



Bibliography of carbohydrate polymers

1 BOOKS, REVIEWS & SYMPOSIA

Carbohydr Polym 1993 21 (2-3) 81

Proceedings of the workshop on cereal polysaccharides: Foreword

2 CELLULOSE

Aoki S, Ando H, Machida R, Ida K, Watanabe S, Ozawa H// Eisai & Co Ltd, Dept Pharmaceut Res, Takehaya machi 1, Kawashima, Gifu 50161, Japan

Chem Pharm Bull Tokyo 1993 41 (8) 1438

Sustained-release matrix using hydroxypropylcellulose/ethylcellulose complex as a filler, and controlling factors of drug release

Barinov AV, Bakhirkin YA, Bykovskii YA, Martynov SI, Chistyakov AA, Shcherbakov AI// Moscow Engn Phys Inst, Moscow 115409, Russia

JETP Lett-Engl Tr 1993 58 (1) 23

Nonequilibrium dissociation of cellulose nitrate macromolecules by resonant IR laser light

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

J Chromatogr 1993 644 (1) 208

Capillary electrophoresis with amperometric detection using a porous cellulose acetate joint

Dave V, Frazier CE, Glasser WG*// *Virginia Polytech Inst & State Univ, Dept Wood Sci & Forest Prod, Blacksburg, Va 24061, USA

J Appl Polym Sci 1993 49 (9) 1671

Novel cellulose derivatives. 1. Liquid crystal phase formation in tri-*O*- α -naphthylmethyl cellulose solutions

Fernor TR// Hort Res Int, Dept Microbiol & Crop Protect, Worthing Rd, Littlehampton BN17 6LP, W Sussex, England

Int Biodeterior Biodegrad 1993 31 (2) 87

Applied aspects of composting and bioconversion of ligno-cellulosic materials - An overview

Francotte E, Grolimund K, Juvancz Z// Ciba Geigy AG, Div Pharmaceut, K122P25, CH-4002 Basel, Switzerland

Chirality 1993 5 (4) 232

Benzoylcellulose derivatives as chiral stationary phases for open tubular column

Kerns G, Bauer E, Berg H// KAI eV, WIP Projekt Pilzgenet, Permoserstr 15, Leipzig, FRG

Bioelectrochem Bioenerg 1993 32 (1) 89

Electrostimulation of cellulose fermentation by pulsatile electromagnetically induced currents

Kleinebudde P// Christian Albrechts Univ Kiel, Dept Pharmaceut & Biopharmaceut, Gutenbergstr 76-78, W-2300 Kiel 1, FRG

Int J Pharm 1993 96 (1-3) 119

Application of low substituted hydroxypropylcellulose (L-HPC) in the production of pellets using extrusion/spheronization

Kuga S, Takagi S, Brown RM*// *Univ Texas, Dept Bot, Austin, Tx 78713, USA

Polymer 1993 34 (15) 3293

Native folded-chain cellulose II

Maffione G, Lamartino P, Guglielmini G, Gazzaniga A// Boehringer Ingelheim Italia Spa, via Serio 15, I-20139 Milan, Italy

Drug Develop Ind Pharm 1993 19 (16) 2043

High viscosity HPMC as a film-coating agent

Mannebach MH, Treiner C*// *Univ Paris 06, Electrochim Lab, CNRS, UA 430, 4 Pl Jussieu, Bat 74, F-75230 Paris 05, France

J Colloid Interface Sci 1993 159 (2) 505

Interactions between copper dodecylsulfate micelles and hydroxyethyl or hydroxypropyl cellulose in water at 25°C

Misra BN, Mehta IK, Rathore MPS, Lakhnpal S// Himachal Pradesh Univ, Dept Chem, Simla 171005, Himachal Pradesh, India

J Appl Polym Sci 1993 49 (11) 1979

Effect of L(-)-threonine, 5-hydroxytryptophan, and 5-hydroxytryptamine on the ceric ion-initiated grafting of methyl acrylate onto cellulose

