Mele A, Redenti E*, Ventura P// *Chiesi Farmaceut Spa, Dept Chem & Biopharmaceut, Via Palermo 26-A, I-43100 Parma, Italy
J Pharm Sci 1992 **81** (12) 1162
 Proton nuclear magnetic resonance spectroscopy studies of the inclusion complex of piroxicam with β -cyclodextrin
- Fujiwara S, Kakiwara H, Sakaguchi K, Imanaka T*// *Osaka Univ, Fac Engn, Dept Biotechnol, Suita, Osaka 565, Japan
J Bacteriol 1992 **174** (22) 7478
 Analysis of mutations by cyclodextrin glucanotransferase from *Bacillus stearothermophilus* which affect cyclization characteristics and thermostability
- Fujiwara S, Kakiwara H, Woo KB, Lejeune A, Kanemoto M, Sakaguchi K, Imanaka T*// *Osaka Univ, Fac Engn, Dept Biotechnol, Suita, Osaka 565, Japan
Appl Environ Microbiol 1992 **58** (12) 4016
 Cyclization characteristics of cyclodextrin glucanotransferase are conferred by the NH₂-terminal region of the enzyme
- Giordano F, Bruni G, Bettinetti GP// Univ Pavia, Dept Pharmaceut Chem, Viale Taramelli 12, I-27100 Pavia, Italy
J Therm Anal 1992 **38** (12) 2683
 Solid-state microcalorimetry on drug-cyclodextrin binary systems
- Hamasaki K, Nakamura A, Ueno A, Toda F// Tokyo Inst Technol, Fac Biosci & Biotechnol, Dept Bioengn, 4259 Nagatsuta cho, Midori ku, Yokohama, Kanagawa 227, Japan
J Inclusion Phenom Mol Recogn 1992 **13** (4) 349
 Trans-cis photosomerization of 1-methyl-4-(4'-hydroxystyryl)pyridinium in inclusion complexes of β -cyclodextrin and its derivatives
- Hargitai T, Kaida Y, Okamoto Y*// *Nagoya Univ, Fac Engn, Dept Appl Chem, Chikusa ku, Nagoya 46401, Japan
J Chromatogr 1993 **628** (1) 11
 Preparation and chromatographic evaluation of 3,5-dimethylphenyl carbamoylated β -cyclodextrin stationary phases for normal-phase high-performance liquid chromatographic separation of enantiomers
- He BL, Zhao XB// Nankai Univ, Inst Polymer Chem, Tianjin 300071, Peoples Rep China
React Polym 1992 **18** (3) 229
 Study on the oxidation of crosslinked β -cyclodextrin polymer and its use in the removal of urea. 1.
- Helm H, Andersen A, Muller BW*, Waaler T// *Univ Kiel, Dept Pharmaceut, Gutenbergstr 76-78, W-2300 Kiel 1, FRG
Acta Pharm Nordica 1992 **4** (4) 313
 Complex formation of β -cyclodextrin and gamma-cyclodextrin with digitoxin
- Ikeda H, Ikeda T, Toda F// Tokyo Inst Technol, Fac Biosci & Biotechnol, Dept Bioengn, 4259 Nagatsuta cho, Midori ku, Yokohama, Kanagawa 227, Japan
Bioorg Medicinal Chem Letter 1992 **2** (12) 1581
 Substrate selectivity of imidazole-appended dimethyl- β -cyclodextrin
- Inoue Y, Hakushi T, Liu Y, Tong LH, Shen BJ, Jin DS// Himeji Inst Technol, Dept Mat Sci, Kamigori, Hyogo 67812, Japan
J Amer Chem Soc 1993 **115** (2) 475
 Thermodynamics of molecular recognition by cyclodextrins. 1. Calorimetric titration in inclusion complexation of naphthalenesulfonates with α -cyclodextrin, β -cyclodextrin and gamma-cyclodextrin - Enthalpy enthalpy compensation
- Kano K, Tamiya Y, Hashimoto S// Doshisha Univ, Fac Engn, Dept Appl Chem, Kamikyo ku, Kyoto 602, Japan
J Inclusion Phenom Mol Recogn 1992 **13** (3) 287
 Binding forces in complexation of p-alkylphenols with β -cyclodextrin and methylated β -cyclodextrins
- Kim TJ, Lee YD, Kim HS*// *Korea Adv Inst Sci & Technol, Dept Biotechnol, Taejeon 305701, South Korea
Biotechnol Bioeng 1993 **41** (1) 88
 Enzymatic production of cyclodextrins from milled corn starch in an ultrafiltration membrane bioreactor
- Kitahata S, Hara K, Fujita K, Nakano H, Kuwahara N, Koizumi K// Osaka Municipal Tech Res Inst, 1-6-50 Morinomiya, Jyoto ku, Osaka 536, Japan
Biosci Biotechnol Biochem 1992 **56** (9) 1386
 Acceptor specificity of cyclodextrin glycosyltransferase from *Bacillus stearothermophilus* and synthesis of α -D-glucosyl O- β -D-galactosyl-(1-4)- β -D-glucoside
- Kitahata S, Hara K, Fujita K, Kuwahara N, Koizumi K// Osaka Municipal Tech Res Inst, 1-6-50 Morinomiya, Jyoto ku, Osaka 536, Japan
Biosci Biotechnol Biochem 1992 **56** (9) 1518
 Synthesis of 6-O- α -D-galactosyl α -cyclodextrin by coffee bean α -galactosidase
- Kobayashi M, Ohya S// Natl Food Res Inst, Tsukuba, Ibaraki 305, Japan
Carbohydr Res 1992 **237** 263
 Action of taka-amylase-A and cyclodextrin glucanotransferase on dialdehyde-cyclodextrins and their reduced forms
- Kutner W, Storck W, Doblhofer K// Max Planck Gesell, Fritz Haber Inst, Faradayweg 4-6, W-1000 Berlin 33, FRG
J Inclusion Phenom Mol Recogn 1992 **13** (3) 257
 Preparation and properties of insoluble films of cyclodextrin condensation polymers

- Lee JH, Choi KH, Choi JY, Lee YS, Kwon IB, Yu JH// Yonsei Univ, Lotte Grp, Ctr Res & Dev, 4-23 Yangpyong Dong, Youngdeungpo ku, Seoul 150104, South Korea
Enzyme & Microb Technol 1992 **14** (12) 1017
Enzymatic production of α -cyclodextrin with the cyclomalto-dextrin glucanotransferase of *Klebsiella oxytoca* 19-1
- Lin SY, Perng RI// Vet Gen Hosp, Dept Med Res, Biopharmaceut Lab, Taipei, Taiwan
J Inclusion Phenom Mol Recogn 1992 **14** (2) 149
Inclusion complex formation of acetaminophen by heating and cogrinding with cyclodextrins
- Li S, Purdy WC*// *McGill Univ, Dept Chem, Montreal, Quebec, Canada H3A 2K6
J Chromatogr 1992 **625** (2) 109
Direct separation of enantiomers using multiple-interaction chiral stationary phases based on the modified β -cyclodextrin-bonded stationary phase
- Liu FY, Kildsig DO, Mitra AK*// *Purdue Univ, Sch Pharm & Pharmacol Sci, Dept Ind & Phys Pharm, West Lafayette, In 47907, USA
Pharmaceut Res 1992 **9** (12) 1671
Cyclodextrin/weak-electrolyte complexation - Interpretation and estimation of association constants from phase solubility diagrams
- Marzona M, Carpignano R, Quagliotto P// Univ Turin, Dipt Chim Gen & Organ Applicata, Corso Massimo Dazeglio 48, I-10125 Turin, Italy
Ann Chim-Rome 1992 **82** (9-10) 517
Quantitative structure-stability relationships in the inclusion complexes of steroids with cyclodextrins
- Mir M, Marquet J*, Cayon E// *Univ Autonoma Barcelona, Dept Chem, E-08193 Barcelona, Spain
Tetrahedron Lett 1992 **33** (46) 7053
Solid state photochemistry of ternary cyclodextrin complexes - Total selectivity in the photoreduction of nitrophenyl ethers by 1-phenylethylamine
- Moelands D, Karnik NA, Pranker RJ, Sloan KB, Stone HW, Perrin JH*// *Univ Florida, J Hillis Miller Hlth Ctr, Coll Pharm, Dept Med Chem, Gainesville, FL 32610, USA
Int J Pharm 1992 **86** (2-3) 263
Microcalorimetric study of the interactions of aspartame with β -cyclodextrin and hydroxypropyl- β -cyclodextrin - The anomalous heat of dilution of the latter
- Moriya T, Kurita H, Matsumoto K, Otake T, Mori H, Morimoto M, Ueba N, Kunita N// Address not available. *J Med Chem* 1992 **35** (25) 4767
Potent inhibitory effect of a series of modified cyclodextrin sulfates (mCDS) on the replication of HIV-1 *in vitro* (*J Med Chem* 1991, **34** 2304) (Additions and corrections)
- Mortellaro MA, Czarnik AW*// *Ohio State Univ, Dept Chem, Columbus, Oh 43210, USA
Bioorg Medicinal Chem Letter 1992 **2** (12) 1635
Hydrogen bonding effects on the reactivity of a preassociating α -nucleophile - The secondary-side β -CD hydroxylamine
- Nakatsu CN, Stalcup AM// Univ Hawaii, Dept Chem, 2545 The Mall, Honolulu, HI 96822, USA
J Liq Chromatogr 1993 **16** (1) 209
Separation of enantiomers using an (S)-naphthylethylcarbamoylated γ -cyclodextrin stationary phase
- Patzelt H, Gaudet V, Robinson JA// Univ Zurich, Inst Organ Chem, CH-8057 Zurich, Switzerland
J Antibiot 1992 **45** (11) 1806
Stimulation of polyether antibiotic production in Streptomycetes by heptakis-2,6-di-O-methyl β -cyclodextrin
- Pitchumani K, Vellayappan M// Madurai Kamaraj Univ, Sch Chem, Madurai 625021, Tamil Nadu, India
J Inclusion Phenom Mol Recogn 1992 **14** (2) 157
Complex formation of nitrobenzoic acids and some naphthalene derivatives with β -cyclodextrin
- Pitha J, Anand R*// *Div Res Grants, Virol Study Sect, 5333 Westbard Ave, Westwood Bldg, Bethesda, Md 20892, USA
Antivir Chem Chemother 1993 **4** (1) 65
 α -cyclodextrin sulphate, an anti-HIV agent, retains its antiviral effect in the presence of hydrocortisol phosphate
- Poh BL, Chow YM// Univ Sci Malaysia, Sch Chem Sci, George Town, Malaysia
J Inclusion Phenom Mol Recogn 1992 **14** (2) 85
- Transport method for determining the association constants of complexes formed between aromatic hydrocarbons and α -cyclodextrin and β -cyclodextrin in water
- Pranker RJ, Stone HW, Sloan KB, Perrin JH// Univ Queensland, Dept Pharm, St Lucia, Qld 4072, Australia
Int J Pharm 1992 **88** (1-3) 189
Degradation of aspartame in acidic aqueous media and its stabilization by complexation with cyclodextrins or modified cyclodextrins
- Schmalzing D, Jung M, Mayer S, Rickert J, Schurig V// Univ Tubingen, Inst Organ Chem, Morgenstelle 18, W-7400 Tubingen 1, FRG
J High Res Chromatogr 1992 **15** (11) 723
Extending the scope of enantiomer separations on chiral-dex by GLC - Comparison with permethylated β -cyclodextrin dissolved in OV-1701
- Schuette JM, Ndou TT, De la Pena AM, Mukundan S, Warner IM*// *Louisiana State Univ, Dept Chem, Baton Rouge, La 70803, USA
J Amer Chem Soc 1993 **115** (1) 292
Influence of alcohols on the β -cyclodextrin acridine complex
- Schutznier W, Fanali S*// *CNR, Ist Cromatog, POB 10, I-00016 Monterotondo, Italy
Electrophoresis 1992 **13** (9-10) 687
Enantiomers resolution in capillary zone electrophoresis by using cyclodextrins
- Senel S, Cakoglu O, Summu M, Duchene D, Hincal AA// Hacettepe Univ, Fac Pharm, Dept Pharmaceut Technol, 06100 Ankara, Turkey
J Inclusion Phenom Mol Recogn 1992 **14** (2) 171
Preparation and investigation of the tenoxicam β -cyclodextrin complex
- Shibakami M, Sekiya A*// *Nat'l Chem Lab Ind, Higashi 1-1, Tsukuba, Ibaraki 305, Japan
J Chem Soc Chem Commun 1992 **23** 1742
X-ray crystallographic study of fluorine atom effect on guest orientation inside the α -cyclodextrin cavity
- Shimada M, Morimoto Y, Takahashi S*// *Osaka Univ, Inst Sci & Ind Res, Ibaraki, Osaka 567, Japan
J Organometal Chem 1993 **443** (1) C8
Preparation and properties of cyclodextrin-metal carbonyl inclusion compounds
- Sideris EE, Valsami GN, Koupparis MA, Macheras PE*// *Univ Athens, Dept Pharm, GR-15771 Athens, Greece
Pharmaceut Res 1992 **9** (12) 1568
Determination of association constants in cyclodextrin/drug complexation using the Scatchard plot - Application to β -cyclodextrin-anilino-naphthalenesulfonates
- Sivagnanam U, Palaniandavar M*// *Bharathidasan Univ, Dept Chem, Tiruchirappalli 620024, India
J Electroanal Chem 1992 **34** (1-2) 197
Selective inclusion of methylviologen by β -cyclodextrin - Effect of cyclodextrins on the electrochemistry of methylviologen
- Sophianopoulos AJ, Warner IM*// *Emory Univ, Dept Chem, Atlanta, Ga 30322, USA
Anal Chem 1992 **64** (21) 2652
Purification of β -cyclodextrin
- Steiner T, Koelliner G, Ali S, Zakim D, Saenger W// Free Univ Berlin, Inst Kristallog, Takustr 6, W-1000 Berlin, 33, FRG
Biochem Biophys Res Commun 1992 **188** (3) 1060
Topography of cyclodextrin inclusion. 30. Crystalline β -cyclodextrin.12H₂O reversibly dehydrates to β -cyclodextrin.10.5H₂O under ambient conditions
- Sybilka D, Bielejewska A, Nowakowski R, Duszczek K, Jurczak J// Polish Acad Sci, Inst Phys Chem, Kasprazaka 44 52, PL-01224 Warsaw, Poland
J Chromatogr 1992 **625** (2) 349
Improved chiral recognition of some compounds via the simultaneous use of β -cyclodextrin and its permethylated derivative in a reversed-phase high-performance liquid chromatographic system
- Szejtli J// Cyclolab, Cyclodextrin Res & Dev Lab, Budapest, Hungary
J Inclusion Phenom Mol Recogn 1992 **14** (1) 25
The properties and potential uses of cyclodextrin derivatives
- Tait RJ, Skanchy DJ, Thompson DP, Chetwyn NC, Dunshee DA, Rajewski RA, Stella VJ, Stobaugh JF*// *Univ Kansas, Ctr Bioanalyt Res, 2095 Constant Ave, Lawrence, Ks 66045, USA
J Pharmaceut Biomed Anal 1992 **10** (9) 615
Characterization of sulfoalkyl ether derivatives of β -cyclodextrin by capillary electrophoresis with indirect UV detection
- Ueno A, Minato S, Osa T// Tokyo Inst Technol, Fac Biosci & Biotechnol, Dept Bioengn, Nagatsuta, Midori ku, Yokohama, Kanagawa 227, Japan

Anal Chem 1992 **64** (21) 2562

Detection of organic compounds by guest-responsive monomer and excimer fluorescence of 6A,6B-bis(2-naphthylsulfonyl)- β -cyclodextrins, 6A,-6C-bis(2-naphthylsulfonyl)- β -cyclodextrins, and 6A,6D-bis(2-naphthylsulfonyl)- β -cyclodextrins

Utsuki T, Hirayama F, Uekama K// *Kumamoto Univ, Fac Pharmaceut Sci, 5-1 Oe-honmachi, Kumamoto 862, Japan

J Chem Soc Perkin Trans II 1993 (1) 109

Different photodimerization behaviour of tranilast in α -cyclodextrin, β -cyclodextrin and gamma-cyclodextrin complexes - Cavity-size and stoichiometry dependence

Van der Houwen OAGJ, Bekers O, Bult A, Beijnen JH, Underberg WJM// *POB 80082, 3508 TB Utrecht, The Netherlands

Int J Pharm 1993 **89** (1) R5

Computation of mitomycin C- γ -cyclodextrin complex stability constant

Vazquez ML, Franco CM, Cepeda A, Prognon P*, Mahuzier G// *Fac Pharm Chatenay Malabry, Chim Analyt Lab 2, Rue JB Clement, F-92290 Chatenay Malabry, France

Anal Chim Acta 1992 **269** (2) 239

Liquid chromatographic study of the interaction between aflatoxins and β -cyclodextrin

Watanabe Y, Matsumoto Y, Seki M, Takase M, Matsumoto M// Showa Coll Pharmaceut Sci, Dept Pharmaceut, 3165 Higashi Tamagawagakuen 3-chome, Machida, Tokyo 194, Japan

Chem Pharm Bull Tokyo 1992 **40** (11) 3042

Absorption enhancement of polypeptide drugs by cyclodextrins. 1. Enhanced rectal absorption of insulin from hollow-type suppositories containing insulin and cyclodextrins in rabbits

Watanabe Y, Matsumoto Y, Kawamoto K, Yazawa S, Matsumoto M// Showa Coll Pharmaceut Sci, Dept Pharmaceut, 3165 Higashi Tamagawagakuen 3-chome, Machida, Tokyo 194, Japan

Chem Pharm Bull Tokyo 1992 **40** (11) 3100

Absorption enhancement to polypeptide drugs by cyclodextrins. 2. Enhancing effect of cyclodextrins on nasal absorption of insulin and its duration in rabbits

Westman G, Wennerstrom O*, Raston I// *Chalmers Univ Technol, Dept Organ Chem, S-41296 Gothenburg, Sweden

Tetrahedron 1993 **49** (2) 483

On the effect of cyclodextrin on the Z/E-selectivity of Wittig reactions with semistabilized ylides

White G, Katona T, Zodda JP, Eakins MN// Bristol Myers Squibb Pharmaceut Res Inst, Bldg 80, Rm 43, POB 191, 1 Squibb Dr, New Brunswick, NJ 08903, USA

J Chromatogr 1992 **625** (2) 157

Determination of the impurity of γ -cyclodextrin by high-performance liquid chromatography

Ye HP, Tong W, D'Souza VT// *Univ Missouri, Dept Chem, St Louis, Mo 63121, USA

Tetrahedron Lett 1992 **33** (42) 6271

Trapping of a reaction intermediate by cyclodextrins

Zhang DD, Sun YJ, Zhao LS, Huang YM// Fudan Univ, Dept Chem, Shanghai 200433, Peoples Rep China

J Inclusion Phenom Mol Recogn 1992 **14** (2) 113

Structural studies of DM- β -CD dihalogenated norcarane inclusion complexes

5 LIGNIN

Barr DP, Shah MM, Aust SD// *Utah State Univ, Ctr Biotechnol, Logan, Ut 84322, USA

J Biol Chem 1993 **268** (1) 241

Veratryl alcohol-dependent production of molecular oxygen by lignin peroxidase

Bonnarme P, Delattre M, Drouet H, Corrieu G, Asther M// *Fac Sci Luminy, Biotechnol Champignons Filamenteux Lab, 163 Ave Luminy, Case 929, F-13288 Marseille 9, France

Biotechnol Bioeng 1993 **41** (4) 440

Toward a control of lignin and manganese peroxidases hypersecretion by *Phanerochaete chrysosporium* in agitated vessels - Evidence of the superiority of pneumatic bioreactors on mechanically agitated bioreactors

Collier WE, Schultz TP, Kalasinsky VF// Mississippi Forest Prod Utilizat Lab, Mississippi State, Ms 39762, USA

Holzforschung 1992 **46** (6) 523

Infrared study of lignin - Reexamination of aryl-alkyl ether C-O stretching peak assignments

Faix O, Grunwald C, Beinhoff O// Bundesforsch Anstalt Forst & Holzwirtschaft, Inst Holzchem & Chem Technol Holzes, Leuschnerstr 91, W-2050 Hamburg 80, FRG

Holzforschung 1992 **46** (5) 425

Determination of phenolic hydroxyl group content of milled wood lignins (MWL's) from different botanical origins using selective aminolysis, FTIR, ¹H-NMR, and UV spectroscopy

Farhangrazi ZS, Sinclair R, Yamazaki I*, Powers LS// *Utah State Univ, Natl Ctr Design Molec Funct, Logan, Ut 84322, USA

Biochemistry-USA 1992 **31** (44) 10763

Haloperoxidase activity of *Phanerochaete chrysosporium* lignin peroxidase H2 and peroxidase H8

Gierer J, Yang E, Reitberger T// Royal Inst Technol, Dept Wood Chem, S-10044 Stockholm 70, Sweden

Holzforschung 1992 **46** (6) 495

The reactions of hydroxyl radicals with aromatic rings in lignins, studied with creosol and 4-methylveratrol

Godden B, Ball AS, Helvenstein P, McCarthy AJ*, Penninckx MJ// *Univ Liverpool, Dept Genet & Microbiol, Life Sci Bldg, POB 147, Liverpool L69 3BX, England

J Gen Microbiol 1992 **138** (11) 2441

Towards elucidation of the lignin degradation pathway in Actinomycetes

Hennion S, Little CHA, Hartmann C// *Univ Orleans, Physiol Viellissement & Senescence Vegetaux Super Lab, F-45067 Orleans 02, France

Physiol Plant, 1992 **86** (3) 474

Activities of enzymes involved in lignification during the postharvest storage of etiolated *Asparagus* spears

Johansson T, Nyman PO// Univ Lund, Dept Biochem, Ctr Chem, POB 124, S-22100 Lund, Sweden

Arch Biochem Biophys 1993 **300** (1) 49

Isozymes of lignin peroxidase and manganese(II) peroxidase from the white rot Basidiomycete *Trametes versicolor*. 1. Isolation of enzyme forms and characterization of physical and catalytic properties

Johansson T, Welinder KG, Nyman PO// Univ Lund, Dept Biochem, Ctr Chem, POB 124, S-22100 Lund, Sweden

Arch Biochem Biophys 1993 **300** (1) 57

Isozymes of lignin peroxidase and manganese(II) peroxidase from the white rot Basidiomycete *Trametes versicolor*. 2. Partial sequences, peptide maps, and amino acid and carbohydrate compositions

Kosikova B, Demianova V*, Kacurakova M// *Slovak Tech Univ, Inst Chem, CS-81237, Bratislava, Czechoslovakia

J Appl Polymer Sci 1993 **47** (6) 1065

Sulfur-free lignins as composites of polypropylene films

Kunisada T, Sakagami H, Takeda M, Naoe T, Kawazoe Y, Ushijima H*, Muller WEG, Kitamura T// *Natl Inst Hlth, AIDS Res Ctr, Gakuen 4-7-1, Musashimurayama, Tokyo 208, Japan

Anticancer Res 1992 **12** (6B) 2225

Effect of lignins on HIV-induced cytopathogenicity and myeloperoxidase activity in human myelogenous leukemic cell lines

Landucci LL, Deka GC, Roy DN// US Forest Serv, Forest Prod Lab, 1 Gifford Pinchot Dr, Madison, Wi 53705, USA

Holzforschung 1992 **46** (6) 505

A ¹³C-NMR study of milled wood lignins from hybrid *Salix* clones

Lestan D, Cemilec M, Stancar A, Perdih A// Univ Ljubljana, Dept Chem & Chem Technol, Murnikova 6, Ljubljana 16001, Slovenia

FEMS Microbiol Lett 1993 **106** (1) 17

Influence of some surfactants and related compounds on ligninolytic activity of *Phanerochaete chrysosporium*

Ma DB, Hattori T, Akamatsu Y, Adachi M, Shimada M// *Kyoto Univ, Wood Res Inst, Uji, Kyoto 611, Japan

Biosci Biotechnol Biochem 1992 **56** (9) 1378

Kinetic analysis of the noncompetitive inhibition of the lignin peroxidase-catalyzed reaction by oxalic acid

Martinez AT, Almendros G, Martinez MJ, Valmaseda M, Gonzalez AE// CSIC, Ctr Invest Biol, Velazquez 144, E-28006 Madrid, Spain

J Biotechnol 1992 **25** (3) 333

Changes in the polydispersity of colloidal lignins by ligninolytic *Basidiomycetes*

Maurer A, Fengel D// Univ Munich, Inst Holzforsch, Winzererstr 45, W-8000 Munich 40, FRG

Holzforschung 1992 46 (5) 417

On the origin of milled wood lignin .1. The influence of ball-milling on the ultrastructure of wood cell walls and the solubility of lignin

Maurer A, Fengel D// Univ Munich, Inst Holzforsch, Winzererstr 45, W-8000 Munich 40, FRG

Holzforschung 1992 46 (6) 471

On the origin of milled wood lignin. 2. The solubility of lignin - Studied by dioxane extraction of ultrathin sections

Qian P, McCarthy JL// Univ Washington, Dept Chem Engr, Seattle, Wa 98195, USA

Holzforschung 1992 46 (6) 489

Some characteristics of the lignins of a fast growing cottonwood hybrid compared with those of black cottonwood

Ralph J, Helm RF, Quideau S, Hatfield RD// USDA, ARS, US Dairy Forage Res Ctr, 1925 Linden Dr W, Madison, Wi 53706, USA

J Chem Soc Perkin Trans 1992 1 (2) 2961

Lignin-feruloyl ester cross-links in grasses. 1. Incorporation of feruloyl esters into coniferyl alcohol dehydrogenation polymers

Ralph J, Helm RF, Quideau S// USDA, ARS, US Dairy Forage Res Ctr, 1925 Linden Dr W, Madison, Wi 53706, USA

J Chem Soc Perkin Trans 1992 1 (2) 2971

Lignin-feruloyl ester cross-links in grasses. 2. Model compound syntheses

Sakagami H, Kohno S, Takeda M, Nakamura K, Nomoto K, Ueno I, Kanegasaki S, Naoe T, Kawazoe Y// Showa Univ, Sch Med, Dept Biochem 1, 1-5-8 Hatanodai, Shinagawa ku, Tokyo 142, Japan

Anticancer Res 1992 12 (6B) 1995

O₂ scavenging activity of lignins, tannins and PSK

Shah MM, Grover TA, Barr DP, Aust SD*// *Utah State Univ, Ctr Biotechnol, Logan, Ut 84322, USA

J Biol Chem 1992 267 (30) 21564

On the mechanism of inhibition of the veratryl alcohol oxidase activity of lignin peroxidase H₂ by EDTA

Smirnov VA, Kovalenko EI*// *S Ordzhonikidze Polytech Inst, Novocherkassk, USSR

Sov Electrochem Engl Tr 1992 28 (4) 485

Electrochemical oxidation and modification of lignin

Strancar A, Perdih A// Edvard Kardelj Univ, Sept Chem & Chem Technol, POB 537, 61101 Ljubljana, Slovenia

Holzforschung 1992 46 (5) 391

Oximation of lignin carbonyl groups and their potential use for lignin determination

Vazquez-Torres H, Canche-Escamilla G, Cruz-Ramos CA// Univ Autonoma Metropolitana Iztapalapa, Dept Fis, Apdo Postal 55-534, Mexico City 09340, DF, Mexico

J Appl Polym Sci 1993 47 (1) 37

Coconut husk lignin. 3. Reactivity of alkaline extracts with formaldehyde

Wang JS, Manley RS, Feldman D*// *Concordia Univ, Ctr Bldg Studies, Montreal, Quebec, Canada H3G 1M8

Prog Polym Sci 1992 17 (4) 611

Synthetic polymer-lignin copolymers and blends

6 POLYSACCHARIDES - NAMED

Abdel-Naby MA, El-Shayeb NMA, Sherief AA// Natl Res Ctr, Dept Chem Nat & Microbial Prod, Cairo, Egypt

Appl Biochem Biotech 1992 37 (2) 141

Purification and some properties of chitinase from *Aspergillus carneus*

Abel G, Czop JK*// *Longwood Med Res Ctr, 221 Longwood Ave, Boston, Ma 02115, USA

Int J Immunopharmacol 1992 14 (8) 1363

Stimulation of human monocyte β -glucan receptors by glucan particles induces production of TNF- α and IL-1 β

Agerkvist I// Inst Surface Chem, Box 5607, S-11486 Stockholm, Sweden

Colloid Surface 1992 69 (2-3) 173

Mechanisms of flocculation with chitosan in *Escherichia coli* disintegrates - Effects of urea and chitosan characteristics

Aiba S// Ind Prod Res Inst, Div Biomimet Chem, 1-1-4 Higashi, Tsukuba, Ibaraki 305, Japan

Makromol Chem-Macro Chem Phys 1993 194 (1) 65

Studies on chitosan. 5. Reactivity of partially N-acetylated chitosan in aqueous

media

Ajongwen NJ, Barker PE// Univ Aston, Dept Chem Engr & Appl Chem, Birmingham B4 7ET, England

J Chem Technol Biotechnol 1993 56 (1) 113

Scale-up studies on non-aerated fed-batch fermentation of dextranase and the industrial synthesis of dextran using the enzymatic route

Amano K, Shibata Y// Akita Univ, Sch Med, Cent Res Lab, Akita 010, Japan

Microbiol Immunol 1992 36 (9) 961

Structural studies of peptidoglycans in *Campylobacter* species

Ananyeva EP, Budagov RS, Elinov NP, Kashkina MA, Polyanskaya GA, Ulyanova LP, Chlopovskaya EI, Chernyshova NM// Russian Acad Med Sci, Med Radiol Res Inst, Moscow, Russia

Mikol Fitopatol 1992 26 (4) 270

Use of yeast polysaccharide - rasanan - for early therapy of combined radiation-thermal injury (Russian)

Arai K, Matsunaga A, Yoneyama M, Takigami S, Nakamura Y, Edwards HE, Phillips GO// Gunma Univ, Kiryu, Gunma 376, Japan

J Polym Sci A-Polym Chem 1993 31 (1) 249

Amino acid end-group in commercial heparin. 3. Determination of the number of amino groups of amino acid and hexosamine residues per heparin molecule

Araki T, Tamura Y, Morishita T// Mie Univ, Fac Bioresources, Tsu, Mie 514, Japan

J Gen Appl Microbiol Tokyo 1992 38 (4) 343

β 1,4-mannanases from marine bacteria, *Vibrio* spp MA-129 and MA-138

Aravantinos-Zafiris G, Oreopoulou V// Natl Tech Univ Athens, Dept Chem Engr, 5 Iroon Polytech Str Zografou, GR-15700 Athens, Greece

J Sci Food Agr 1992 60 (1) 127

The effect of nitric acid extraction variables on orange pectin

Arino C, Nadal AM, Esteban M*, Casassas E// *Univ Barcelona, Fac Quim, Dept Quim Anal, Ave Diagonal 647, E-08028 Barcelona, Spain

Electroanal 1992 4 (8) 757

Voltammetric study of zinc(II) and lead(II) ions in the presence of alginate and pectin

Askin M, Yurdakoc K*, Gulsun Z// *Univ Dicle, Fac Sci, Dept Chem, Diyarbakir, Turkey

Spectrosc Lett 1993 26 (1) 163

Concentration dependence of NMR T₁ in agar solutions

Atkins TW, McCallion RL, Tighe BJ// Univ Aston, Inst Pharmaceut Sci, Birmingham B4 7ET, England

Biomaterials 1993 14 (1) 16

Incorporation and release of fluorescein isothiocyanate-linked dextrans from a bead-formed macroporous hydrophilic matrix with potential for sustained release

Bajpai UDN, Mishra V, Rai S// Osaka City Univ, Fac Engr, Dept Appl Chem, Osaka 558, Japan

J Appl Polym Sci 1993 47 (4) 717

Grafting of poly(acrylonitrile) onto guar gum using potassium persulfate ascorbic acid redox initiating system

Baker WH, Nold JB, Patchen ML, Jackson WE// Armed Forces Radiobiol Res Inst, Def Nucl Agcy, Bethesda, Md 20889, USA

Proc Soc Exp Biol Med 1992 201 (2) 180

Histopathologic effects of soluble glucan and WR-2721, independently and combined in C3H/HeN mice

Balakrishnan H, Dutta-Choudhury M, Srinivasan MC, Rele MV*// *Natl Chem Lab, Dept Biochem Sci, Poona 411008, Maharashtra, India

World J Microbiol Biotechnol 1992 8 (6) 627

Cellulase-free xylanase production from an alkalophilic *Bacillus* species

Barbut S, Mittal GS// Univ Guelph, Sch Engr, Guelph, Ontario, Canada N1G 2W1

Food Sci Technol-Lebensm Wiss 1992 25 (6) 509

Use of carrageenans and xanthan gum in reduced fat breakfast sausages

Behere A, Satyanarayan V, Padwaldesai SR*// *Bhabha Atom Res Ctr, Div Food Technol & Enzyme Engr, Bombay 400085, India

Enzyme Microb Technol 1993 15 (2) 158

Separation and limited characterization of 3 polygalacturonases of *Aspergillus niger*

Benhamou N, Theriault G// Univ Laval, Fac Sci Agr & Alimentat, Dept Phyto, St Foy, Quebec, Canada G1K 7P4

Physiol Molec Plant Pathol 1992 41 (1) 33

Treatment with chitosan enhances resistance of tomato plants to the crown and

- root rot pathogen *Fusarium oxysporum* f-sp *radicis lycopersici*
 Bezukladnikov PW, Elyakova LA, Mazur AK// Russian Acad Sci, Pacific Inst Bioorgan Chem, Vladivostok, Russia
Bioorg Khim 1992 18 (9) 1141
 Multiple attack in the mechanism of action of endo-glucanases (Russian, English Abstract)
- Boucher I, Dupuy A, Vidal P, Neugebauer WA, Brzezinski R*// *Univ Sherbrooke, Fac Sci, Dept Biol, Rech Biol, Actinomycetes Grp, 2500 Blvd Univ, Sherbrooke, Quebec, Canada J1K 2R1
Appl Microbiol Biotechnol 1992 38 (2) 188
 Purification and characterization of a chitosanase from *Streptomyces* N174
- Bruneteau M, Perret J, Rouhier P, Michel G// Univ Lyon 1, Biochim Microbiennne Lab, F-69622 Villeurbanne, France
Carbohydr Res 1992 236 345
 Structure of β -D-glucans from *Fusarium oxysporum*
- Cairns P, Miles MJ, Morris VJ*, Ridout MJ, Brownsey GJ, Winter WT// *AFRC, Inst Food Res, Norwich Lab, Colney Lane, Norwich NR4 7UA, England
Carbohydr Res 1992 235 23
 X-ray fibre diffraction studies of chitosan and chitosan gels
- Cakic MD, Jovanovski GI, Veljkovic VB, Lazic ML, Stankovic MZ// Univ Nis, Fac Technol, Durmitorska 19, YU-16000 Leskovac, Yugoslavia
Pharmazie 1992 47 (7) 712
 Study on dextran particulation in bottled dextran solutions
- Cantos G, Barbieri CL, Iacomini M, Gorin PAJ, Travassos LR*// *Escola Paulista Med Sch, Dept Microbiol, Immunol & Parasitol, BR-04023 Sao Paulo, Brazil
Biochem J 1993 289 (1) 155
 Synthesis of antimony complexes of yeast mannan and mannan derivatives and their effect on *Leishmania*-infected macrophages
- Cao JW, Zheng LA, Chen SY// Wuhan Univ, Dept Biol, Wuhan 430072, Peoples Rep China
Enzyme & Microb Technol 1992 14 (12) 1013
 Screening of pectinase producer from alkalophilic bacteria and study on its potential application in degumming of ramie
- Capek P// Slovak Acad Sci, Inst Chem, CS-84238, Bratislava, Czechoslovakia
Collect Czech Chem Commun 1992 57 (11) 2400
 Polysaccharides from the flowers of *Malva sylvestris* L, ssp *mauritanica* (L) Thell - The structure of D-glucan
- Cardenas G, Bernal L, Retamal J// Concepcion Univ, Fac Ciencias, Dept Quim, Casilla 3C, Correo 3, Concepcion, Chile
Bol Soc Chil Quim 1992 37 (4) 285
 Chitin derivatives. 2.
- Cases MR, Stortz CA, Cerezo AS*// *Univ Buenos Aires, Fac Ciencias Exactas & Nat, Dept Quim Organ, Ciudad Univ, RA-1428 Buenos Aires, Argentina
Phytochemistry 1992 31 (11) 3897
 Methylated, sulphated xylogalactans from the red seaweed *Corallina officinalis*
- Chabreck P, Soltes L, Hradec H, Filip J, Orvisky E// Slovak Tech Univ, Inst Biotechnol, CS-81237 Bratislava, Czechoslovakia
Collect Czech Chem Commun 1992 57 (10) 2151
 Preparation and characterization of the high molecular weight (^3H)hyaluronic acid
- Chandy T, Sharma CP*// *Sree Chitra Tirunal Inst Med Sci & Technol, Div Biosurface Technol, BMT Wing, Trivandrum 695012, India
Biomaterials 1992 13 (13) 949
 Chitosan beads and granules for oral sustained delivery of nifedipine - *In vitro* studies
- Chandy T, Sharma CP// Sree Chitra Tirunal Inst Med Sci & Technol, Div Biosurface Technol, BMT Wing, Poojapura Trivandrum 695012, India
Artif Organs 1992 16 (6) 568
 Polyllysine-immobilized chitosan beads as adsorbents for bilirubin
- Chang CT, Lo HF, Wu CJ, Sung HY// Providence Univ, Dept Food & Nutr, Shalu 43309, Taiwan
Biochem Int 1992 28 (4) 707
 Purification and properties of chitinase from cabbage
- Chang KC, Miyamoto A// Nth Dakota State Univ, Dept Food Nutr, Fargo, ND 58105, USA
J Food Sci 1992 57 (6) 1435
 Gelling characteristics of pectin from sunflower head residues
- Chang MM, Hadwiger LA, Horovitz D// Washington State Univ, Dept Plant Pathol, Pullman, Wa 99164, USA
Plant Mol Biol 1992 20 (4) 609
 Molecular characterization of a pea β -1,3-glucanase induced by *Fusarium solani* and chitosan challenge
- Chen JT, Hasumi K, Masubuchi K// Canc Inst Hosp, Dept Gynecol, 1-37-1 Kami Ikebukuro, Toshima ku, Tokyo 170, Japan
Biotherapy 1992 5 (4) 275
 Interferon- α , interferon-gamma and sizofiran in the adjuvant therapy in ovarian cancer - A preliminary trial
- Christensen BE, Knudsen KD, Smidsrod O, Kitamura S, Takeo K// Univ Trondheim, NTH, Dept Biotechnol, Norwegian Biopolymer Lab, N-7034 Trondheim, Norway
Biopolymers 1993 33 (1) 151
 Temperature-induced conformational transition in xanthans with partially hydrolyzed side chains
- Coddeville B, Strecker G, Wieruszeski JM, Vliegenthart JFG, Van Halbeek H, Peter-Katalinic J, Egge H, Spik G*// *Univ Sci & Tech Lille Flandres Artois, Chim Biol Lab, CNRS, Unite Mixte Rech 111, F-59655 Villeneuve Dascq, France
Carbohydr Res 1992 236 145
 Heterogeneity of bovine lactotransferrin glycans - Characterization of α -D-Galp-(1-3)- β -D-Gal- and α -NeuAc-(2-6)- β -D-GalpNAc-(1-4)- β -D-GlcNAc-substituted N-linked glycans
- Cohen E// Hebrew Univ Jerusalem, Fac Agr, Dept Entomol, IL-76100 Rehovot, Israel
Arch Insect Biochem Physiol 1993 22 (1-2) 245
 Chitin synthesis and degradation as targets for pesticide action
- Cotoras M, Agosin E// Catholic Univ Chile, Fac Engr, Dept Chem Engr, POB 306, Santiago, Chile
Exp Mycol 1992 16 (4) 253
 Regulatory aspects of endoglucanase production by the brown-rot fungus *Gloeophyllum trabeum*
- Cros S, Dupenhoat CH, Bouchemal N, Ohassan H, Imbert A, Perez S*// *INRA, BP 527, F-44026 Nantes 03, France
Int J Biol Macromol 1992 14 (6) 313
 Solution conformation of a pectin fragment disaccharide using molecular modelling and nuclear magnetic resonance
- Da Silva JAL, Goncalves MP, Rao MA// Univ Catolica Portuguesa, Escola Super Biotechnol, Rua Dr A Bernardno, De Almeida, P-4200 Oporto, Portugal
J Food Engr 1993 18 (3) 211
 Viscoelastic behaviour of mixtures of locust bean gum and pectin dispersions
- Dawson DM, Melton LD, Watkins CB// Univ Otago, POB 56, Dunedin, New Zealand
Plant Physiol 1992 100 (3) 1203
 Cell wall changes in nectarines (*Prunus persica*) - Solubilization and depolymerization of pectic and neutral polymers during ripening and in mealy fruit
- De Bruyn A, Alvarez AP, Sandra P, De Leenheer L// State Univ Ghent, Organ Chem Lab, Krijgslaan 281 S4, B-9000 Ghent, Belgium
Carbohydr Res 1992 235 303
 Isolation and identification of O- β -D-fructofuranosyl-(2-1)-O- β -D-fructofuranosyl-(2-1)-D-fructose, a product of the enzymatic hydrolysis of the inulin from *Cichorium intybus*
- De Iannino NI, Ugalde RA*// *Fac Ciencias Exactas & Nat Buenos Aires, Inst Invest Bioquim Fdn Campomar, Antonio Machado 151, RA-1405 Buenos Aires, Argentina
Arch Microbiol 1993 159 (1) 30
 Biosynthesis of cyclic β -(1-6) glucan in *Bradyrhizobium* spp
- Diebschlag W, Michaelis HC*, Nocker W// *Sandoz Ag, Dept Med, Deutschhermstr 15, W-8500 Nurnberg, FRG
Drug Invest 1993 5 (1) 51
 Efficacy and safety of a low molecular weight heparin ointment in the treatment of ankle sprain swelling and pain - A double-blind placebo-controlled study
- Dobozi MS, Szakacs G, Bruschi CV// Cent Food Res Inst, Dept Biochem, Herman Otto 15, H-1022 Budapest, Hungary
Appl Environ Microbiol 1992 58 (11) 3466
 Xylanase activity of *Phanerochaete chrysosporium*
- Ebringerova A, Hromadkova Z// Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Czechoslovakia
Food Hydrocolloid 1992 6 (5) 437
 Flow properties of rye bran arabinoxylan dispersions