Nishioka N, Yamaoka M, Haneda H, Kawakami K, Uno M// Osaka Electrocomm Univ, Fac Engn, Neyagawa, Osaka 572, Japan

Macromolecules 1993 26 (17) 4694

Thermal decomposition of cellulose/synthetic polymer blends containing grafted products. 1. Methyl methacrylate blends

Papadimitriou E, Buckton G, Efentakis M// Univ Athens, Dept Pharmaceut Technol, Panepistimioupolis, Zografos 15771, Greece

Int J Pharm 1993 98 (1-3) 57

Probing the mechanisms of swelling of hydroxypropylmethylcellulose matrices

Prasad MP, Kalyanasundaram M// Indian Council Med Res, Vector Control Res Ctr, Pondicherry 605006, India

J Appl Polym Sci 1993 49 (12) 2075

Ionotropic crosslinking of sodium carboxymethylcellulose and sodium carboxymethylcellulose-gelatin matrices and their erosion properties

Price D, Coleman GV, Horrocks AR// Univ Salford, Dept Chem & Appl Chem, Salford M5 4WT, England

J Therm Anal 1993 40 (2) 649

Use of cyclic differential scanning calorimetry - Experiments to investigate the formation of an activated cellulose species during cotton (cellulose) fabric pyrolysis in air and the influence of flame retarded treatments thereon

Rinaudo M, Danhelka J, Milas M// Ctr Rech Macromolec Vegetales, CNRS, BP 53X, F-38041 Grenoble, France

Carbohydr Polym 1993 21 (1) 1

A new approach to characterising carboxymethylcelluloses by size exclusion chromatography

Rudnev AV, Fonakova MV, El-Kabbani EA// Moscow MV Lomonosov State Univ, Radiat Chem Lab, Moscow, Russia

Vestn Mosk Univ Khim 1993 34 (2) 153

An effect of ionizing radiation on the conversion of biomass in organic residua. 4. Change in the elemental composition of cellulose, wood, and lignin induced by ionizing radiation and temperature (Russian)

Schmidt RJ, Chung LY, Turner TD// UWCC, Welsh Sch Pharm, POB 13, Cardiff CF1 3XF, Wales

Brit J Dermatol 1993 129 (2) 154

Quantification of hydrogen peroxide generation by granuflex (DuoDERM) hydrocolloid granules and its constituents (gelatin, sodium carboxymethylcellulose, and pectin)

Shatalov AA, Kholkin YI// St Petersburg Forest Technol Acad, St Petersburg, Russia

Khim Priir Soedin 1993 (1) 136

Kinetic principles of the hydrolysis of shell hemicellulose of sunflower seeds (Russian)

Shukla SR, Rao GVG, Athalye AR// Univ Bombay, Dept Chem Technol, Bombay 400019, India

J Appl Polym Sci 1993 49 (8) 1423

Improving graft level during photoinduced graft-copolymerization of styrene

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.

onto cotton cellulose

Sisson RA, Swift A, Wake GC, Gray BF// Univ London Imperial Coll Sci Technol & Med, Dept Math, London SW7 2B, England
IMA J Appl Math 1993 50 (3) 285

The self-heating of damp cellulosic materials. 2. On the steady states of the spatially-distributed case

Tager AA, Tyukova IS, Zhigalova ER, Marchenko GN, Shipina OT// AM Gorky State Univ, Prosp Lenina 51, Sverdlovsk 620083, Russia
Vysokomol Soedin 1993 35 (7) B887

Effect of composition of nitrile-butadiene rubbers on their compatibility with cellulose nitrate (Russian, English Abstract)

Tanaka Y, Kanaya I, Takahashi Y, Shinose M, Tanaka H, Omura S*// *Kitasato Inst, Biol Funct Res Ctr, 9-1 Shirokane 5-chome, Minato ku, Tokyo 108, Japan

J Antibiot 1993 46 (8) 1208

Phthoxazolin A, a specific inhibitor of cellulose biosynthesis from microbial origin. 1. Discovery, taxonomy of producing microorganism, fermentation, and biological activity