- El-Ghaouth A, Ponnampalam R, Castaigne F, Arul J// Univ Laval, Inst Food Sci & Technol, Quebec City, Quebec, Canada G1K 7P4
Hortscience 1992 **27** (9) 1016
Chitosan coating to extend the storage life of tomatoes
- El-Yachoui M, Homez JP, Tailliez R// Univ IBN Toufail, Fac Sci, Dept Biol, Kenitra, Morocco
J Appl Bacteriol 1992 **73** (6) 514
General properties of extracellular bacterial inulinase
- Espinoza P, Barzana E, Garcia-Garibay M, Gomez-Ruiz L*// *Univ Autonoma Metropolitana Azcapotzalco, Dept Biotechnol, Iztapalapa, AP 55-535, Mexico City 09340, DF, Mexico
Biotechnol Lett 1992 **14** (11) 1053
Evaluation of *Kluyveromyces marxianus* for the production of lactase simultaneously to pectinase or inulinase
- Esteban RM, Lopez-Andreu FJ, Martin-Cabrejas MA, Molla E// Ciudad Univ Madrid, Fac Ciencias, Dept Quim Agricola, Cantoblanco, E-28049 Madrid, Spain
Food Chem 1993 **46** (3) 289
Pectin changes during the development and ripening of eggplant fruits
- Feletti F, Di Valserra MD, Contos S, Mattaboni P, Germogli R// *Via Podgora 9, I-20122 Milan, Italy
Arzneim-Forsch-Drug Res 1992 **42-2** (11) 1363
Chronic toxicity study on a new glucan extracted from *Candida albicans* in rats
- Fernandez-Bolanos J, Heredia A*, Guillen R, Castro A, Duran C// *CSIC, Inst Grasa, Apdo 1078, E-41012 Seville, Spain
Z Lebensmittel-Untersuch Fors 1992 **195** (5) 451
Evolution of endoglucanase activity in olives during ripening and storage and its relationship with cellulolytic microorganisms
- Findon A, McKay G*, Blair HS// *Queens Univ Belfast, Dept Chem Engr, Belfast BT9 5AG, Northern Ireland
J Environ Sci Health A-Sci E 1993 **A28** (1) 173
Transport studies for the sorption of copper ions by chitosan
- Flaque C, Montserrat S// Univ Politecn Cataluna, Escuela Tecn Super Ingn Ind, Termodinam & Fisicoquim Lab, Colon 11, E-08222 Terrassa, Spain
J Appl Polym Sci 1993 **47** (4) 595
Viscoelastic behaviour of vinylic copolymers of cellulose and their glass transition temperature by DSC
- Friedrich J, Cimerman A, Steiner W// Boris Kidric Inst Chem, Hajdrihova 19, Ljubljana, Slovenia
Food Biotechnol 1992 **6** (3) 207
Production of pectolytic enzymes by *Aspergillus niger* on sucrose
- Furukawa S, Fujikawa T, Koga D, Ide A// Hijiya Women's Jr Coll, Dept Home Econ, Nutr Chem Lab, Hiroshima 732, Japan
Biosci Biotechnol Biochem 1992 **56** (11) 1829
Purification and some properties of exo-type fucoidanases from *Vibrio* sp N-5
- Gamerith G, Groicher R, Zeillinger S, Herzog P, Kubicek CP// Lenzing Ag, Dept Res & Dev, A-4860 Lenzing, Austria
Appl Microbiol Biotechnol 1992 **38** (3) 315
Cellulase-poor xylanases produced by *Trichoderma reesei* RUT C-30 on hemicellulose substrates
- Garcia-Ochoa F, Santos VE, Fritsch AP// Univ Complutense Madrid, Fac Quim, Dept Ingn Quim, E-28040 Madrid, Spain
Enzyme & Microb Technol 1992 **14** (12) 991
Nutritional study of *Xanthomonas campestris* in xanthan gum production by factorial design of experiments
- Garcia RB, Lopes L, Andrade CT*// *Univ Fed Rio de Janeiro, Inst Macromolec, POB 68525, BR-20000 Rio de Janeiro, Brazil
Fresenius J-Anal Chem 1992 **344** (10-11) 510
Network formation from agarose-guar gum solutions
- Gaube J, Pfennig A, Stumpf M// TH Darmstadt, Inst Chem Technol, Petersenstr 20, W-6100 Darmstadt, FRG
J Chem Eng Data 1993 **38** (1) 163
Vapor liquid equilibrium in binary and ternary aqueous solutions of poly(ethylene glycol) and dextran
- Gauss GH, Lieber MR*// *Stanford Univ, Med Ctr, Sch Med, Dept Pathol, Exptl Oncol Lab, Stanford, Ca 94305, USA
Nucl Acid Res 1992 **20** (24) 6739
DEAE-dextran enhances electroporation of mammalian cells
- Gay L, Bulone V, Girard V, Fevre M*, Chanzy H// *Univ Lyon 1, Biol Cellulaire Fong Lab, CNRS, UMR 106, Bat 405, F-69622 Villeurbanne, France
FEMS Microbiol Lett 1992 **100** (1-3) 405
Chitin pleomorphism in the cellulosic cell wall fungus *Saprolegnia*
- Ghagare S, Savitsky GB, Spencer HG*// *Clemson Univ, Dept Chem, Clemson, SC 29634, USA
Polymer 1992 **33** (22) 4725
²³Na NMR studies of partially neutralized poly(galacturonic acid)
- Ghareib M, El-Dein MMN// Ain Shams Univ, Fac Educ, Dept Biol, Cairo, Egypt
Zbl Mikrobiol 1992 **147** (8) 569
Purification and general properties of xylanase from *Aspergillus terreus*
- Ghareib M, El-Dein MMN// Ain Shams Univ, Fac Educ, Dept Biol, Cairo, Egypt
Acta Microbiol Pol 1992 **41** (1-2) 109
Isolation and enzymatic properties of pectic enzymes from *Fusarium accuminatum*
- Gibbs MD, Saul DJ, Luthi E, Bergquist PL*// *Univ Auckland, Dept Cellular & Molec Biol, Ctr Gene Technol, Auckland, New Zealand
Appl Environ Microbiol 1992 **58** (12) 3864
The β -mannanase from '*Caldocellum saccharolyticum*' is part of a multidomain enzyme
- Gillis S, Shushan A, Eldor A// Hadassah Univ Hosp, Dept Hematol, Hemostasis & Thrombosis Unit, POB 12000, Jerusalem, Israel
Int J Gynecol Obstet 1992 **39** (4) 297
Use of low molecular weight heparin for prophylaxis and treatment of thromboembolism in pregnancy
- Gomes I, Saha RK, Mohiuddin G, Hoq MM*// *Dept Microbiol, Dhaka 1000, Bangladesh
World J Microbiol Biotechnol 1992 **8** (6) 589
Isolation and characterization of a cellulase-free pectinolytic and hemicellulolytic thermophilic fungus
- Gooday GW, Zhu WY, O'Donnell RW// Univ Aberdeen, Marischal Coll, Dept Molec & Cell Biol, Aberdeen AB9 1AS, Scotland
FEMS Microbiol Lett 1992 **100** (1-3) 387
What are the roles of chitinases in the growing fungus?
- Goto F, Ogawa T*// *Inst Phys & Chem Res, Wako, Saitama 35101, Japan
Tetrahedron Lett 1992 **33** (45) 6841
Synthesis of sulfated glycohexaose of linkage region of chondroitin 4-sulfate- β -D-GlcA-(1-3)[(SO₃Na-4)]- β -D-GalNAc-(1-4)- β -D-GlcA-(1-3)- β -D-Gal-(1-3)- β -D-Gal-(1-4)-D-Xyl
- Grohmann K, Baldwin EA// USDA ARS, SAA Citrus & Subtrop Prod Lab, 600 Ave Sth NW, Winter Haven, FL 33883, USA
Biotechnol Lett 1992 **14** (12) 1169
Hydrolysis of orange peel with pectinase and cellulase enzymes
- Gunji M, Ueda H, Ogata M, Nakagaki M// Hoshi Univ, Ebara 2-4-41, Shinagawa ku, Tokyo 142, Japan
Yakugaku Zasshi-J Pharm Soc J 1992 **112** (12) 906
Studies on the oil in water emulsions stabilized with gum arabic by using the turbidity ratio method (Japanese, English Abstract)
- Gupta N, Vohra RM, Hoondal GS// Panjab Univ, Dept Microbiol, Chandigarh 160014, India
Biotechnol Lett 1992 **14** (11) 1045
The thermostable extracellular xylanase from alkalophilic *Bacillus* sp NG-27
- Hassan RM// Assiut Univ, Fac Sci, Dept Chem, Assiut 71516, Egypt
J Polym Sci A-Polym Chem 1993 **31** (1) 51
Alginate polyelectrolyte ionotropic gels. 14. Kinetics and mechanism of formation of intermediate complex during the oxidation of alginate polysaccharide by alkaline permanganate with a spectrophotometric evidence of manganate(VI) transient species
- Hassan RM, Makhoul MT, El-Shatoury SA// Assiut Univ, Fac Sci, Dept Chem, Assiut 71516, Egypt
Colloid Polym Sci 1992 **270** (12) 1237
Alginate polyelectrolyte ionotropic gels. 9. Diffusion control effects on the relaxation time of sol-gel transformation for transition-divalent metal alginate ionotropic gel complexes
- Heinrichova K, Dzurova M, Rexova-Benkova L// Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Czechoslovakia
Carbohydr Res 1992 **235** 269
Mechanism of action of D-galacturonan digalacturonohydrolase of *Selenomonas ruminantium* on oligogalactosiduronic acids

- He L, Bickerstaff GF*, Paterson A, Buswell JA// *Univ Paisley, Dept Biol, Paisley PA1 2BE, Scotland
Enzyme Microb Technol 1993 15 (1) 13
 Purification and partial characterization of 2 xylanases that differ in hydrolysis of soluble and insoluble xylan fractions
- Hirsh J// Henderson Gen Hosp, Hamilton Civ Hosp Res Ctr, 711 Concess St, Hamilton, Ontario, Canada L8V 1C3
Coronary Artery Dis 1992 3 (11) 990
 Heparin and low-molecular weight heparins
- Hotta H, Hagiwara K, Tabata K, Ito W, Homma M*// *Kobe Univ, Sch Med, Dept Microbiol, 7-5-1 Kusunoki cho, Chuo ku, Kobe 650, Japan
Int J Immunopharmacol 1993 15 (1) 55
 Augmentation of protective immune responses against Sendai virus infection by fungal polysaccharide schizophyllan
- Hurtado-Ponce AQ// SE Asian Fisheries Dev Ctr, Dept Aquaculture, Tigbauan, Philippines
Bot Mar 1992 35 (5) 365
 Rheological properties of agar from *Gracilariopsis heteroclada* Zhang et Xia (Gracilariales, Rhodophyta) treated with powdered commercial lime and aqueous alkaline solution
- Hurtado-Ponce AQ// SE Asian Fisheries Dev Ctr, Dept Aquaculture, Tigbauan, Philippines
Bot Mar 1992 35 (5) 441
 Influence of extraction time on the rheological properties of agar from some *Gracilaria* species from the Philippines
- Ichikawa T, Araki C, Nakajima T, Shimada A// Otsu Women's Univ, Fac Home Econ, 3 Bancho 12, Chiyoda ku, Tokyo 112, Japan
J Jpn Soc Food Sci Technol 1992 39 (10) 894
 Effect of chitosan addition on the properties of gelatin gels
- Igarashi T, Yamamoto A, Goto G// Showa Univ, Sch Dent, Dept Oral Microbiol, Shinagawa ku, Tokyo 142, Japan
Microbiol Immunol 1992 36 (9) 969
 Characterization of the dextranase purified from *Streptococcus mutans* Ingbritt
- Iino Y, Takai Y, Sugamata N, Morishita Y// Gunma Univ, Sch Med, Dept Surg 2, 3-39-15 Showa machi, Maebashi, Gunma 371, Japan
Anticancer Res 1992 12 (6B) 2101
 PSK (krestin) potentiates chemotherapeutic effects of tamoxifen on rat mammary carcinomas
- Irwin PL, Sevilla MD, Chamulitrat W, Hoffman AE, Klein J// USDA ARS, Eastern Reg Res Ctr, 600 E Mermaid Lane, Philadelphia, Pa 19118, USA
J Agr Food Chem 1992 40 (11) 2045
 Localized, internal, and supramolecular polyuronide motions in cell wall matrices - A comparison of solid-state NMR and EPR relaxation behavior
- Ishiguro K, Yoshie N, Sakurai M, Inoue Y*// *Tokyo Inst Technol, Dept Biomolec Engn, Meguro ku, Tokyo 152, Japan
Carbohydr Res 1992 237 333
 A ¹H-NMR study of a fragment of partially N-deacetylated chitin produced by lysozyme degradation
- Ishikawa K, Majima T, Ebina T// Tohoku Univ, Sch Med, Dept Bacteriol, Sendai, Miyagi 980, Japan
Biotherapy 1992 5 (4) 251
 Antitumor effect of a *Colioliol* preparation, PSK - Induction of macrophage chemotactic factor (MCF) in spleens of tumor bearing mice
- Ivanov K, Popova M, Denev P, Kratchanov C*// *Hsch Lebensmittelind, 26 Blvd Maritza, BU-4002 Plovdiv, Bulgaria
Z Lebensmittel-Untersuch Fors 1992 195 (5) 455
 Application of polyuronides for removing heavy metals from vegetable oils .3. Application of alginic acid, pectic and pectinic acids for demetalization of hydrogenated sunflower oil
- Jana C, Ladislava S, Berta T, Josefa K// Prague Inst Chem Technol, CS-16628 Prague 6, Czechoslovakia
Listy Cukrov 1992 108 (11-12) 258
 Determination of beet pectin in sinical (Czech, English Abstract)
- Jiang ZH, Schmidt RR*// *Univ Constance, Fak Chem, Postfach 5560, W-7750 Constance, FRG
Liebigs Ann Chem 1992 (9) 975
 Glycosyl imidates 56. Synthesis of the hexasaccharide moiety of pectinioside E
- Johnson IH// Univ Melbourne, Sch Dent Sci, Fac Med Dent & Hlth Sci, 711 Elizabeth St, Melbourne, Vic 3000, Australia
Microbios 1992 72 (290) 35
 Extracellular dextranase from *Streptococcus oralis*
- Kamel M, El-Thalouth IA, Abou-Amer M, Ragheb A, Nassar SH// Natl Res Ctr, Div Text Res, Cairo, Egypt
Starch 1992 44 (11) 433
 Chemical modification of guaran gum. 1. Carboxymethylation in aqueous medium
- Kamel M, Ragheb A, Haggag K, El-Thalout IA// Natl Res Ctr, Div Text, Cairo, Egypt
Starch 1992 44 (10) 374
 Isolation, chemical modification and rheological characterization of *Leucaena* gum. 1. Carboxymethylation
- Karamanos NK// Univ Patras, Dept Chem, Organ Chem Biochem & Nat Prod, Patras, Greece
Biochem Cell Biol 1992 70 (8) 629
 2 squid skin proteoglycans each containing chondroitin sulfates with different sulfation patterns
- Kasahara S, Nakajima T*, Miyamoto C, Wada K, Furuichi Y, Ichishima E// *Tohoku Univ, Dept Appl Biol Chem, Tsutsumidori Amamiyamachi, Aoba ku, Sendai 981, Japan
J Ferment Bioeng 1992 74 (4) 238
 Characterization and mode of action exo-1,3-β-D-glucanase from *Aspergillus saitoi*
- Kato H, Inoue M, Yamamura Y, Kawahito Y, Mukai S, Sugino S, Kondo M// Kyoto Prefectural Univ Med, Dept Internal Med 1, Kamikyo ku, Kyoto 602, Japan
Biotherapy 1992 5 (3) 177
 Effect of recombinant human granulocyte colony-stimulating factor (rhG-CSF) on cytotoxicity of PSK-induced peritoneal polymorphonuclear leukocytes (PMNs)
- Katsuki H, Kawahara A, Ichinose H// Saga Pref Govt, Ceram Ind Res Inst, 3100-5 Arita machi, Saga 844, Japan
J Matter Sci 1992 27 (22) 6067
 Preparation and some properties of porous alumina ceramics obtained by the gelatination of ammonium alginate
- Kennedy L, McDowell K, Sutherland IW*// *Univ Edinburgh, Inst Cell & Molec Biol, Div Biol, Edinburgh EH9 3JH, Scotland
J Gen Microbiol 1992 138 (11) 2465
 Alginases from *Azotobacter* species
- Khanh NQ, Leidinger K, Albrecht H, Rutkowski E, Gottschalk M// TH Darmstadt, Inst Biochem, Petersenstr 22, W-6100 Darmstadt, FRG
Biotechnol Lett 1992 14 (11) 1047
 Effects of promoters on the enhancement of pectin methyl esterase expression in *Aspergillus niger*
- Knapczyk J// Nicholas Copernicus Med Acad, Fac Pharm, Dept Pharmaceut Technol & Biopharmaceut, Krupnicza 16, PL-31123 Krakow, Poland
Int J Pharm 1992 88 (1-3) 9
 Antimycotic buccal and vaginal tablets with chitosan
- Knapczyk J// Nicholas Copernicus Med Acad, Fac Pharm, Dept Pharmaceut Technol & Biopharmaceut, Krakow, Poland
Int J Pharm 1993 89 (1) 1
 Excipient ability of chitosan for direct tableting
- Kondo Y, Kato A, Hojo H, Nozoe S, Takeuchi M, Ochi K// Tohoku Univ, Inst Pharmaceut, Aobayama, Aoba ku, Sendai, Miyagi 980, Japan
J Pharmacobio-Dynam 1992 15 (11) 617
 Cytokine-related immunopotentiating activities of paramylon, a β-(1-3)-D-glucan from *Euglena gracilis*
- Konicek J, Lasik J// Czechoslovak Acad Sci, Inst Microbiol, Prague 4, Czechoslovakia
Biotechnol Lett 1992 14 (10) 907
 The properties and production of the glucan exocellular polysaccharide of the strain *Achromobacter delicatulus*
- Korthauer W, De la Torre J// Bundeswehr, Sch Diensthundewesen, Diensthundeklin, St Sebastianer Str 29, W-5400 Koblenz 31, FRG
Kleintierprax 1992 37 (7) 467
 The treatment of deforming arthropathies in service dogs with a new glycosaminoglycan preparation (German, English Abstract)
- Kubo T, Yoshihara K, Hosokawa J, Nishiyama M// Govt Ind Res Inst, Shikoku 2-3-3, Hananomiyama-cho, Takamatsu, Kagawa 761, Japan
Nippon Nogeikagaku Kaishi 1992 66 (11) 1641
 Effects of cultivation pH on the degree of deacetylation of chitosan produced by *Rhizopus acetoinus* HUT-1219 (Japanese, English Abstract)
- Kvesitadze EG, Lomitashvili TB, Kvesitadze GI, Nikupaavola ML// Acad Sci

- Georgian Republic, Inst Plant Biochem, Tbilisi 380059, Georgia
Biotechnol Appl Biochem 1992 **16** (3) 303
 Thermostable endoglucanases of the thermophilic fungus *Allesheria terrestris*
- Ladanyi A, Timar J, Lapis K// Semmelweis Univ Med, Inst Pathol & Exptl Canc Res 1, Ulloi 26, H-1085 Budapest, Hungary
Cancer Immunol Immunother 1993 **36** (2) 123
 Effect of lentinan on macrophage cytotoxicity against metastatic tumor cells
- Lagos A, Yazdani-Pedram M, Reyes J, Campos N// Univ Chile, Fac Ciencias Quim & Farmaceut, Dept Quim Organ, Casilla 233, Santiago, Chile
J Macromol Sci Pure Appl Chem 1992 **29** (11) 1007
 Ceric ion-initiated grafting of poly(methyl acrylate) onto chitin
- Lahaye M, Vigouroux J// INRA, Biochim & Technol Glucides Lab, BP 527, F-44026 Nantes 03, France
J Appl Phycol 1992 **4** (4) 329
 Liquefaction of dulce [*Palmaria palmata* (L) Kuntze] by a commercial enzyme preparation and a purified endo- β -1,4-D-xylanase
- Lamb DJ, Wang HM, Mallis LM, Linhardt RJ*// *Univ Iowa, Coll Pharm, Div Med & Nat Prod Chem, Iowa City, Ia 52242, USA
J Amer Soc Mass Spectrom 1992 **3** (8) 797
 Negative ion fast-atom bombardment tandem mass spectrometry to determine sulfate and linkage position in glycosaminoglycan-derived disaccharides
- Lamberti FV, Sefton MV*// *Univ Toronto, Dept Chem Engn & Appl Chem, Toronto, Ontario, Canada M5S 1A1
Biomaterials 1992 **13** (15) 1109
 FT-IR measurement of emulsified cationic DMAEMA-MMA adsorption to calcium alginate
- Lapcik L, Dammer C, Valko M// Slovak Tech Univ, Fac Chem Technol, Bratislava, Czechoslovakia
Colloid Polym Sci 1992 **270** (10) 1049
 Hyaluronic acid-copper(II) complexes - Spectroscopic characterization
- Leluyer B, Mougnot JF, Mashako L, Chapoy P, Olives JP, Morali A, Chevalier B, Ginies JL, Dupont C, Dagorne M, et al// Ctr Hosp Le Havre, Dept Pediat, 55 Bis rue Gustave Flaubert, F-76600 Le Havre, France
Ann Pediat 1992 **39** (10) 635
 Multicenter clinical study of sodium alginate for the treatment of regurgitations in infants (French, English Abstract)
- Leon O, Quintana L, Peruzzo G, Slebe JC// Sth Univ Chile, Fac Ciencias, Inst Bioquim, Casilla 567, Valdivia, Chile
Appl Environ Microbiol 1992 **58** (12) 4060
 Purification and properties of an extracellular agarase from *Alteromonas* sp strain C-1
- Ley K, Linnemann G, Meinen M, Stoolman LM, Gaetgens P// Free Univ Berlin, Dept Physiol, Arnimallee 22, W-1000 Berlin 33, FRG
Blood 1993 **81** (1) 177
 Fucoidin, but not yeast polyphosphomannan PPME, inhibits leukocyte rolling in venules of the rat mesentery
- Li Y, Spencer HG*// *Clemson Univ, Dept Chem, Clemson, SC 29634, USA
Colloid Surface 1992 **66** (3) 189
 Adsorption of dextrans on spherical TiO₂ particles
- Lin SY, Lin PC// Vet Gen Hosp, Dept Med Res, Biopharmaceut Lab, Taipei, Taiwan
Chem Pharm Bull Tokyo 1992 **40** (9) 2491
 Effect of acid type, acetic acid and sodium carboxymethyl cellulose concentration on the formation micromeritic dissolution and floating properties of theophylline-chitosan microcapsules
- Liners F, Van Cultsem P*// *Univ Notre Dame Paix, Unite Biotechnol Theor, rue Bruxelles 61, B-5000 Namur, Belgium
Protoplasma 1992 **170** (1-2) 10
 Distribution of pectic polysaccharides throughout walls of suspension-cultured carrot cells - An immunocytochemical study
- Liu XC, Gao PJ, Cheng YH// Baylor Univ, Dept Chem, Waco, Tx 76798, USA
Biotechnol Appl Biochem 1992 **16** (2) 134
 Purification and characterization of 1,4- β -D-glucan glucanohydrolase from *Paecilomyces* sp S-28
- Liu ZC, Perlin AS*// *McGill Univ, Dept Chem, Montreal, Quebec, Canada H3A 2A7
Carbohydr Res 1992 **236** 121
 Regioselectivity in the sulfation of some chemically-modified heparins, and observations on their cation-binding characteristics
- Livant P, Roden L, Krishna NR*// *Univ Alabama, Ctr Comprehens Canc, Birmingham, Al 35294, USA
Carbohydr Res 1992 **237** 271
 NMR studies of a tetrasaccharide from hyaluronic acid
- Longas MO, Garg HG// Purdue Univ Calumet, Dept Chem & Phys, Hammond, In 46323, USA
Carbohydr Res 1992 **237** 319
 Sulfate composition of dermatan sulfate from scar tissue
- Lusterio DD, Suizo FG, Labunos NM, Valledor MN, Ueda S, Kawai S, Koike K, Shikata S, Yoshimatsu T, Ito S*// *Kao Co, Tochigi Res Labs, Ichikai, Tochigi 32134, Japan
Biosci Biotechnol Biochem 1992 **56** (10) 1671
 Alkali resistant, alkaline endo-1,4- β -glucanase produced by *Bacillus* sp PKM-5430
- Maglione G, Matsushita O, Russell JB, Wilson DB*// *Cornell Univ, Div Biol Sci, Biochem Molec & Cell Biol Sect, Ithaca, NY 14853, USA
Appl Environ Microbiol 1992 **58** (11) 3593
 Properties of a genetically reconstructed *Prevotella ruminicola* endoglucanase
- Mai GT, Seow WK, Pier GB, McCormack JG, Thong YH*// *Univ Queensland, Mater Publ Hosp, Dept Child Hlth, Immunobiol Lab, Brisbane 4101, Australia
Infect Immun 1993 **61** (2) 559
 Suppression of lymphocyte and neutrophil functions by *Pseudomonas aeruginosa* mucoid exopolysaccharide (alginate) - Reversal by physiochemical, alginate, and specific monoclonal antibody treatments
- Malkki Y, Autio K, Hanninen O, Myllymaki O, Pelkonen K, Suortti T, Torronen R// VTT, Tech Res Ctr Finland, Food Res Lab, POB 203, SF-02151 Espoo, Finland
Cereal Chem 1992 **69** (6) 647
 Oat bran concentrates - Physical properties of β -glucan and hypocholesterolemic effects in rats
- Manjon A, Iborra JL*, Romero C, Canovas M// *Univ Murcia, Fac Chem, Dept Biochem, POB 4021, E-30001 Murcia, Spain
Appl Biochem Biotech 1992 **37** (1) 19
 Properties of pectinesterase and endo-D-polygalacturonase coimmobilized in a porous glass support
- Marbet GA// Kantonsspital, Gerinnungslab, CH-4031 Basel, Switzerland
Ther Umsch 1992 **49** (12) 843
 Low molecular heparins - Favourable profile of action for prophylaxis and therapy of venous thromboses (German, English Abstract)
- Martin-Gil FJ, Leal JA, Gomez-Miranda B, Martin-Gil J, Prieto A, Ramos-Sanchez MC// Univ Valladolid, ETSII, Dept Quim Inorgan, Quim Biomat Lab, E-47011 Valladolid, Spain
Thermochim Acta 1992 **211** 241
 Low temperature thermal behaviour of chitins and chitin-glucans
- Mathrani IM, Ahring BK*// *Tech Univ Denmark, Dept Biotechnol, Anaerob Microbiol Biotechnol Grp, Bldg 223, DK-2800 Lyngby, Denmark
Appl Microbiol Biotechnol 1992 **38** (1) 23
 Thermophilic and alkalophilic xylanases from several *Dictyoglomus* isolates
- Matsumoto T, Kawai M, Masuda T// Kyoto Univ, Dept Polymer Chem, Kyoto 606, Japan
Biorheology 1992 **29** (4) 411
 Influence of concentration and mannuronate/glycuronate ratio on steady flow properties of alginate aqueous systems
- Maxim S, Flondor A, Pasa R, Popa M// Petru Poni Inst Macromolec Chem, Alea GG Ghica Voda 41 A, Iasi 6600, Romania
Acta Biotechnol 1992 **12** (6) 497
 Immobilized pectolytic enzymes on acrylic supports
- McKee JWA, Kavalieris L, Brasch DJ, Brown MT, Melton LD*// *Univ Otago, Seaweed Res Grp, Dunedin, New Zealand
J Appl Phycol 1992 **4** (4) 357
 Alginate content and composition of *Macrocystis pyrifera* from New Zealand
- Mehta A, Chopra S, Kare V, Mehta P// Univ Sagar, Dept Bot, Sagar 470003, India
Zbl Mikrobiol 1992 **147** (8) 557
 Influence of native carbon sources on the production of pectolytic and cellulolytic enzymes by *Fusarium oxysporum* and *Fusarium moniliforme*
- Milewski S, O'Donnell RW, Gooday GW// Gdansk Tech Univ, Dept Pharmaceut Technol & Biochem, PL-80952 Gdansk, Poland
J Gen Microbiol 1992 **138** (12) 2545
 Chemical modification studies of the active centre of *Candida albicans* chiti-

nase and its inhibition by allosamidin

Mismetti P, Perpoint B, Laporte-Simitsidis S, Tardy-Poncet B, Reynaud J, Cherrah Y, Ollagnier M, Queneau P, Decousus H// Hop Bellevue, Unite Pharmacol Clin, Pavillon 5, Blvd Pasteur, F-42023 St Etienne, France
Therapie 1992 47 (6) 557

Prophylactic dose of a low molecular weight heparin (nadroparine) - Chrono-pharmacological study after subcutaneous administration to healthy volunteers (French, English Abstract)

Miyamoto A, Chang KC// Nth Dakota State Univ, Dept Cereal Sci & Food Technol, Fargo, ND 58105, USA

J Food Sci 1992 57 (6) 1439

Extraction and physicochemical characterization of pectin from sunflower head residues

Miyano H, Nakagawa R, Suzuki E, Uryu T// Ajinomoto Co Inc, Cent Res Labs, Kawasaki ku, Kawasaki, Kanagawa 210, Japan

Carbohydr Res 1992 235 29

Analysis of residue types in curdlan sulfate by nuclear magnetic resonance

Miyoshi H, Shimura K, Watanabe K*, Onodera K// *Univ Tokyo, Fac Engr, Dept Ind Chem, 7-3-1 Hongo, Bunkyo ku, Tokyo 113, Japan

Biosci Biotechnol Biochem 1992 56 (12) 1901

Characterization of some fungal chitosans

Mizutani Y, Nio Y, Yoshida O**// Kyoto Univ, Fac Med, Dept Urol, 54 Kawara cho, Sakyo Ku, Kyoto 606, Japan

J Urol 1992 148 (5) 1571

Effect of PSK and its subfractions on peripheral blood lymphocytes mediated cytotoxicity against urinary bladder tumor cells

Murakata C, Ogawa T**// *Inst Phys Chem Res, Wako, Saitama 35101, Japan

Carbohydr Res 1992 235 95

Synthetic studies on cell-surface glycans. 85. stereoselective total synthesis of the glycosylphosphatidylinositol (GPI) anchor of *Trypanosoma brucei*

Murata Y, Nakada K, Miyamoto E, Kawashima S, Seo SH// Hokuriku Univ, Sch Pharm, Kanazawa, Ishikawa 92011, Japan

J Control Release 1993 23 (1) 21

Influence of erosion of calcium-induced alginate gel matrix on the release of brilliant blue

Muzzarelli RAA, Biagini G, Bellardini M, Simonelli L, Castaldini C, Fratto G// Univ Ancona, Fac Med, I-60100 Ancona, Italy

Biomaterials 1993 14 (1) 39

Osteoconduction exerted by methylpyrrolidinone chitosan used in dental surgery

Muzzarelli RAA// Univ Ancona, Fac Med, via Ranieri 67, I-60100 Ancona, Italy

Carbohydr Polym 1993 20 (1) 7

Biochemical significance of exogenous chitins and chitosans in animal and patients

Nagasawa K, Uchiyama H, Sato N, Hatano A// Kitasato Univ, Sch Pharmaceut Sci, 5-9-1 Shirokane, Minato ku, Tokyo 108, Japan

Carbohydr Res 1992 236 165

Chemical change involved in the oxidative-reductive depolymerization of heparin

Nakanishi K, Marui M, Yasui T// Tokyo Univ Agr & Technol, Dept Brewing & Fermentat, 1-1-1 Sakuragaoka, Setagaya ku, Tokyo 156, Japan

J Ferment Bioeng 1992 74 (6) 392

Comparison of xylan and methyl β -xyloside-induced xylanases from *Streptomyces* sp

Nicoletti A, Nicoletti G, Ferraro G, Palmieri G, Mattaboni P, Germogli R**// *Via Podgora 9, I-20122 Milan, Italy

Arzneim-Forsch-Drug Res 1992 42-2 (10) 1246

Preliminary evaluation of immunoadjuvant activity of an orally administered glucan extracted from *Candida albicans*

Nilsson M, Westman J, Svahn CM// Kabi Pharm Ab, Organ Chem, S-11287 Stockholm, Sweden

J Carbohydr Chem 1993 12 (1) 23

Synthesis of trisaccharides and tetrasaccharides present in the linkage region of heparin and heparan sulphate

Nishiya T, Robibo D// McGill Univ, Artificial Cells & Organs Res Ctr, 3655 Drummond St, Montreal, Quebec, Canada H3G 1Y6

Carbohydr Res 1992 235 239

Quantitative analysis of carboxymethyl chitin adsorbed in a liposome surface

Ochiai T, Isono K, Suzuki T, Koide Y, Gunji Y, Nagata M, Ogawa N// Chiba

Univ, Sch Med, Dept Surg 2, 1-8-1 Inohana, Chiba 280, Japan

Int J Immunother 1992 8 (3) 161

Effect of immunotherapy with lentinan on patients survival and immunological parameters in patients with advanced gastric cancer - Results of a multi-centre randomized controlled study

Ohtsuka K, Hino S, Fukushima T, Ozawa O, Kanematsu T, Uchida T// Nissin Sugar Mfg Co Ltd, Toyosu 4-9-11, Koutou ku, Tokyo 135, Japan

Biosci Biotechnol Biochem 1992 56 (9) 1373

Characterization of levansucrase from *Rahnella aquatilis* JCM-1683

Ohya Y, Nishimoto T, Ouchi T// Kansai Univ, Fac Engr, Dept Appl Chem, Suita, Osaka 564, Japan

Carbohydr Polym 1993 20 (1) 43

Design of D-glucose analogue of MDP/CM-curdian conjugate and its immunological enhancement activity

Onodera S, Shiomi N// Rakuno Gakuen Univ, Fac Dairy Sci, Dept Food Sci, Ebetsu, Hokkaido 069, Japan

Biosci Biotechnol Biochem 1992 56 (9) 1443

Purification and subsite affinities of exoinulinase from *Penicillium trzebinskii*

Onogi Y, Okubo T// Mukogawa Womens Univ, Dept Home Econ, Hishinomiya, Hyogo 663, Japan

Liq Cryst 1992 12 (5) 815

Hydrostatic pressure effects on polymer cholestric liquid-crystalline structure. 1. Equilibrium structure of hydroxypropyl cellulose aqueous solution

Oppenheim AB, Chet I// Hebrew Univ Jerusalem, Hadassah Med Sch, Dept Molec Genet, IL-91010 Jerusalem, Israel

Trends Biotech 1992 10 (11) 392

Cloned chitinases in fungal plant-pathogen control strategies

Orvisky E, Soltes L, Chabreck P, Novak I, Kery V, Stancikova M, Vins I// Res Inst Rheumat Dis, CS-92101 Piastany, Czechoslovakia

J Liq Chromatogr 1992 15 (18) 3203

The determination of hyaluronan molecular weight distribution by means of high-performance size exclusion chromatography

Osman ME, Williams PA*, Menzies AR, Phillips GO// *NE Wales Inst, Polymer & Colloid Chem Grp, Connahs Quay, Deeside CH5 4BR, Clwyd, Wales

J Agr Food Chem 1993 41 (1) 71

Characterization of commercial samples of gum arabic

Ostberg T, Graffner C// Univ Oslo, Inst Pharm, Dept Pharmaceut, POB 1068, N-0316 Oslo 3, Norway

Acta Pharm Nordica 1992 4 (4) 201

Calcium alginate matrices for oral multiple unit administration. 1. Pilot investigations of production method

Oviatt HW, Brant DA// Univ Calif Irvine, Dept Chem, Irvine, Ca 92717, USA

Int J Biol Macromol 1993 15 (1) 3

Thermal treatment of semi-dilute aqueous xanthan solutions yields weak gels with properties resembling hyaluronic acid

Pal MK, Yadav RC// Univ Kalyani, Dept Biochem & Biophys, Kalyani 741235, West Bengal, India

J Macromol Sci Pure Appl Chem 1992 29 (11) 1049

Circular dichroic probe of the competition for drug and dye between anionic polymers DNA and heparin. 1.

Pantaleone D, Yalpani M*, Scollar M// *Nutrasweet Co, 601 E Kensington Rd, Mt Prospect, Il 60056, USA

Carbohydr Res 1992 237 325

Unusual susceptibility of chitosan to enzymatic hydrolysis

Pardo C, Gacto M// Univ Murcia, Fac Biol, Dept Genet & Microbiol, E-30071 Murcia, Spain

Microbios 1992 71 (288-289) 193

Production and properties of an exo-polygalacturonic acid hydrolase from *Geotrichum lactis*

Pavlov GM, Korneeva EV, Mikhailova NA, Ananieva EP// St Petersburg State Univ, St Petersburg, Russia

Biofizika SSSR 1992 37 (6) 1035

Hydrodynamic and molecular characteristics of the mannan fractions from *Rhodotorula rubra*

Peniche-Covas C, Arguelles-Monal W, Sanroman J// Univ Havana, Fac Chem, Havana 10400, Cuba

Polym Degrad Stabil 1993 39 (1) 21

A kinetic study of the thermal degradation of chitosan and a mercaptan derivative of chitosan

Piacquadro D, Nelson DB// Univ Calif San Diego, Div Dermatol, 3350 La

- Jolla Village Dr, San Diego, Ca 92161, USA
J Dermatol Surg Oncol 1992 18 (11) 992
 Alginates - A new dressing alternative
 Piculell L, Nilsson S, Muhrbeck P// Address not available.
Carbohydr Polym 1993 20 (1) 77
 Effects of small amounts of κ -carrageenan on the rheology of aqueous ι -carrageenan (*Carbohydr Polym* 1992 18 199) - Correction
 Pimenov GG, Tyurina NV, Golyakova ES// VI Lenin State Univ, Kazan, Russia
Vysokomol Soedin Ser A SSSR 1992 34 (12) 18
 Features of magnetic proton relaxation of solvent molecules in agarose gels (Russian, English Abstract)
 Pipitone V, Ambanelli U, Cervini C, Ligniere GC, Ugo GT, Ferraris M, Marcolongo R, Megale F, Semi U, Trotta F, et al// Univ Bari, Dept Rheumatol, Piazza Giulio Cesaie 1, I-70100 Bari, Italy
Curr Ther Res 1992 52 (4) 608
 A multicenter, triple-blind study to evaluate galactosaminoglycuronoglycan sulfate versus placebo in patients with femorotibial gonarthrosis
 Pittendrigh BR, Zacharuk RY// Purdue Univ, Dept Entomol, 1158 Entomol Hall, West Lafayette, In 47907, USA
Environ Entomol 1992 21 (6) 1267
 Laboratory evaluations of xanthan gum for the control of *Aedes atropalpus* (Diptera, Culicidae) pupae
 Poncelet D, Lencki R, Beaulieu C, Halle JP, Neufeld RJ*, Fournier A// *McGill Univ, Dept Chem Engr, 3480 Univ St, Montreal, Quebec, Canada H3A 2A7
Appl Microbiol Biotechnol 1992 38 (1) 39
 Production of alginate beads by emulsification internal gelation. 1. Methodology
 Prakash A// Desh Bandhu Coll, Kalkaji, New Delhi 110019, India
Entomon 1992 17 (1-2) 15
 Ovicidal action of certain chitin synthesis inhibitors in mosquitoes
 Praznik W, Spies T, Hofinger A// Agr Univ Vienna, Inst Chem, Gregor Mendel Str 33, A-1180 Vienna, Austria
Carbohydr Res 1992 235 (Nov) 231
 Studies on fructans. 2. Fructooligosaccharides from the stems of *Triticum aestivum*
 Price IR, Bielig LM// James Cook Univ Nth Queensland, Dept Bot, Townsville, Qld 4811, Australia
Bot Mar 1992 35 (5) 457
 Agar yield from *Gracilaria edulis* (Gracilariales, Rhodophyta) in the Townsville region, Eastern Tropical Australia
 Raab B// Deutsch Inst Ernahrungsforsch Potsdam Rehbrücke, Arthur Scheunert Allee 114-116, O-1505 Bergholz Rehbrücke, Germany
Electrophoresis 1992 13 (9-10) 807
 Characterization of endopolygalacturonase (EC 3.2.1.15) from *Aspergillus niger* as glycoprotein by electrophoretic methods and lectin affinity blotting
 Ray M, Carroll P, Smith I, Hawson G// Prince Charles Hosp, Dept Haematol, Rode Rd, Chermshire, Qld 4032, Australia
Blood Coagulat Fibrinol 1992 3 (6) 743
 An attempt to standardize APTT reagents used to monitor heparin therapy
 Ross AS, McMaster GJ, Tomlinson JD, Cheetham NWH// Bread Res Inst Australia, POB 7, Nth Ryde, NSW 2113, Australia
J Sci Food Agr 1992 60 (1) 91
 Effect of dextrans of differing molecular weights on the rheology of wheat flour doughs and the quality characteristics of pan and arabic breads
 Routledge PA, West RR// Univ Wales Coll Med, Cardiff CF4 4XN, Wales
Brit Med J 1992 305 (6859) 906
 Low molecular weight heparin (Editorial)
 Royer JC, Novak JS, Nakas JP*// *SUNY Syracuse, Coll Environm Sci & Forestry, Syracuse, NY 13210, USA
J Ind Microbiol 1992 11 (1) 59
 Apparent cellulase activity of purified xylanase is due to contamination of assay substrate with xylan - Short communication
 Saastamoinen M, Plaami S, Kumpulainen J// Agr Res Ctr, SF-31600 Jokioinen, Finland
J Cereal Sci 1992 16 (3) 279
 Genetic and environmental variation in β -glucan content of oats cultivated or tested in Finland
 Safarik I, Safarikova M// Sth Bohemian Biol Ctr, Analyt Chem Lab, Branišovska 31, CS-37005 Ceske Budejovice, Czechoslovakia
Biotechnol Appl Biochem 1992 16 (3) 263
 A new substrate for the determination of dextranase activity in coloured samples
 Sakamoto J, Koike A, Saji S, Teramukai S, Ohashi Y, Nakazato H// Aichi Canc Ctr, Dept Gastroenterol Surg, Tumor Marker Comm, Nagoya, Aichi 464, Japan
Surg Today 1992 22 (6) 530
 Preoperative serum immunosuppressive acidic protein (IAP) test for the prognosis of gastric cancer - A statistical study of the threshold level and evaluation of the effect of the biological response modifier PSK
 Santopietro LMD, Sineriz F, Castro GR*// *PROIMI, Ave Belgrano & PJE Caseros, RA-4000 Tucuman, Argentina
J Microbiol Meth 1992 16 (4) 253
 A spectrophotometric method for the quantitative measurement of pullulan
 Saucedo I, Guibal E*, Roulph C, Lecloirec P// *Ecole Mines Ales, ENSTIMA, Dept Genie Environm Ind, 6 Ave Clavieres, F-30319 Ales, France
Environ Technol 1992 13 (12) 1101
 Sorption of uranyl ions by a modified chitosan - Kinetic and equilibrium studies
 Sawhney AS, Hubbell JA*// *Univ Texas, Dept Chem Engr, Austin, Tx 78712, USA
Biomaterials 1992 13 (12) 863
 Poly(ethylene oxide)-graft-poly(L-lysine) copolymers to enhance the biocompatibility of poly(L-lysine)-alginate microcapsule membranes
 Schafer HJ, Lehman W, Heider HJ, Nolte I// Adolfsstr 50, W-3500 Kassel, FRG
Kleintierprax 1992 37 (10) 665
 The efficacy of sodium hyaluronate on the postoperative period after crucial ligament surgery in dogs - A randomised double blind and multicenter study (German, English Abstract)
 Scott JE, Chen Y, Brass A// Univ Manchester, Chem Bldg, Manchester M13 9PL, England
Eur J Biochem 1992 209 (2) 675
 Secondary and tertiary structures involving chondroitin and chondroitin sulphates in solution, investigated by rotary shadowing/electron microscopy and computer simulation
 Searle-van Leeuwen MJF, Van den Broek LAM, Schols HA, Beldman G, Voragen AGJ*// *Wageningen Univ Agr, Biotechnion, Dept Food Sci, Bomenweg 2, 6703 HD Wageningen, The Netherlands
Appl Microbiol Biotechnol 1992 38 (3) 347
 Rhamnogalacturonan acetyltransferase - A novel enzyme from *Aspergillus aculeatus*, specific for the deacetylation of hairy (ramified) regions of pectins
 Sewall CJ// FMC Corp, Div Food Ingredients, Box 308, Rockland, Me 04841, USA
J Appl Phycol 1992 4 (4) 347
 Gelling interactions of phycocolloids extracted from red algae with a galactomannan from locust bean and a glucomannan from konjac tuber
 Shimada E, Matsumura G// Showa Univ, Sch Pharmaceut Sci, 1-5-8 Hatanodai, Shinagawa ku, Tokyo 142, Japan
J Chromatogr 1992 627 (1-2) 43
 Determination of Stokes radii and molecular masses of sodium hyaluronates by sepharose gel chromatography
 Shimazawa R, Hashimoto Y*, Iwasaki S// *Univ Tokyo, Inst Appl Microbiol, 1-1-1 Yayoi, Bunkyo ku, Tokyo 113, Japan
Tetrahedron Lett 1992 33 (47) 7197
 Water-soluble Zimmerman's molecular tweezer analogs - Dextran-coupling method for solubilization
 Singh S, Koehler B, Fett WF// Penn State Univ, Dept Chem, Hazleton Campus, Hazleton, Pa 18201, USA
Curr Microbiol 1992 25 (6) 335
 Effect of osmolarity and dehydration on alginate production by fluorescent pseudomonads
 Sipos P, Veber M, Burger K*, Illes J, Machula G// *Attila Jozsef Univ, Dept Inorgan & Analyt Chem, POB 440, H-6701 Szeged, Hungary
Acta Chim Hung 1992 129 (5) 671
 Hyaluronate-metal ion interactions - Correlation between viscometric, potentiometric, polarographic and electrophoretic data
 Song Y, Onishi H, Nagai T// Hoshi Univ, Fac Pharmaceut Sci, Ebara 2-4-41, Shinagawa ku, Tokyo 142, Japan
Chem Pharm Bull Tokyo 1992 40 (10) 2822

- Synthesis and drug-release characteristics of the conjugates of mitomycin C with N-succinylchitosan and carboxymethyl-chitin
- Soni PL, Singh A// Forest Res Inst, MFP Div, Chem Forest Prod, Dehra Dun 248006, India
Indian J Chem Sect B 1992 31 (11) 793
- Structural characterisations of a glucan from the fruits of *Cassimiroa edulis*
- Spaltro S, Ananthapadmanabhan KP*, Frushour M, Aronson M// *Unilever Res US, 45 River Rd, Edgewater, NJ 07020, USA
Colloid Surface 1992 68 (1-2) 1
- Adsorption of dextrans onto hydroxyapatite - Presence of maxima
- Spies T, Praznik W*, Hofinger A, Altmann F, Nitsch E, Wutka R// *Agr Univ Vienna, Inst Chem, Gregor Mendel Str 33, A-1180 Vienna, Austria
Carbohydr Res 1992 235 221
- Studies of fructans. 1. The structure of the fructan sinistrin from *Urginea maritima*
- Stellwagen NC// Univ Iowa, Dept Biochem, Iowa City, Ia 52242, USA
Electrophoresis 1992 13 (9-10) 601
- Agarose gel pore radii are not dependent on the casting buffer
- Stokke BT, Elgsaeter A, Brant DA, Kuge T, Kitamura S// Univ Trondheim, NTH, Dept Phys, Norwegian Biopolymer Lab, N-7034 Trondheim, Norway
Biopolymers 1993 33 (1) 193
- Macromolecular cyclization of (1-6)-branched-(1-3)- β -D-glucans observed after denaturation renaturation of the triple-helical structure
- Studer M, Fluck K, Zimmermann W// *Swiss Fed Inst Technol, Inst Biotechnol, CH-8093 Zurich, Switzerland
FEMS Microbiol Lett 1992 99 (2-3) 213
- Production of chitinases by *Aphanocladium album* grown on crystalline and colloidal chitin
- Suda M, Ohno N, Adachi Y, Yadomae T// Tokyo Coll Pharm, Immunopharmacol Microbial Prod Lab, 1432-1 Horinouchi, Hachioji, Tokyo 19203, Japan
J Pharmacobio Dynam 1992 15 (8) 417
- Tissue distribution of intraperitoneally administered (1-3)- β -D-glucan (SSG), a highly branched antitumor glucan, in mice
- Sudarshan NR, Hoover DG, Knorr D// Oregon State Univ, Dept Food Sci & Technol, Corvallis, Or 97331, USA
Food Biotechnol 1992 6 (3) 257
- Antibacterial action of chitosan
- Sugiyama T, Itoh M, Ohtawa M, Natsuga T// Shimizu Pharmaceut Co Ltd, Res Dept, Div Res & Dev, Shimizu, Shizuoka 424, Japan
Thromb Res 1992 68 (2) 119
- Study on neutralization of low molecular weight heparin (LHG) by protamine sulfate and its neutralization characteristics
- Suzuki K, Yamagishi K, Kaneko T, Nishimura M, Kikkawa Y, Tujio M, Takano S, Asano T, Hasegawa T// Kanagawa Prefectural Junior Coll Nutr, 399 Sakuragaoka, Hodogaya ku, Yokohama, Kanagawa 240, Japan
J Jpn Soc Food Sci Technol 1992 39 (11) 960
- The change of polygalacturonase and polyuronide of the vapor heat treated papaya in the ripening process - (Studies on the ripening physiology of papaya treated with vapor heat. 2.) (Japanese, English Abstract)
- Tabata K, Ito W, Hirata A, Kojima T// Taito Co Ltd, Res Lab, 1-26 Higashishiraike shinmachi, Nagata ku, Kobe 653, Japan
Nippon Nogeikagaku Kaishi 1992 66 (11) 1633
- Depolymerization of schizophyllan by gamma-ray irradiation (Japanese, English Abstract)
- Takada K, Tomoda M*, Shimizu N// *Kyoritsu Coll Pharmaceut Sci, Minato ku, Tokyo 105, Japan
Chem Pharm Bull Tokyo 1992 40 (9) 2487
- Core structure of glycyrrhizin GA, the main polysaccharide from the stolon of *Glycyrrhiza glabra* var glandulifera - Anti-complementary and alkaline phosphate-inducing activities of the polysaccharide and its degradation products
- Takahashi S, Terayama H, Kuzuhara H// *Inst Phys & Chem Res, Wako, Saitama 35101, Japan
Tetrahedron Lett 1992 33 (49) 7565
- Total synthesis of (-)-allosamidin, an insect chitinase inhibitor, employing chitin as a key starting material
- Takahashi T, Kayama N// Hoshi Univ, Inst Med Chem, Ebara 2-4-41, Shinagawa ku, Tokyo 142, Japan
Chem Pharm Bull Tokyo 1992 40 (10) 2775
- Binding to chitosan of multiple forms of glucoamylases from *Aspergillus saitoi* and *Rhizopus* sp
- Tavares LBB, Chitarra MFI, Chitarra AB// Univ Reg Blumenau, Blumenau, SC, Brazil
Arq Biol Tecnol 1992 35 (2) 203
- Using modified atmosphere in the storage of 2 peaches cvs [*Prunus persica* (L) Batsch]. 2. Total sugars and pectic substance transformation (Portuguese, English Abstract)
- Terayama H, Takahashi S, Kuzuhara H// *Inst Phys & Chem Res, Wako, Saitama 35101, Japan
J Carbohydr Chem 1993 12 (1) 81
- Large-scale preparation of N,N'-diacetylchitobiose by enzymic degradation of chitin and its chemical modifications
- Teunissen MJ, Baerends RJS, Knelissen RAG, Den Camp HJMO*, *Vogels GD// Catholic Univ Nijmegen, Fac Sci, Dept Microbiol, Toernooiveld 1, 6525 ED Nijmegen, The Netherlands
Appl Microbiol Biotechnol 1992 38 (1) 28
- A semi-continuous culture system for production of cellulolytic and xylanolytic enzymes by the anaerobic fungus *Piromyces* sp strain E2
- Toi M, Hattori T, Akagi M, Inokuchi K, Orita K, Sugimachi K, Dohi K, Nomura Y, Monden Y, Hamada Y// Tokyo Metropolitan Komagome Hosp, 3-18-22 Honkomagome, Bunkyo ku, Tokyo 113, Japan
Cancer 1992 70 (10) 2475
- Randomized adjuvant trial to evaluate the addition of tamoxifen and PSK to chemotherapy in patients with primary breast cancer - 5 year results from the Nishi-Nippon Group of the Adjuvant Chemoendocrine Therapy for Breast Cancer Organization
- Torronen A, Mach RL, Messner R, Gonzalez R, Kalkinen N, Harkki A, Kubicek CP// *CSIC, Inst Agroquim & Tecnol Alimentos, Valencia, Spain
BioTechnology 1992 10 (11) 1461
- The 2 major xylanases from *Trichoderma reesei* - Characterization of both enzymes and genes
- Triolet J, Raffi J, Agnel JP, Battesti C, Thiery C, Vincent P// *Ctr Cadarache, Dept Physiol Vegetale & Ecosyst, SIV, GRSO, F-13108 St Paul Durance, France
Magn Reson Chem 1992 30 (11) 1051
- Electron spin resonance study of spin-trapped radicals from gamma irradiation of fructans
- Trono GC, Lluisma AO// Univ Philippines, Coll Sci, Inst Marine Sci, Quezon, Philippines
Hydrobiologia 1992 247 (1-3) 223
- Differences in biomass production and carrageenan yields among 4 strains of farmed carrageenophytes in Northern Bohol, Philippines
- Tseng CH, Yamaguchi K, Kitamikado M// Kyushu Univ, Fac Agr, Dept Fisheries, Higashi ku, Fukuoka 812, Japan
Nippon Suisan Gakkaishi 1992 58 (4) 743
- 2 types of alginate lyase from a marine bacterium *Vibrio* sp AL-9
- Tseng CH, Yamaguchi K, Nishimura M, Kitamikado M// Kyushu Univ, Fac Agr, Dept Fisheries, Higashi ku, Fukuoka 812, Japan
Nippon Suisan Gakkaishi 1992 58 (11) 2063
- Alginate lyase from *Vibrio alginolyticus* ATCC-17749
- Uehara T, Takeshita M, Maeda M// *Saitama Univ, Dept Biochem, Urawa, Saitama 338, Japan
Carbohydr Res 1992 235 309
- Studies on anticoagulant-active arabinan sulfates from the green alga, *Codium latum*
- Uragami T, Shinomiya H// Kansai Univ, Fac Engr, Chem Branch, Suita, Osaka 564, Japan
J Membrane Sci 1992 74 (1-2) 183
- Concentration of aqueous dimethyl sulfoxide solutions through a chitosan membrane by permeation with a temperature difference
- Urbani R, Di Blas A, Cesaro A// *Univ Trieste, Dept Biochem Biophys & Macromolec Chem, I-34127 Trieste, Italy
Int J Biol Macromol 1993 15 (1) 24
- Conformational features of carrabiose polymers. 1. Configurational statistics of κ -carrageenan
- Usov AI, Ivanova EG// ND Zelinskii Organ Chem Inst, Moscow, Russia
Bioorg Khim 1992 18 (8) 1108
- Polysaccharides of algae. 46. Studies on agar from the red seaweed *Gelidium acerosa* (Russian, English Abstract)
- Valuev LI, Shanazarova IM, Plate NA// AV Topchiev Petrochem Synth Inst, Moscow, Russia
Vysokomol Soedin Ser A SSSR 1992 34 (11) 88

Immobilization of ovomucoid on dextrans (Russian, English Abstract)

Vaudaux P, Avramoglou T, Letourneur D, Lew DP, Jozefonvicz J// Hop Cantonal Geneva, Dept Med, Div Malad Infect, CH-1211 Geneva 4, Switzerland
J Biomater Sci-Polym Ed 1992 **4** (2) 89

Inhibition by heparin and derivatized dextrans of *Staphylococcus aureus* adhesion to fibronectin-coated biomaterials

Vogel C, Steffan W, Boye H, Kristen H, Betaneli VI, Ott AY, Kochetkov NK// Univ Rostock, Fachbereich Chem, Buchbinderstr 9, O-2500 Rostock, FRG
Carbohydr Res 1992 **237** 131

Galacturonic acid derivatives. 5. Synthesis of a heteroglycuronan derivative containing the β -D-galactopyranosyluronic acid (1-3)-L-rhamnose repeating unit
 Waaler PJ, Arnesen K, Graffner C, Muller BW// Apothekernes Lab AS, POB 158, N-0212 Oslo, Norway
Acta Pharm Nordica 1992 **4** (4) 291

Optimization of the amount of xanthan gum and guar gum in a matrix tablet formulation using a central composite design

Wade NL, Kavanagh EE, Hockley DG, Brady CJ// Hort Res & Advisory Stn, POB 581, Gosford, NSW 2250, Australia
J Sci Food Agr 1992 **60** (1) 61

Relationship between softening and the polyuronides in ripening banana fruit

Wang GH// China Meat Res Ctr, Beijing 100075, Peoples Rep China
J Food Protect 1992 **55** (11) 916

Inhibition and inactivation of 5 species of foodborne pathogens by chitosan

Wang ZY, Zhang QZ, Konno M, Saito S// Australian Natl Univ, Res Sch Chem, GPO Box 4, Canberra, ACT 2600, Australia
J Phys II 1993 **3** (1) 1

Sol-gel transition of alginate solution by addition of calcium ions - Alginate concentration dependence of gel point

Waterhouse AL, Horvath K, Liu JH// Univ Calif Davis, Dept Viticulture & Enol, Davis, Ca 95616, USA
Carbohydr Res 1992 **235** 1

Conformational analysis of D-fructans. 6. Conformational analysis of β -D-fructofuranosyl-(2-6)- β -D-glucopyranoside by molecular mechanics (MM2) calculations

Weist JL, Karel M// Hershey Foods Corp, Ctr Tech, POB 805, Hershey, Pa 17033, USA
Food Biotechnol 1992 **6** (3) 273

Development of a fluorescence sensor to monitor lipid oxidation. 2. The kinetics of chitosan fluorescence formation after exposure to lipid oxidation volatiles

Wei Z, Piculell L, Nilsson S// Univ Lund, Ctr Chem, Box 124, S-22100 Lund, Sweden
Macromolecules 1992 **25** (23) 6165

Effects of specific anion binding on the helix coil transition of lower charged carrageenans - NMR data and conformational equilibria analyzed within the Poisson-Boltzmann cell model

Williams DL, Pretus HA, McNamee RB, Jones EL, Ensley HE, Browder IW// E Tennessee State Univ, Quillen Dishner Coll Med, Dept Surg, Glucan Res Lab, POB 70575, Johnson City, Tn 37614, USA
Carbohydr Res 1992 **235** 247

Development of a water-soluble, sulfated(1-3)- β -D-glucan biological response modifier derived from *Saccharomyces cerevisiae*

Williams RJ// Amer Red Cross, R&D Labs, 15601 Crabbs Branch Way, Rockville, Md 20855, USA
Thermochim Acta 1992 **212** 105

Anomalous behavior of ice in solutions of ice-binding arabinoxylans

Wolters GHJ, Fritschy WM, Gerrits D, Van Schifagaarde R// Univ Groningen, Dept Surg, Surg Res Lab, Bloemsingel 1, 9713 BZ Groningen, The Netherlands
J Appl Biomater 1992 **3** (4) 281

A versatile alginate droplet generator applicable for microencapsulation of pancreatic islets

Yamasaki Y, Fukumoto I, Kumagai N, Ohta Y, Nakagawa T, Kawamukai M, Matsuda H// Shimane Univ, Fac Agr, Matsue, Shimane 690, Japan
Biosci Biotechnol Biochem 1992 **56** (10) 1546

Continuous chitosan hydrolyzate production by immobilized chitosanolytic enzyme from *Enterobacter* sp G-1

Yin Y, Walker CE// Kansas State Univ Agr & Appl Sci, Dept Grain Sci & Ind, Manhattan, Ks 66506, USA
Cereal Chem 1992 **69** (6) 592

Pentosans from gluten-washing wastewater - Isolation, characterizations, and

role in baking

Yokoyama F, Achife CE, Takahira K, Yamashita Y, Monobe K, Kusano F, Nishi K// Okayama Univ, Fac Engr, Dept Appl Chem, Okayama 700, Japan
J Macromol Sci-Phys 1992 **B31** (4) 463

Morphologies of oriented alginate gels crosslinked with various divalent metal ions

Yonezawa Y, Kijima M, Sato T// Kyoto Univ, Fac Engr, Dept Ind Chem, Yoshida, Kyoto 606, Japan

Berich Bunsen Gesell Phys Chem 1992 **96** (12) 1828

Aggregation of silver particles in silver alginate films

Ziolecki A, Guczynska W*, Wojciechowicz M// *Polish Acad Sci, Kielanowski Inst Anim Physiol & Nutr, PL-05110 Jablonna, Poland
Lett Appl Microbiol 1992 **15** (6) 244

Some rumen bacteria degrading fructan

7 POLYSACCHARIDES - OTHER

Alekseeva YI, Soloveva TS, Tutorskii IA, Kalinin SV, Cheltsov AV// MV Lomonosov Fine Chem Technol Inst, Moscow, Russia
Colloid J Russ Acad Sci Engl 1992 **54** (2) 144

Properties of aqueous, binary, polysaccharide/surfactant solutions

Aoi K, Suzuki H, Okada M*// *Nagoya Univ, Fac Agr, Chikusa ku, Nagoya 46401, Japan

Macromolecules 1992 **25** (25) 7073

Architectural control of sugar-containing polymers by living polymerization - Ring-opening polymerization of 2-oxazolines initiated with carbohydrate derivatives

Armbruster BL, Desai N// Monsanto Co, Monsanto Corp Res, Mail Zone U1E, St Louis, Mo 63167, USA

Food Struct 1992 **11** (4) 289

Identification of proteins and complex carbohydrates in some commercial low-fat dairy products by means of immunolocalization techniques

Balasubramanian D, Raman B, Sundari CS// Ctr Cellular & Molec Biol, Hyderabad 500007, India

J Amer Chem Soc 1993 **115** (1) 74

Polysaccharides as amphiphiles

Beynon LM, Richards JC*, Perry MB// *Natl Res Council Canada, Inst Biol Sci, Ottawa, Ontario, Canada K1A 0R6

Eur J Biochem 1992 **210** (1) 119

Nuclear magnetic resonance analysis of the capsular antigen of *Actinobacillus pleuropneumoniae* serotype 9 - Its identity with the capsular antigen of *Escherichia coli* K62 (K2ab), *Neisseria meningitidis* serogroup H and *Pasteurella haemolytica* serotype T15

Berlin AA, Kislenko VN// Lvov Polytech Inst, Lvov, Ukraine

Prog Polym Sci 1992 **17** (5) 765

Kinetics and mechanism of radical graft polymerization on monomers onto polysaccharides

Bowman JP, Sly LI*, Hayward AC, Spiegel Y, Stackebrandt E// *Univ Queensland, Dept Microbiol, Ctr Bacterial Divers & Identificat, Brisbane, Qld 4072, Australia
Int J Syst Bact 1993 **43** (1) 120

Telluria mixta (*Pseudomonas mixta* Bowman, Sly and Hayward 1988) gen nov, comb nov, and *Telluria chitinolytica* sp nov, soil-dwelling organisms which actively degrade polysaccharides

Chenu C, Jaunet AM// INRA, Sci Sol Stn, Route St Cyr, F-78026 Versailles, France

Scanning 1992 **14** (6) 360

Cryoscanning electron microscopy of microbial extracellular polysaccharides and their association with minerals

Davydova SL, Chervina LV// AV Topchiev Petrochem Synth Inst, Moscow, Russia

J Anal Chem-Engl Tr 1992 **47** (6) 786

Application of a copper-selective electrode to the determination and investigation of monomeric and polymeric amino sugars

De Bruin AH, Parolis H*, Parolis LAS// *Rhodes Univ, Sch Pharmaceut Sci, Grahamstown 6140, South Africa

Carbohydr Res 1992 **235** 199

The capsular antigen of *Escherichia coli* serotype O8:K102:H-

De Ruiter GA, Schols HA, Voragen AGJ, Rombouts FM*// *Wageningen Univ Agr, Dept Food Sci, Bomenweg 2, 6703 HD Wageningen, The Nether-

- lands
Anal Biochem 1992 207 (1) 176
 Carbohydrate analysis of water-soluble uronic acid-containing polysaccharides with high-performance anion-exchange chromatography using methanolysis combined with TFA hydrolysis is superior to 4 other methods
 Dickinson E, Euston SR// Univ Leeds, Procter Dept Food Sci, Leeds LS2 9JT, England
Food Hydrocolloid 1992 6 (4) 345
 Computer simulation model of the adsorption of protein-polysaccharide complexes
 El-Gindy AA, Saad RR// Ain Shams Univ, Fac Educ, Dept Biol Sci, Cairo, Egypt
Acta Microbiol Pol 1992 41 (1-2) 83
 Polysaccharase activities of *Chaetomium murorum* and *C. bostrychodes* grown on groundnut shells
 Force RW, Lugo RA, Nahata MC// *Ohio State Univ, Coll Pharm, 500 W 12th Ave, Columbus, OH 43210, USA
Ann Pharmacother 1992 26 (11) 1429
Haemophilus influenzae type b conjugate vaccines
 Fujita T, Nishikawa M, Tamaki C, Takakura Y, Hashida M*, Sezaki H// *Kyoto Univ, Fac Pharmaceut Sci, Dept Basic Pharmaceut, Sakyo ku, Kyoto 60601, Japan
J Pharmacol Exp Ther 1992 263 (3) 971
 Targeted delivery of human recombinant superoxide dismutase by chemical modification with monosaccharide and polysaccharide derivatives
 Geresh S, Lupescu N, Arad SM// Ben Gurion Univ Negev, Inst Appl Res, IL-84110 Beer Sheva, Israel
Phytochemistry 1992 31 (12) 4181
 Fractionation and partial characterization of the sulphated polysaccharide of *Porphyridium*
 Girhammar U, Nair B M// Univ Lund, Dept Appl Nutr & Food Chem, Box 124, S-22100 Lund, Sweden
Food Hydrocolloid 1992 6 (4) 329
 Certain physical properties of water-soluble non-starch polysaccharides from wheat, rye, triticale, barley and oats
 Glushka J, Cassels FJ, Carlson RW, Van Halbeek H// *Univ Georgia, Complex Carbohydrate Res Ctr, Athens, Ga 30602, USA
Biochemistry-USA 1992 31 (44) 10741
 Complete structure of the adhesion receptor polysaccharide of *Streptococcus oralis* ATCC-55229 (*Streptococcus sanguis* H1)
 Hackland PL, Parolis H// *Rhodes Univ, Sch Pharmaceut Sci, Grahamstown 6140, South Africa
Carbohydr Res 1992 235 (Nov) 211
 The structure of the capsular polysaccharide of *Escherichia coli* O9:K35:H⁻
 Hatanaka K, Song SC, Maruyama A, Akaike T, Kobayashi A, Kuzuhara H// Tokyo Inst Technol, Dept Biomolec Engr, Midori ku, Yokohama, Kanagawa 227, Japan
J Carbohydr Chem 1992 11 (8) 1027
 Novel reaction route including enzymic reaction for a synthesis of a branched polysaccharide
 Hebbat KP, Gueniot B, Heyraud A, Colin-Morel P, Heulin T*, Balandreau J, Rinaudo M// *Univ Nancy 1, Ctr Pedol Biol, Equipe Ecol Microbienne Rhizosphere, CNRS, UPR 6831, BP 5, F-54501 Vandoeuvre Nancy, France
Appl Microbiol Biotechnol 1992 38 (2) 248
 Characterization of exopolysaccharides produced by rhizobacteria
 Herbreteau B// Univ Orleans, Chim Bioorgan & Analyt Lab, CNRS, URA 499, BP 6759, F-45067 Orleans 2, France
Analisis 1992 20 (10) M31
 Sugars and their polymers analyzed using liquid chromatography (French, English Abstract)
 Iqbal M, Grey D, Stepan-Sarkissian G// PCSIR Labs Complex, Biotechnol & Food Res Ctr, Ferozepur Rd, Lahore 54600, Pakistan
Acta Microbiol Pol 1992 41 (1-2) 65
 Effect of nitrogen on growth, extracellular polysaccharide and intracellular phycoerythrin production by the *Porphyridium cruentum*
 Jacon SA, Rao MA, Cooley HJ, Walter RH// Cornell Univ, Dept Food Sci & Technol, Geneva, NY 14456, USA
Carbohydr Polym 1993 20 (1) 35
 The isolation and characterization of a water extract of konjac flour gum
 Kawaguchi K, Satomi K, Yokoyama M, Kadota H// Kureha Chem Ind Co Ltd, Food Sci Labs, Hyakunincho, Shinjuku ku, Tokyo 169, Japan
Nippon Suisan Gakkaishi 1992 58 (10) 1955
 Conditions for production of an extracellular polysaccharide by a *Klebsiella* sp isolated from river water (Japanese, English Abstract)
 Khmelenina VN, Gayazov RR, Suzina NE, Doronina NV, Mshenskii YN, Trotsenko YA// Russian Acad Sci, Inst Microbial Biochem & Physiol, Pushchino, Russia
Microbiology-Engl Tr 1992 61 (3) 277
 Synthesis of polysaccharides by *Methylococcus capsulatus* under different growth conditions
 Knirel YA, Paramonov NA, Vinogradov EV, Shashkov AS, Kochetkov NK, Sidorczyk Z, Swierko A// ND Zelinskii Organ Chem Inst, Leninsky Prospekt 47, Moscow, Russia
Carbohydr Res 1992 235 C19
 Structure of the O-specific polysaccharide of *Proteus penneri* 62 containing 2-acetamido-3-O-[(S)-l-carboxyethyl]-2-deoxy-D-glucose (N-acetylisomuramic acid)
 Kojic M, Vujcic M, Banina A, Cocconcelli P, Cerning J, Topisirovic L// *Inst Molec Genet & Genet Engr, Vojvode Stepe 283, POB 794, YU-11001 Belgrade, Yugoslavia
Appl Environ Microbiol 1992 58 (12) 4086
 Analysis of exopolysaccharide production by *Lactobacillus casei* CG11, isolated from cheese
 Konopka A// Gesell Biotechnol Forsch GmbH, Div Microbiol Mascheroder Weg 1, W-3300 Braunschweig, FRG
FEMS Microbiol Ecol 1992 102 (1) 27
 Accumulation and utilization of polysaccharide by hot-spring phototrophs during a light-dark transition
 Koyama Y, Ishikawa M, Iwamoto M, Kojima S// Sci Univ Tokyo, Biol Sci Res Inst, 2669 Yamazaki, Noda Chiba 278, Japan
J Control Release 1992 22 (3) 253
 Synthesis and body distribution of glucose-containing polymers
 Leon-Barrios M, Corzo J, Perez-Galdona R, Trujillo J, Gutierrez-Navarro AM// *Univ la Laguna, Dept Microb & Biol Cell, La Laguna, Spain
Microbios 1992 69 (279) 97
 Extracellular polysaccharides from 4 strains of *Bradyrhizobium (Chamaecytisus proliferus)*
 Lipkind GM, Shashkov AS, Nifantev NE, Kochetkov NK// *ND Zelinskii Organ Chem Inst, Moscow, Russia
Carbohydr Res 1992 237 11
 Computer-assisted analysis of the structure of regular branched polysaccharides containing 2,3-disubstituted rhamnopyranose and mannopyranose residues on the basis of ¹³C-NMR data
 Lo HK, Malinin TI, Malinin GI// Univ Miami, Dept Orthopaed & Rehabil R-12, Miami, FL 33101, USA
Biotech Histochem 1992 67 (6) 372
 Lead tetraacetate-thiocarbohydrazide-silver proteinate method for light microscopy of polysaccharides
 Marty N, Dourmes JL, Chabanon G, Montrozier H// Univ Paul Sabatier, Fac Med Rangueil, Microbiol Lab, Bat L1, Ave Jean Poulhes, F-31054 Toulouse, France
Fems Microbiol Lett 1992 98 (1-3) 35
 Influence of nutrient media on the chemical composition of the exopolysaccharide from mucoid and nonmucoid *Pseudomonas aeruginosa*
 Massiot P, Guiller I, Baron A, Drilleau JF// INRA, Rech Cidricoles Biotransformat Fruits & Legumes Stn, BP 29F, F-35650 Le Rheu, France
Food Sci Technol-Lebensm Wiss 1992 25 (6) 559
 Cell wall polysaccharides modifications during heat treatment and enzymatic degradation of carrot tissues
 Mercer MD, Smittle DA// Univ Georgia, Dept Hort, Tifton, Ga 31794, USA
J Amer Soc Hort Sci 1992 117 (6) 930
 Storage atmospheres influence chilling injury and chilling injury-induced changes in cell wall polysaccharides of cucumber
 Molchanova VI, Mikheyskaya LV, Isakov VV, Ovodov YS// Russian Acad Sci, Pacific Inst Bioorgan Chem, Vladivostok, Russia
Bioorg Khim 1992 18 (12) 1505
 The structure of the polysaccharide constituent of bioglycan from the scallop *Patinopecten yessoensis* (Russian, English Abstract)
 Mukherjee A, Roy N// *Indian Assn Cultivat Sci, Dept Biol Chem, Calcutta 700032, West Bengal, India
Syst Appl Microbiol 1992 15 (4) 505
 Revised structure of the capsular polysaccharide of *Klebsiella* serotype 15

- Nakayama Y, Iwahana M, Sakamoto N, Tanaka NG*, Osada Y// *Daiichi Pharmaceut Co Ltd, Exploratory Res Labs, 16-13 Kita Kasai 1-chome, Edogawa ku, Tokyo 134, Japan
J Cell Physiol 1993 **154** (1) 1
 Inhibitory effects of a bacteria-derived sulfated polysaccharide against basic fibroblast growth factor-induced endothelial cell growth and chemotaxis
- Neu TR, Dengler T, Jann B, Poralla K// Univ Groningen, Mat Tech Lab, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands
J Gen Microbiol 1992 **138** (12) 2531
 Structural studies of an emulsion-stabilizing exopolysaccharide produced by an adhesive hydrophobic *Rhodococcus* strain
- Novak JS, Tanenbaum SW, Nakas JP// *SUNY Coll Syracuse, Coll Environm Sci & Forestry, Dept Environm & Forest Biol, Syracuse, NY 13210, USA
Appl Environ Microbiol 1992 **58** (11) 3501
 Heteropolysaccharide formation by *Arthrobacter viscosus* grown on xylose and xylose oligosaccharides
- Paulsen H, Wilkens R, Reck F, Brockhausen I// Univ Hamburg, Inst Organ Chem, Martin Luther King Platz 6, W-2000 Hamburg 13, FRG
Liebigs Ann Chem 1992 (12) 1303
 Building units of oligosaccharides. 104. Synthesis of branched tetrasaccharide and pentasaccharide structures of N-glycoproteins methylated at 4'-OH of the branching unit (German)
- Ralet MC, Della Valle G, Thibault JF// *INRA, Biochim & Technol Glucides Lab, rue Geraudiere, BP 527, F-44026 Nantes 03, France
Carbohydr Polym 1993 **20** (1) 17
 Raw and extruded fibre from pea hulls. 1. Composition and physico-chemical properties
- Ralet MC, Sauliner L, Thibault JF// *INRA, Biochim & Technol Glucides Lab, rue Geraudiere, BP 527, F-44026 Nantes 03, France
Carbohydr Polym 1993 **20** (1) 25
 Raw and extruded fibre from pea hulls. 2. Structural study of the water-soluble polysaccharides
- Roy R, Tropper FD, Romanowska A// Univ Ottawa, Dept Chem, Ottawa, Ontario, Canada K1N 6N5
J Chem Soc Chem Commun 1992 (21) 1611
 Custom-designed glycopolymer synthesis by terpolymerizations
- Sato N, Nakazawa F, Sato M, Hoshino E, Ito T// Niigata Univ, Sch Dent, Dept Oral Microbiol, Gakkocho Dori 2, Niigata 951, Japan
Biosci Biotechnol Biochem 1992 **56** (11) 1863
 A new chemotype of *Eubacterium saburreum* - Isolation and identification of L-threo-2-pentulose from the antigenic polysaccharide of *E. saburreum* T15
- Severn WB, Richards JC// Natl Res Council Canada, Inst Membrane Res, Ottawa, Ontario, Canada K1A 0R6
Can J Chem 1992 **70** (10) 2664
 The acidic specific capsular polysaccharide of *Rhodococcus equi* serotype 3 - Structural elucidation and stereochemical analysis of the lactate ether and pyruvate acetal substituents
- Shaposhnikova GM, Borodina NP, Snegireva AE, Shevlyagin VY, Loenko YN, Popov AM, Artyukov AA, Elyakov GB// NF Gamaleya Epidemiol & Microbiol Res Inst, Moscow, Russia
Dokl Akad Nauk 1992 **324** (4) 881
 Inhibition effects of marine genesis polysaccharides in development of Raucher virus-induced leukemia (Russian)
- Spontak RJ, Bartolo RG, El-Nokaly M, Hiler GD// Nth Carolina State Univ, Dept Mat Sci & Engr, Raleigh, NC 27695, USA
Polymer 1992 **33** (24) 5343
 Enhanced anisotropic ordering and phase separation in lyotropic polysaccharide blends
- Stokke BT, Elgsaeter A, Kitamura S// Univ Trondheim Nth, Dept Phys, Norwegian Biopolymer Lab, N-7034 Trondheim, Norway
Int J Biol Macromol 1993 **15** (1) 63
 Macrocyclization of polysaccharides visualized by electron microscopy
- Sun XB, Matsumoto T, Yamada H// *Kitasato Inst, Oriental Med Res Ctr, 5-9-1 Shirokane, Minato-ku, Tokyo 108, Japan
Planta Med 1992 **58** (5) 432
 Anti-ulcer activity and mode of action of the polysaccharide fraction from the leaves of *Panax ginseng*
- Sun XB, Matsumoto T, Yamada H// *Kitasato Inst, Oriental Med Res Ctr, 5-9-1 Shirokane, Minato-ku, Tokyo 108, Japan
Planta Med 1992 **58** (5) 445
 Purification on an anti-ulcer polysaccharide from the leaves of *Panax ginseng*
- Tihlarik K, Pasteka M// Slovak Acad Sci, Inst Chem, Dubravska Cesta 9, CS-80936 Bratislava, Czechoslovakia
Starch 1992 **44** (10) 385
 Determination of the carbonyl groups in oxidized polysaccharides by hydroxylammonium formate
- Tomoda M, Ohara N, Gonda R, Shimizu N, Takada K, Satoh Y, Shirai S// Kyoritsu Coll Pharmaceut Sci, Minato ku, Tokyo 105, Japan
Chem Pharm Bull Tokyo 1992 **40** (11) 3025
 An acidic polysaccharide having immunological activities from the rhizome of *Cnidium officinale*
- Usov AI, Klochkova NG// ND Zelinskii Organ Chem Inst, Leninsky Prospect 47, Moscow, 117913, Russia
Bot Mar 1992 **35** (5) 371
 Polysaccharides of algae. 45. Polysaccharide composition of red seaweeds from Kamchatka coastal waters (Northwestern Pacific) studied by reductive hydrolysis of biomass
- Vella PP, Marburg S, Staub JM, Kniskern PJ, Miller W, Hagopian A, Ip C, Tolman RL, Rusk CM, Chupak LS, et al// Merck Sharp & Dohme Ltd, Dept Cellular & Molec Biol, W Point, Pa 19486, USA
Infect Immunity 1992 **60** (12) 4977
 Immunogenicity of conjugate vaccines consisting of pneumococcal capsular polysaccharide types 6B, type 14, type 19F, and type 23F and a meningococcal outer membrane protein complex
- Vorotynskaya SL, Vitovskaya GA, Ananjeva EP// St Petersburg Pharmaceut Chem Inst, St Petersburg, Russia
Mikol Fitopatol 1992 **26** (5) 367
 Studies on the properties of polysaccharides produced by the yeasts *Cryptococcus luteolus* (Saito) Skinner
- Votselko SK, Pirog TP, Malashenko YP, Grinberg TA// Ukrainian Acad Sci, Inst Microbiol & Virol, Kiev, Ukraine
Microbiology-Engl Tr 1992 **61** (4) 497
 Determination of the molecular weight distribution of microbial exopolysaccharides
- Zhbankov RG// BI Stepanov Phys Inst, Prospekt Skaryna 70, Minsk 220072, Belorussia
J Mol Struct 1992 **275** 65
 Vibrational spectra and structure of monosaccharides and polysaccharides

8 LIPOPOLYSACCHARIDES

- Anderson AN, Richards JC, Perry MB// *Natl Res Council Canada, Inst Biol Sci, Ottawa, Ontario, Canada K1A 0R6
Carbohydr Res 1992 **237** 249
 Structure of the O-antigen of *Escherichia coli* 0119 lipopolysaccharide
- Chaby R, Pedron T, Girard R// *Inst Pasteur, CNRS, URA 359, Unite Immunophysiol Molec, 25 rue Docteur Roux, Paris 15, France
J Infect Dis 1993 **167** (1) 131
 Nontoxic forms of lipopolysaccharides, poorly cleared *in vivo*, are present in variable amounts in phenol-extracted endotoxins
- Gamian A, Romanowska E, Ulrich J, Defaye J// Ludwik Hirsfeld Inst Immunol & Exptl Therapy, PL-53114 Wroclaw, Poland
Carbohydr Res 1992 **236** 195
 The structure of the sialic acid-containing *Escherichia coli* O104 O-specific polysaccharide and its linkage to the core region in lipopolysaccharide
- Garegg PJ, Helland AC// Univ Stockholm, Dept Organ Chem, Arrhenius Lab, S-10691 Stockholm, Sweden
J Carbohydr Chem 1993 **12** (1) 105
 Synthesis of methyl O-(2-acetamido-2-deoxy- α -D-glucopyranosyl)-(1-2)-O- α -D-glucopyranosyl-(1U2)- α -D-galactopyranoside and of methyl O- α -D-glucopyranosyl-(1-2)-O- α -D-galactopyranosyl-(1-3)-O-[α -D-galactopyranosyl-(1-6)]- α -D-glucopyranoside, corresponding to parts of the outer core of the *Salmonella* cell wall lipopolysaccharide
- Gupta DS, Shashkov AS, Jann B, Jann K// *Max Planck Inst Immunobiol, W-7800 Freiburg, FRG
J Bacteriol 1992 **174** (24) 7963
 Structures of the O1B and O1C lipopolysaccharide antigens of *Escherichia coli*
- Hammond SM// Glaxo Spa, Dept Microbiol, Via Fleming 4, I-37100 Verona, Italy
FEMS Microbiol Lett 1992 **100** (1-3) 293
 Inhibitors of lipopolysaccharide biosynthesis impair the virulence potential of *Escherichia coli*

- Harrata AK, Domelsmith LN, Cole RB*// *Univ New Orleans, Dept Chem, New Orleans, La 70148, USA
Biol Mass Spectrom 1993 22 (1) 59
 Electrospray mass spectrometry for characterization of lipid A from *Enterobacter agglomerans*
- Haslov K, Fomsgaard A, Takayama K, Fomsgaard JS, Ibsen P, Fauntleroy MB, Stashak PW, Taylor CE, Baker PJ*// *NIAID, Immunogenet Lab, Twinbrook II Res Facil, 12441 Parklawn Dr, Rockville, Md 20852, USA
Immunobiology 1992 186 (5) 378
 Immunosuppressive effects induced by the polysaccharide moiety of some bacterial lipopolysaccharides
- Hisatsune K, Kondo S, Isshiki Y, Iguchi T, Haishima Y// Josai Univ, Sch Pharmaceut Sci, Dept Microbiol, Sakado, Saitama 35002, Japan
Biochem Biophys Res Commun 1993 190 (1) 302
 Occurrence of 2-O-methyl-N-(3-deoxy-L-glycero-tetronyl)-D-perosamine (4-amino-4,6-dideoxy-D-manno-pyranose) in lipopolysaccharide from Ogawa but not from Inaba O forms of O1 *Vibrio cholerae*
- Jann B, Shashkov AS, Gupta DS, Jann K*// *Max Planck Inst Immunbiol, Stuebweg 51, W-7800 Freiburg, FRG
Eur J Biochem 1992 210 (1) 241
 The O18-antigens (lipopolysaccharides) of *Escherichia coli* - Structural characterization of the O18A-specific, O18A1-specific, O18B-specific and O18B1-specific polysaccharides
- Karunaratne DN, Richards JC, Hancock REW*// *Univ British Columbia, Dept Microbiol, 300-6174 Univ Blvd, Vancouver, Brit Columbia, Canada V6T 1Z3
Arch Biochem Biophys 1992 299 (2) 368
 Characterization of lipid A from *Pseudomonas aeruginosa* O-antigenic B-band lipopolysaccharide by ¹D and ²D NMR and mass spectral analysis
- Kerwood DE, Schneider H, Yamasaki R*// *UCSF San Francisco, Vet Admin Med Ctr, 113A, 4150 Clement St, San Francisco, Ca 94121, USA
Biochemistry-USA 1992 31 (51) 12760
 Structural analysis of lipooligosaccharide produced by *Neisseria gonorrhoeae*, strain MS11 mk (variant A) - A precursor for a gonococcal lipooligosaccharide associated with virulence
- Kol O, Wieruszkeski JM, Strecker G, Fournet B*, Zalisz R, Smets P// *Univ Sci & Tech Lille Flandres Artois, Chim Biol Lab, CNRS, Unite Mixte 111, F-59655 Villeneuve Dascq, France
Carbohydr Res 1992 236 339
 Structure of the O-specific polysaccharide chain of *Klebsiella pneumoniae* O1K2 (NCTC-5055) lipopolysaccharide - A complementary elucidation
- Kondo S, Haishima Y, Hisatsune K*// *Josai Univ, Sch Pharmaceut Sci, Dept Microbiol, Sakado, Saitama 35002, Japan
FEMS Microbiol Lett 1993 106 (1) 93
 Location of fructose in lipopolysaccharide isolated from O1 *Vibrio cholerae* NIH-41R
- Kovac P// NIDDK, Bethesda, Md 20892, USA
J Carbohydr Chem 1992 11 (8) 999
 Synthesis of ligands related to the O-specific antigen of *Shigella dysenteriae* type 1. 4. Enhanced stereoselectivity of α -D-galactosylation in the synthesis of the sequence α -D-Galp-(1-3)- α -D-GlcPNac, allowing further extensions of the chain at C-2'
- Lacroix RP, Duncan JR, Jenkins RP, Leitch RA, Perry JA, Richards JC*// *Nat'l Res Council Canada, Inst Biol Sci, Ottawa, Ontario, Canada K1A 0R6
Infec Immunity 1993 61 (1) 170
 Structural and serological specificities of *Pasteurella haemolytica* lipopolysaccharides
- Lam JS, Graham LL, Lightfoot J, Dasgupta T, Beveridge TJ// Univ Guelph, Coll Biol Sci, Dept Microbiol, Guelph, Ontario, Canada N1G 2W1
J Bacteriol 1992 174 (22) 7159
 Ultrastructural examination of the lipopolysaccharides of *Pseudomonas aeruginosa* strains and their isogenic rough mutants by freeze substitution
- Mielniczuk Z, Alugupalli S, Mielniczuk E, Larsson L*// *Univ Lund, Dept Med Microbiol, Solvegatan 23, S-22362 Lund, Sweden
J Chromatogr 1992 623 (1) 115
 Gas chromatography-mass spectrometry of lipopolysaccharide 3-hydroxy fatty acids - Comparison of pentafluorobenzoyl and trimethylsilyl methyl ester derivatives
- Mizuno D, Soma GI*// *Teikyo Univ, Biotechnol Res Ctr, 907 Nogawa, Miyamae ku, Kawasaki 216, Japan
Mol Biother 1992 4 (4) 166
 Oral or percutaneous administration of lipopolysaccharide of small molecular size may cure various intractable diseases - A new version of Coley's toxin
- Oxley D, Wilkinson SG*// *Univ Hull, Sch Chem, Hull HU6 7RX, England
FEMS Microbiol Lett 1992 99 (2-3) 209
 Structure of a neutral glycan from the lipopolysaccharides of reference strains for *Serratia marcescens* serogroup O2 and serogroup O3
- Ravenscroft N, Walker SG, Dutton GGS, Smit J*// *Univ British Columbia, Dept Microbiol, Vancouver, Brit Columbia, Canada V6T 1Z3
J Bacteriol 1992 174 (23) 7595
 Identification, isolation, and structural studies of the outer membrane lipopolysaccharide of *Caulobacter crescentus*
- Seltmann G, Knirel YA, Shashkov AS, Tschape H// Bundesgesundheitsamts, Robert Koch Inst, Bereich Wernigerode, Burgstr 37, O-3700 Wernigerode, FRG
Zbl Bakt-Int J Med Microbiol 1992 277 (4) 419
 Characterization of a lipopolysaccharide encoded by a recombinant *Shigella sonnei* plasmid in *Escherichia coli* K-12
- Shimizu T, Iwamoto Y, Yanagihara Y, Ikeda K, Achiwa K// Shizuoka Univ, Dept Microbiol, Sch Pharmaceut Sci, 52-1 Yada, Shizuoka 422, Japan
Int J Immunopharmacol 1992 14 (8) 1415
 Combined effects of synthetic lipid A analogs or bacterial lipopolysaccharide with glucosaminylmuramyl dipeptide on antitumor activity against Meth-A fibrosarcoma in mice
- Smith H, Cole JA, Parsons NJ// Univ Birmingham, Sch Med, Birmingham B15 2TT, England
FEMS Microbiol Lett 1992 100 (1-3) 287
 The sialylation of gonococcal lipopolysaccharide by host factors - A major impact on pathogenicity
- Sourek J, Oravec C, Mannel DS// Inst Hyg & Epidemiol, CS-10042 Prague, Czechoslovakia
Folia Microbiol Prague 1992 37 (6) 450
 Bacterial endotoxins as potential antitumor agents - Tumor mass loss in mice treated with bacterial lipopolysaccharides of *Shigella dysenteriae* serovar 1
- Stanislavsky ES, Makarenko TA, Kozhenova TE// II Mechnikov Vaccine & Serum Inst, Moscow, Russia
Fems Microbiol Immunol 1992 105 (4) 181
 Specific and non-specific mouse protection induced by different chemotypes of the *Pseudomonas aeruginosa* lipopolysaccharides
- Tsuchido T, Takeuchi A, Takano M// Kansai Univ, Fac Engr, Dept Biotechnol, Yamate cho, Suita, Osaka 564, Japan
J Appl Bacteriol 1992 73 (6) 531
 Synthesis of lipopolysaccharide by *Escherichia coli* cells recovering from sublethal heat stress
- Vinogradov EV, Holst O*, Thomas-Oates JE, Broady KW, Brade H// *Forschungsinstit Borstel, Inst Exptl Biol & Med, Div Biochem Microbiol, Parkallee 22, W-2061 Borstel, FRG
Eur J Biochem 1992 210 (2) 491
 The structure of the O-antigenic polysaccharide from lipopolysaccharide of *Vibrio cholerae* strain H11 (non-O1)
- Watson DC, Robbins JB, Szu SC// Johns Hopkins Univ, Sch Med, Dept Pediat, Blalock 1111, 600 N Wolfe St, Baltimore, Md 21205, USA
Infec Immunity 1992 60 (11) 4679
 Protection of mice against *Salmonella typhimurium* with an O-specific polysaccharide-protein conjugate vaccine
- Yao ZJ, Liu HM, Valvano MA*// *Univ Western Ontario, Hlth Sci Ctr, Dept Microbiol & Immunol, London, Ontario, Canada N6A 5C1
J Bacteriol 1992 174 (23) 7500
 Acetylation of O-specific lipopolysaccharides from *Shigella flexneri* 3a and *Shigella flexneri* 2a occurs in *Escherichia coli* K-12 carrying cloned *S. flexneri* 3a and *S. flexneri* 2a rfb genes

9 STARCH

- Aboshosha MH, Ibrahim NA// Natl Res Ctr, Div Text Res, Cairo, Egypt
Starch 1992 44 (12) 466
 Synthesis and characterization of starch-glycidyl methacrylate-acrylic acid cation exchange composites
- Asada H, Suzuki K// Nohon Shokken Co Ltd, 5-35 Higashitoyu-cho, Imabari, Ehime 794, Japan
J Jpn Soc Food Sci Technol 1992 39 (10) 929
 Influences of concentration, crosslinking level and origin of starches on flow

properties of gelatinized modified starch suspensions

Autio K, Pessa E, Suortti T, Poutanen K// Tech Res Ctr Finland, Food Res Lab, POB 203, SF-02151 Espoo, Finland

Food Hydrocolloid 1992 **6** (4) 371

Characterization of acid-hydrolyzed starches for the confectionery industry

Autio K, Suortti T, Hamunen A, Poutanen K// VTT, Food Res Lab, POB 203, SF-02151 Espoo, Finland

Starch 1992 **44** (10) 393

Microstructural and physicochemical properties of oxidized potato starch for paper coating

Autio K, Poutanen K, Suortti T, Pessa E// VTT, Tech Res Ctr Finland, Food Res Lab, POB 203, SF-02151 Espoo, Finland

Food Struct 1992 **11** (4) 315

Heat-induced structural changes in acid-modified barley starch dispersions

Baron JF// Hop La Pitie Salpetriere, Dept Anesthesie Reanimat, Serv Prof P Viars, 47 Blvd Hop, F-75013 Paris, France

Ann Fr Anesth Reanim 1992 **11** (5) 509

Pharmacology of low molecular weight hydroxyethylstarches (French, English Abstract)

Beretka J// CSIRO, Div Bldg Construct & Engr, POB 56, Highett, Vic 3190, Australia

J Chem Technol Biotechnol 1992 **55** (3) 269

By-product gypsum from the tapioca starch process

Boschreig F, Marcote MJ, Minana MD, Cabello ML// *Hosp Univ Le Fe, Unidad Metab Congenitas, Avda Campanar, E-46009 Valencia, Spain

Talanta 1992 **39** (11) 1493

Separation and identification of sugars and maltodextrins by thin layer chromatography - Application to biological fluids and human milk

Child NS// Address not available.

Int Sugar J 1992 **94** (1127) 268

Corn wet-milling in the USA versus starch production in Europe

Ciesla K, Zoltowski T, Mogilevski LY// Inst Nucl Chem & Technol, Dorodna 16, PL-03195 Warsaw, Poland

Starch 1992 **44** (11) 419

SAXA investigations of structural changes after gamma-ray irradiation of potato starch and starch suspensions

De Moura JM// Univ Idaho, Moscow, Id 83843, USA

J Chem Educ 1992 **69** (10) 860

New source for starch solutions - Biodegradable pellets

Desmangles RJP, Flipo D, Fournier M, Mateescu MA// *Univ Quebec, Dept Chim, Case Postale 8888 Succursale A, Montreal, Quebec, Canada H3C 3P8

J Chromatogr-Biomed Appl 1992 **584** (1) 121

Fast separation of macrophages by retention on cross-linked amylose and release by enzymatic amyolysis of the chromatographic material

Eisenhaber F, Schulz W// European Molec Biol Lab, Biocomp Unit, Meyerhofstr 1, Postfach 102209, W-6900 Heidelberg, Germany

Biopolymers 1992 **32** (12) 1643

Monte Carlo simulation of the hydration shell of double-helical amylose - A left-handed antiparallel double helix fits best into liquid water structure

Eliasson AC, Kim HR// Univ Lund, Ctr Chem, Dept Food Technol, POB 124, S-22100 Lund, Sweden

J Texture Stud 1992 **23** (3) 279

Changes in rheological properties of hydroxypropyl potato starch pastes during freeze-thaw treatments. 1. A rheological approach for evaluation of freeze-thaw stability

Ferrero C, Martino MN, Zaritzky NE// Natl Univ La Plata, Fac Ciencias Exactas, Ctr Invest & Desarrollo Criotechnol Alimentos, RA-1900 La Plata, Argentina

Food Struct 1992 **11** (3) 237

Light microscopy measurements of ice recrystallization in frozen corn starch pastes using isothermal freeze fixation

Franco CML, Ciacco CF// UNESP, Dept Engr & Technol Alimentos, Caixa Postal 136, BR-15055 S Jose Rio P, Brazil

Starch 1992 **44** (11) 422

Factors that affect the enzymatic degradation of natural starch granules - Effect of the size of the granules

Fujita S, Iida T, Fujiyama G// Tsu City Coll, Dept Food & Nutr, Ishinden 157, Tsu, Mie 51401, Japan

Starch 1992 **44** (12) 456

Relationship between gelatinizing temperature and enthalpy of starch from

gramineous crops by differential scanning calorimetry

Glenn GM, Johnston RK// USDA, ARS, Western Reg Res Ctr, 800 Buchanan St, Albany, Ca 94710, USA

Food Struct 1992 **11** (3) 187

Mechanical properties of starch, protein and endosperm and their relationship to hardness in wheat

Godet MC, Tran V, Delage MM, Buleon A// INRA, Physicochim Macromolec Lab, BP 527, F-44072 Nantes, France

Int J Biol Macromol 1993 **15** (1) 11

Molecular modelling of the specific interactions involved in the amylose complexation by fatty acids

Gorinstein S, Lii CY// Hebrew Univ Jerusalem, Sch Pharm, Dept Pharmaceut Chem, POB 12065, IL-91120 Jerusalem, Israel

Starch 1992 **44** (12) 461

The effects of enzyme hydrolysis on the properties of potato, cassava and amaranth starches

Greizerstein HB, Syracuse JA, Kostyniak PJ// SUNY Buffalo, Toxicol Res Ctr, Buffalo, NY 14260, USA

Polym Degrad Stabil 1993 **39** (2) 251

Degradation of starch modified polyethylene bags in a compost field study

Gudmundsson M, Eliasson AC// Univ Lund, Dept Food Technol, Box 124, S-22100 Lund, Sweden

Starch 1992 **44** (10) 379

Comparison of thermal and viscoelastic properties of 4 waxy starches and the effect of added surfactant

Gurruchaga M, Goni I, Valero M, Guzman GM// Univ Pais Vasco, Fac Quim San Sebastian, Dipt Ciencia & Tecnol Polimeros, Apdo 1072, E-20080 San Sebastian, Spain

J Appl Polymer Sci 1993 **47** (6) 1003

Study of the acid hydrolysis of the starch graft copolymers with hydroxylic methacrylates

Hashim DBM, Moorthy SN, Mitchell JR*, Hill SE, Linfoot KJ, Blanshard JMV// *Univ Nottingham, Dept Appl Biochem & Food Sci, Loughborough LE12 5RD, England

Starch 1992 **44** (12) 471

The effect of low levels of antioxidants on the swelling and solubility of cassava starch

Hebeish A, El-Sisy F, Abdel-Hafiz SA, Abdel-Rahman AA, El-Rafie MH// Natl Res Ctr, Div Text Res, Cairo, Egypt

Starch 1992 **44** (10) 388

Oxidation of maize and rice starches using sodium chlorite along with formaldehyde

Hicsasmaz Z, Clayton JT// Middle East Tech Univ, Dept Food Engr, Ankara 06531, Turkey

Food Struct 1992 **11** (2) 115

Characterization of the pure structure of starch-based food materials

Hicsasmaz Z, Clayton JT// Middle East Tech Univ, Dept Food Engr, Ankara 06531, Turkey

J Food Eng 1993 **18** (2) 127

Applicability and comparison of various techniques for measurement of wettability and contact angles between oil-based liquid and starch-based solid food materials

Hildebrand U, Cech F, Rupp D, Sommermeyer K// Fresenius Ag, Chem Pharmazeut Forsch & Entwicklung, Postfach 1809, W-6370 Oberursel, FRG

Starch 1992 **44** (11) 426

Systematic GC/MS analysis of 1,2-O-ethylene glucose derivatives in hydrolates of hydroxyethyl starch (German, English Abstract)

Hirai T, Hirai M, Hayashi S, Ueki T// Shinshu Univ, Fac Text Sci & Technol, 3-15-1 Tokida, Ueda, Nagano 386, Japan

Macromolecules 1992 **25** (24) 6699

Study of the conformational change of amylose induced by complexation with iodine using synchrotron X-ray small-angle scattering

Hua L, Lelievre J// Univ Manitoba, Dept Food Sci, Winnipeg, Manitoba, Canada R3T 2N2

Cereal Chem 1992 **69** (6) 597

Differential scanning calorimetric and rheological study of the gelatinization of starch granules embedded in a gel matrix

Itoh T, Matsumoto M, Miyamoto T*, Suzuki H// *Kyoto Univ, Inst Chem Res, Uji, Kyoto 611, Japan

Polym Int 1993 **30** (3) 345

Monolayers of amylose ester derivatives

- Jankowski T// Univ Agr Poznan, Inst Food Technol, Wojska Polskiego 31, PL-60624 Poznan, Poland
Int J Food Sci Technol 1992 27 (6) 637
 Influence of starch retrogradation on the texture of cooked potato tuber
- Jarvis MC, MacKenzie E, Duncan HJ// Univ Glasgow, Glasgow G12 8QQ, Scotland
Potato Res 1992 35 (2) 93
 The textural analysis of cooked potato .2. Swelling pressure of starch during gelatinisation
- Jovanovich G, Zamponi RA, Lupano CE, Anon MC*// *Natl Univ La Plata, Fac Ciencias Exactas, Ctr Invest & Desarrollo Crioteconol Alimentos, RA-1900 La Plata, Argentina
J Agr Food Chem 1992 40 (10) 1789
 Effect of water content on the formation and dissociation of the amylose-lipid complex in wheat flour
- Kadykova EL, Gubina SM// Russian Acad Sci, Inst Chem Nonaqueous Solut, Ivanovo, Russia
J Appl Chem-Engl Tr 1992 65 (4) 725
 Hydrolytic stability of starch gels in an alkaline medium
- Kalichevsky MT, Jaroszkiewicz EM, Blanshard JMV*// *Univ Nottingham, Sch Agr, Dept Appl Biochem & Food Sci, Loughborough LE12 5RD, England
Polymer 1993 34 (2) 346
 A study of the glass transition of amylopectin sugar mixtures
- Karathanos VT, Saravacos GD// Agr Univ Athens, Dept Food Sci & Technol, GR-11855 Athens, Greece
J Food Engn 1993 18 (3) 259
 Porosity and pore size distribution of starch materials
- Karkalas J, Tester RF, Morrison WR// Univ Strathclyde, Dept Biosci & Biotechnol Food Sci, 131 Albion St, Glasgow G1 1SD, Scotland
J Cereal Sci 1992 16 (3) 237
 Properties of damaged starch granules. 1. Comparison of a micromethod for the enzymic determination of damaged starch with the standard AACC and Ferrand methods
- Katsuta K, Nishimura A, Miura M// Niigata Univ, Fac Educ, 8050 Ikarashi Nino-cho, Niigata 95021, Japan
Food Hydrocolloids 1992 6 (4) 387
 Effects of saccharides on stabilities of rice starch gels. 1. Monosaccharides and disaccharides
- Katsuta K, Nishimura A, Miura M// Niigata Univ, Fac Educ, 8050 Ikarashi Nino-cho, Niigata 95021, Japan
Food Hydrocolloids 1992 6 (4) 399
 Effects of saccharides on stabilities of rice starch gels .2. Oligosaccharides
- Kaur I, Misra BN, Barsola R, Singla K// Himachal Pradesh Univ, Dept Chem, Simla 171005, Himachal Pradesh, India
J Appl Polymer Sci 1993 47 (7) 1165
 Viscometric studies of starch-G-polyacrylamide composites
- Klinger RW, Zimbalski M// TFH Berlin, Kurfurstenstr 141, W-1000 Berlin 30, FRG
Starch 1992 44 (11) 414
 Molecular characterization of amyloses of different origins (German, English Abstract)
- Kotke MK, Chueh HR, Rhodes CT// Univ Rhode Isl, Dept Pharmaceut, Kingston, RI 02881, USA
Drug Develop Ind Pharm 1992 18 (20) 2207
 Comparison of disintegrant and binder activity of 3 corn starch products
- Kresin M, Rau G// Rhein Westfal TH Aachen, Helmholtz Inst Biomed Tech, Paulweisstr 30, W-5100 Aachen, FRG
Cryo-Lett 1992 13 (6) 371
 The glass transition of hydroxyethyl starch
- Lapasin R, Priel S, Tracanelli P// Univ Trieste, Dept Chem Environm & Raw Mat Engr, Via Valerio 2, I-34127 Trieste, Italy
J Appl Polym Sci 1992 46 (10) 1713
 Carboxymethyl starch - A rheological study
- Leloup VM, Colonna P, Ring SG// INRA, Biochim & Technol, Glucides Lab, BP 527, F-44026 Nantes 03, France
J Cereal Sci 1992 16 (3) 253
 Physicochemical aspects of resistant starch
- Lichtenthaler FW, Immel S, Martin D, Muller V// TH Darmstadt, Inst Organ Chem, Petersenstr 22, W-6100 Darmstadt, FRG
Starch 1992 44 (12) 445
 Some disaccharide-derived building blocks of potential industrial utility
- Liu H, Lelievre J// Univ Manitoba, Dept Food Sci, Winnipeg, Manitoba, Canada R3T 2N2
Carbohyd Polym 1993 20 (1) 1
 A model of starch gelatinization linking differential scanning calorimetry and birefringence measurements
- Marshall WE// USDA ARS, South Reg Res Ctr, New Orleans, La 70179, USA
Cereal Chem 1992 69 (6) 632
 Effect of degree of milling of brown rice and particle size of milled rice on starch gelatinization
- Mempel W// Address not available.
Infusionstherapie 1992 19 (6) 268
 Cryopreservation of red blood cells with hydroxyethyl starch - A procedure for clinical routine (Editorial)
- Miura M, Nishimura A, Katsuta K// Mitsubishi Kasei Corp, Res Ctr, Specialty Chem Lab, 1000 Komoshida-cho, Midori ku, Yokohama 227, Japan
Food Struct 1992 11 (3) 225
 Influence of addition of polyols and food emulsifiers on the retrogradation rate of starch
- Morgan KR, Furneaux RH, Stanley RA// Ind Res Ltd, POB 31-310, Lower Hutt, New Zealand
Carbohyd Res 1992 235 15
 Observation by solid-state ¹³C CP MAS NMR spectroscopy of the transformations of wheat starch associated with the making and staling of bread
- Ndon UJ, Levine AD, Bradley BS// Iowa State Univ Sci & Technol, Dept Civil Engr, Ames, Ia 50011, USA
Water Sci Technol 1992 26 (9-11) 2089
 Evaluation of biodegradability of starch-based plastics
- Nebesny E// Tech Univ Lodz, Div Food Technol, V1-30, Stefanowskistr 4-10, PL-90924 Lodz, Poland
Starch 1992 44 (10) 398
 Changes of carbohydrates and molecular structure of dextrans during enzymatic liquefaction of starch
- Niemann C, Whistler RL*// *320 Laurel Dr, West Lafayette, In 47906, USA
Starch 1992 44 (11) 409
 Effect of acid hydrolysis and ball mining on porous corn starch
- Noda T, Takahata Y, Nagata T// Minist Agr Forestry & Fisheries, Kyushu Natl Agr Expt Stn, 2421 Suya, Nishigoshi, Kumamoto 86111, Japan
Starch 1992 44 (10) 365
 Properties of sweet potato starches from different tissue zones
- Noda T, Takahata Y, Nagata T// Minist Agr Forestry & Fisheries, Kyushu Natl Agr Expt Stn, 2421 Suya, Nishigoshi, Kumamoto 86111, Japan
Starch 1992 44 (11) 405
 Developmental changes in properties of sweet potato starches
- Ofoli RY, Morgan RG, Steffe JF// Michigan State Univ, Dept Agr Engr, East Lansing, Mi 48824, USA
J Food Engn 1993 18 (3) 297
 Characterization of the swelling of starch doughs during extrusion
- Ojimekwe PC, Ayemnor GS// IMO State Univ, Sch Food Sci & Technol, PMB 2000, Okigwe, Nigeria
J Food Sci Technol-Mysore 1992 29 (5) 319
 Oligosaccharide composition and functional properties of flour and starch isolates from 4 cultivars of bambarra groundnut seeds
- Papadimitriou E, Efentakis M*, Choulis NH// *Univ Athens, Sch Pharm, Dept Pharmaceut Technol, 104 Solonos St, GR-10690 Athens, Greece
Int J Pharm 1992 86 (2-3) 131
 Evaluation of maltodextrin as excipients for direct compression tablets and their influences on the rate of dissolution
- Rao PA, Nussinovitch A, Chinachoti P*// *Univ Massachusetts, Dept Food Sci, Amherst, Ma 01003, USA
Cereal Chem 1992 69 (6) 613
 Effects of selected surfactants on amylopectin recrystallization and on recoverability of bread crumb during storage
- Raphaelides SN// TEI, Sch Food Technol & Nutr, Salonika, Greece
J Texture Stud 1992 23 (3) 297
 Viscoelastic behaviour of amylose-fatty acid gels
- Ryu GH, Walker CE*// *Kansas State Univ Agr & Appl Sci, Dept Grain Sci & Ind, Manhattan, KS 66506, USA
Food Sci Technol-Lebensm Wiss 1992 25 (6) 514
 Physical properties of wheat flour extrudates produced with shortening and

starch plus several baking ingredients

Safokantanka O, Owusunipah J// Univ Sci & Technol, Dept Crop Sci, Kumasi, Ghana

J Sci Food Agr 1992 **60** (1) 99

Cassava varietal screening for cooking quality - Relationship between dry matter, starch content, mealiness and certain observations of the raw and cooked tuber

Sala R, Tomka I// Fluntera Ag, Nelkenstr 15, CH-8005 Zurich, Switzerland
Angew Makromol Chem 1993 **204** 161

Permeation of gases in polymeric membranes made of thermoplastic starch (German, English Abstract)

Schittenhelm S, Menge-Hartmann U// Bundesforsch Anstalt Landwirtschaft, Inst Pflanzenbau, Braunschweig, FRG

Landbauforsch Volkenrode 1992 **42** (3) 117

Starch and amylose content as well as size and morphology of starch granules from tuber-bearing *Solanum* species (German, English Abstract)

Shefer A, Shefer S, Kost J, Langer R// *MIT, Dept Elect Engr & Comp Sci, 77 Massachusetts Ave, E25 342, Cambridge, Ma 02139, USA

Macromolecules 1992 **25** (25) 6756

Structural characterization of starch networks in the solid state by cross-polarization magic-angle-spinning ^{13}C NMR spectroscopy and wide angle X-ray diffraction

Sokhey AS, Chinnaswamy R// *Midwest Grain Pod Inc, 1300 Main St, Atchison, Ks 66002, USA

Food Struct 1992 **11** (4) 361

Physicochemical properties of irradiation modified starch extrudates

Sputtek A, Rau G// Rhein Westfal TH Aachen, Helmholtz Inst Biomed Tech, Pauwelsstr 30, W-5100 Aachen, FRG

Infusionstherapie 1992 **19** (6) 269

Cryopreservation of human red blood cells in presence of hydroxyethyl starch. 1. Procedure

Sputtek A, Bacher C, Langer R, Kron W, Henrich HA, Rau G// Rhine Westfal TH Aachen, Helmholtz Inst Biomed Tech, Pauwelsstr 30, W-5100 Aachen, FRG

Infusionstherapie 1992 **19** (6) 276

Cryopreservation of human red blood cells in presence of hydroxyethyl starch. 2. Viability analytics

Sudhaker V, Singhal RS, Kulkarni PR// Univ Bombay, Dept Chem Technol, Div Food & Fermentat Technol, Bombay 400019, India

Starch 1992 **44** (10) 369

Starch-gum interactions - Formulations and functionality using amaranth corn starch and CMC

Szczodrak J, Pomeranz Y// Marie Curie Skłodowska Univ, Dept Appl Microbiol, PL-20033 Lublin, Poland

Cereal Chem 1992 **69** (6) 626

Starch-lipid interactions and formation of resistant starch in high-amylose barley

Tester RF, Morrison WR// Univ Strathclyde, Dept Biosci & Biotechnol Food Sci, Glasgow G1 1SD, Scotland

Cereal Chem 1992 **69** (6) 654

Swelling and gelatinization of cereal starches. 3. Some properties of waxy and normal nonwaxy barley starches

Umbach SL, Davis EA, Gordon J, Callaghan PT// Univ Minnesota, Dept Food Sci & Nutr, 1334 Eckles Ave, St Paul, Mn 55108, USA

Cereal Chem 1992 **69** (6) 637

Water self-diffusion coefficients and dielectric properties determined for starch-gluten-water mixtures heated by microwave and by conventional methods

Vera-Pacheco M, Vazquez-Torres H*, Canche-Escamilla G// *Univ Autonoma Metropolitana Iztapalapa, Dept Fis, Apdo Post 55-534, Mexico City 09340, DF, Mexico

J Appl Polym Sci 1993 **47** (1) 53

Preparation and characterization of hydrogels obtained by grafting of acrylonitrile onto cassava starch by ceric ion initiation

Wu JY, Eads TM// *Purdue Univ, Dept Food Sci, West Lafayette, In 47907, USA

Carbohydr Polym 1993 **20** (1) 51

Evolution of polymer mobility during ageing of gelatinized waxy maize starch - A magnetization transfer ^1H -NMR study

Wulff G, Kubik S// Univ Dusseldorf, Inst Organ Chem & Makromolek Chem, Univ Str 1, W-4000 Dusseldorf 1, FRG

Carbohydr Res 1992 **237** 1

Helical amylose complexes with organic compounds. 2. Circular dichroism and ultraviolet spectroscopy of complexes of amylose

Yamasaki N, Ikebe K// Kyushu Univ, Fac Agr, Biochem Lab, Higashi ku, Fukuoka 812, Japan

Biosci Biotechnol Biochem 1992 **56** (12) 2091

A new amylose derivative for the preparation of protein-carbohydrate conjugates

Yu SY, Low SL// Univ Pertanian, Fac Food Sci & Biotechnol, 43400 UPM Serdang, Selangor, Malaysia

Int J Food Sci Technol 1992 **27** (5) 593

Utilization of pregelatinized tapioca starch in the manufacture of a snackfood, fish cracker (keropok)

Zaitseva EA, Atyaksheva LF, Poltorak OM, Chukhrai ES// Moscow MV Lomonosov State Univ, Dept Chem, Moscow, Russia

Zh Fiz Khim 1992 **66** (11) 3123

Stabilization of heterogeneous biocatalysts via amylose (Russian)

Zhang W, Jackson DS// Kansas State Univ Agr & Appl Sci, Dept Grain Sci & Ind, Manhattan, Ks 66506, USA

J Food Sci 1992 **57** (6) 1428

Retrogradation behavior of wheat starch gels with differing molecular profiles

10 STARCH-DEGRADING ENZYMES

Aniche GN// Anambra State Univ Technol, Dept Appl Microbiol & Brewing, Enugu, Nigeria

J Inst Brew 1993 **99** (1) 29

Determination of β -amylase (Letter)

Arasaratnam V, Balasubramaniam K// Univ Jaffna, Fac Med Dept Biochem, Kokuvil, Sri Lanka

J Microbial Biotechnol 1992 **7** (1) 37

Synergistic action of α -amylase and glucoamylase on raw starch

Bock K, Skrydstrup T// Carlsberg Lab, Dept Chem, Gamle Carlsberg Vej 10, DK-2500 Copenhagen, Denmark

Indian J Chem Sect B 1992 **31** (12) 869

The substrate specificity of amyloglucosidase (AMG). 5. The significance of key polar groups in enzymatic hydrolysis

Castro GR, Garcia GF, Sineriz F// Natl Univ Tucuman, PROIMI, Mircen, Fac Bioquim Quim & Farm, Catedra Microbiol Super, Tucuman, Argentina

J Appl Bacteriol 1992 **73** (6) 520

Extracellular isoamylase produced by *Bacillus circulans* MIR-137

Chandrashekar KR, Kaveriappa KM// Mangalore Univ, Dept Biosci, Mangalore 574199, India

J Microbial Biotechnol 1992 **7** (1) 22

Production of extracellular amylase by *Lunulospora curvula* and *Phalangispora constricta*

Decordt S, Hendrickx M*, Maesmans G, Tobback P// *Katholieke Univ Leuven, Fac Agr Sci, Food Technol Lab, Kardinaal Mercierlaan 92, B-3001 Heverlee, Belgium

Int J Food Sci Technol 1992 **27** (6) 661

Immobilized α -amylase from *Bacillus licheniformis* - A potential enzymatic time temperature integrator for thermal processing

Dias AAM, Andrade CMMD, Linardi VR// *Univ Fed Minas Gerais, Inst Ciencias Biol, Dept Microbiol, CX P 2486, BR-30161 Belo Horizonte, MG, Brazil

Rev Microbiol 1992 **23** (3) 189

Production of amylases by *Candida* in liquid and semisolid fermentation

Doyen C, Lauriere C// Physiologie Organes Vegetaux Lab, CNRS, 4 Ter Route Gardes, F-92190 Meudon, France

Phytochemistry 1992 **31** (11) 3697

β -amylases in germinating maize grains - Purification, partial characterization and antigenic relationships

El-Aassar SA, Omar SH*, Gouda MK, Ismail AM, Abdel-Fattah AF// *Univ Alexandria, Fac Sci, Dept Bot & Microbiol, Alexandria, Egypt

Appl Microbiol Biotechnol 1992 **38** (3) 312

Purification of α -amylase from *Bacillus lentus* cultures

German A// Address not available.

Bull Acad Natl Med 1992 **176** (6) 857

Application for use of bacterial α -amylase and pullulanase for specialty breads (French, English Abstract)

Gorg A, Postel W, Weiss W// Tech Univ Munich, Lehrstuhl Allgemeine Le-

- bensmitteltechnol, W-8050 Freising, FRG
Electrophoresis 1992 13 (9-10) 759
 Detection of polypeptides and amylase isoenzyme modifications related to malting quality during malting process of barley by 2-dimensional electrophoresis and isoelectric focusing with immobilized pH gradients
- Gruchala L, Pomeranz Y*// *Washington State Univ, Dept Food Sci & Human Nutr, Pullman, Wa 99164, USA
J Food Sci 1992 57 (6) 1433
 Raw starch degrading amylase(s) affect enzyme-resistant starch
- Ikura Y, Horikoshi K// Inst Phys & Chem Res, Wako, Saitama 35101, Japan
Biosci Biotechnol Biochem 1992 56 (12) 2064
 pH optima of intracellular, membrane-bound, and extracellular amylases from alkalophilic bacilli
- Ishimaru K, Kamezono Y, Teshima S, Hayashi Y// Yoshitomi Pharmaceut Ind Ltd, Chem Res Labs, Yoshitomi, Fukuoka 871, Japan
Biosci Biotechnol Biochem 1992 56 (10) 1552
 Enzymatic synthesis of 2-chloro-4-nitrophenyl 4,6-O-3-ketobutylidene β -malto-pentaoside, a substrate for α -amylase
- Jaleel SA, Srikanth S, Karanth BG// Cent Food Technol Res Inst, Fermentat Technol & Bioengn Discipline, Mysore 570013, Karnataka, India
J Microbial Biotechnol 1992 7 (2) 1
 Production of fungal amyloglucosidase by solid state fermentation - Influence of some parameters
- Janecek S, Balaz S// Slovak Tech Univ, Fac Chem Technol, Dept Biochem Technol, CS-81237 Bratislava, Czechoslovakia
Chem Listy 1992 86 (11) 830
 Structure and stability of α -amylases (Czech, English Abstract)
- Jin FX, Li XZ, Zhang CZ, Shu Q, Wu H, Liu ZQ, Zhang XZ, Wu XX, Cheng YH// Dalian Coll Light Ind, Dept Food Technol, Dalian 116601, Peoples Rep China
J Gen Appl Microbiol Tokyo 1992 38 (4) 293
 Purification and characterization of a thermostable α -amylase from *Bacillus* sp JF strain
- Kawaguchi T, Nagae H, Murao S, Arai M// Univ Osaka Prefecture, Coll Agr, Dept Agr Chem, Sakai, Osaka 593, Japan
Biosci Biotechnol Biochem 1992 56 (11) 1792
 Purification and some properties of a Haim-sensitive α -amylase from newly isolated *Bacillus* sp No 195
- Kim IC, Cha JH, Kim JR, Jang SY, Seo BC, Cheong TK, Lee DS, Choi YD, Park KH*// *Seoul Natl Univ, New Biomat Agr Res Ctr, Suwon 441744, South Korea
J Biol Chem 1992 267 (31) 22108
 Catalytic properties of the cloned amylase from *Bacillus licheniformis*
- Lachmund A, Urmann U, Minol K, Wirsol S, Ruttowski E*// *TH Darmstadt, Inst Biochem, Petersenstr 22, W-6100 Darmstadt, FRG
Curr Microbiol 1993 26 (1) 47
 Regulation of α -amylase formation in *Aspergillus oryzae* and *Aspergillus nidulans* transformants
- Lehmann J, Schmidt-Schuchardt M, Steck J// Univ Freiburg, Inst Organ Chem & Biochem, Albertstr 21, W-7800 Freiburg, FRG
Carbohydr Res 1992 237 177
 Strong competitive inhibition of porcine pancreatic α -amylase by aminodeoxy derivatives of maltose and maltotriose
- Lin WL, Feldberg RS, Clark ED*// *Tufts Univ, Dept Chem Engr, Medford, Ma 02155, USA
Biotechnol Bioeng 1993 41 (2) 273
 Kinetics of cell growth and heterologous glucoamylase production in recombinant *Aspergillus nidulans*
- Liu SC, Ogretmen B, Chuang YY, Stark BC*// *ITT, ITT Ctr, Dept Biol, Chicago, Il 60616, USA
Appl Microbiol Biotechnol 1992 38 (2) 239
 Selection and characterization of α -amylase-overproducing recombinant *Escherichia coli* containing the bacterial hemoglobin gene
- MacGregor AW, Morgan JE// Canadian Grain Commiss, Grain Res Lab, 1404-303 Main St, Winnipeg, MB, Canada R3C 3G8
J Cereal Sci 1992 16 (3) 267
 Determination of specific activities of malt α -amylases
- Mori H, Tatematsu A, Matsui H, Takayanagi T, Honma M, Chiba S// Hokkaido Univ, Fac Agr, Dept Biosci & Chem, Sapporo, Hokkaido 060, Japan
Biosci Biotechnol Biochem 1992 56 (9) 1499
- Starch-hydrolyzing enzymes in germinating kidney bean
- Mukhopadhyay A// Thapar Corp Res & Dev Ctr, Patiala 147001, India
Biotechnol Technique 1992 6 (6) 507
 A novel technique for determining half life of α -amylase enzyme during liquefaction of starch
- Neustroev KN, Golubev AM, Firsov LM, Ibatullin FM, Protasevich II, Makarov AA// Petersburg Nucl Phys Inst, Dept Molec & Radiat Biophys, St Petersburg 188350, Russia
FEBS Lett 1993 316 (2) 157
 Effect of modification of carbohydrate component on properties of glucoamylase
- Noda T, Ohtani T, Shiina T, Nawa Y*// *Minist Agr Forestry & Fisheries, Kyushu Natl Agr Expt Stn, Suya 2421, Nishigoshi, Kumamoto 86111, Japan
J Food Sci 1992 57 (6) 1348
 Semi-continuous hydrolysis of sweet potato raw starch by *Chalara paradoxa* glucoamylase
- Olsen K, Svensson B, Christensen U*// *Univ Copenhagen, Chem Lab 4, Univ Spk 5, DK-2100 Copenhagen, Denmark
Eur J Biochem 1992 209 (2) 777
 Stopped-flow fluorescence and steady-state kinetic studies of ligand-binding reactions of glucoamylase from *Aspergillus niger*
- Padmanbhan S, Ramakrishna M, Lonsane BK*, Krishnaiah MM// *Cent Food Technol Res Inst, Mysore 570013, Karnataka, India
Lett Appl Microbiol 1992 15 (6) 235
 Enhanced leaching of product at elevated temperatures - α -amylase produced by *Bacillus licheniformis* M27 in solid state fermentation system
- Sakai Y, Osada K, Takahashi F*, Takada S// *Utsunomiya Univ, Fac Engr, Dept Appl Chem, 2753 Ishimachi, Utsunomiya, Tochigi 321, Japan
Bull Chem Soc Jpn 1992 65 (12) 3430
 Preparation and properties of immobilized glucoamylase on a magnetically anisotropic carrier comprising a ferromagnetic powder coated by albumin
- Sanroman A, Nunez J, Lema JM// Univ Santiago de Compostela, Dept Ingn Quim, Avda Ciencias S N, E-15706 Santiago de Compostela, Spain
Afinidad 1992 49 (440) 231
 Immobilization of glucoamylase on chitin - Determination of optimum conditions, kinetic model and diffusion limitations (Spanish, English Abstract)
- Shibuya I, Tsuchiya K, Tamura G, Ishikawa T, Hara S// Brewing Resources Co Ltd, Res Inst, 1-54-18 Takinogawa, Kita ku, Tokyo 114, Japan
Biosci Biotechnol Biochem 1992 56 (10) 1674
 Overproduction of an α -amylase/glucoamylase fusion protein in *Aspergillus oryzae* using a high expression vector
- Sitarski J, Andrzejczuk-Hybel J, Kaczkowski J// Agr Univ Warsaw, Dept Biochem, Rakowieka 26-30, PL-02528 Warsaw, Poland
Acta Physiol Plant 1992 14 (4) 177
 α -amylase and β -amylase activity in the Triticale grains
- Tsiomenko AB, Musaev DS, Lupashin VV, Kulaev IS// Acad Sci, Inst Biochem & Physiol Microorganisms, Pushchino, Azerbaijan
Biochemistry-Engl Tr 1992 57 (3) 297
 Secreted α -amylase of the basidiomycetous yeast *Filobasidium capsuligenum* - Isolation, purification, and properties
- Ulbrich-Hofmann R, Selisko B// Martin Luther Univ, Dept Biochem Biotechnol, O-4050 Halle, FRG
Enzyme Microb Technol 1993 15 (1) 33
 Soluble and immobilized enzymes in water-miscible organic solvents - Glucoamylase and invertase
- Yankov D, Rouleau D, Beschkov V// Ecole Polytech, Dept Chem Engr, Case Postal 6079, Succ A, Montreal, Quebec, Canada H3C 3A7
Dokl Bolg Akad Nauk 1992 45 (4) 33
 A study of glucoamylase immobilization by entrapping in polyacrylamide gel