Tanaka Y, Kanaya I, Shiomi K, Tanaka H, Omura S*// *Kitasato Inst, Biol Funct Res Ctr, 9-1 Shirokane 5-chome, Minato ku, Tokyo 108, Japan
J Antibiot 1993 46 (8) 1214

Phthoxazolin A, a specific inhibitor of cellulose biosynthesis from microbial origin. 2. Isolation, physico-chemical properties, and structural elucidation

Wada M, Sugiyama J, Okanao T// Univ Tokyo, Fac Agr, Dept Forest Prod, Yayoi 1-1-1, Bunkyo ku, Tokyo 113, Japan

J Appl Polym Sci 1993 49 (8) 1491

Native celluloses on the basis of 2 crystalline phase (Ia/I β) system

Yamaguchi F, Hatanaka C// Japan Tobacco Inc, Ctr Food R & D, 6-2 Umegaoka, Midori ku, Yokohama, Kanagawa 227, Japan
Biosci Biotechnol Biochem 1993 57 (7) 1191

HPLC measurement of the uronate and neutral sugar contents in corn hemicellulose

3 CELLULOSE-DEGRADING ENZYMES

Bernardez TD, Lyford K, Hogsett DA, Lynd LR*// *Dartmouth Coll, Thayer Sch Engr, Hanover, NH 03755, USA

Biotechnol Bioeng 1993 42 (7) 899

Adsorption of *Clostridium thermocellum* cellulases onto pretreated mixed hardwood, avicel, and lignin

Farid MA, El-Shahed KY// Natl Res Ctr, Dept Nat & Microbial Prod, Nat Prod Lab, Cairo, Egypt

Zbl Mikrobiol 1993 148 (4) 277

Cellulase production on high levels of cellulose and corn steep liquor (German, English Abstract)

Hoshino E, Sasaki Y, Okazaki M, Nisizawa K, Kanda T// Shinshu Univ, Fac Engr, Dept Chem & Mat Engr, Wakasato, Nagano 380, Japan

J Biochem Tokyo 1993 114 (2) 230

Mode of action of exo-type and endo-type cellulases from *Irpex lacteus* in the hydrolysis of cellulose with different crystallinities

Hoshino E, Sasaki Y, Mori K, Okazaki M, Nisizawa K, Kanda T// Shinshu Univ, Fac Engr, Dept Chem & Mat Engr, Wakasato, Nagano 380, Japan

J Biochem Tokyo 1993 114 (2) 236

Electron microscopic observation of cotton cellulose degradation by exo-type and endo-type cellulases from *Irpex lacteus*

Imam SH, Greene RV, Hockridge ME// USDA ARS, Natl Ctr Agr Utilizat Res, Biopolymer Res Unit, Peoria, IL 61604, USA

Biotechnol Technique 1993 7 (8) 579

Zymographic analyses of carboxymethylcellulases secreted by the bacterium from wood-boring marine shipworms

Kolios G, Drinas C*// *Univ Ioannina, Dept Chem, Sector Organ Chem & Biochem, GR-45110 Ioannina, Greece

Biotechnol Appl Biochem 1993 18 (1) 45

Differential effect of ethanol and methanol on *Cellulomonas fimi* NRRL B-402 carboxymethylcellulase production

Lee SG, Kim HS*// *Korea Adv Inst Sci & Technol, Dept Biotechnol, 373-1 Kusong dong, Taejon 305701, South Korea

Biotechnol Bioeng 1993 42 (6) 737

Optimal operating policy of ultrafiltration bioreactor for enzymatic hydrolysis of cellulose

Schou C, Rasmussen G, Schulein M*, Henrissat B, Driguez H// *Tech Univ Denmark, Dept Biochem & Nutr, Bldg 224, DK-2800 Lyngby, Denmark

J Carbohydr Chem 1993 12 (6) 743

4-Thiocelooligosaccharides - Their synthesis and use as inhibitors of cellulases

Tothill IE, Best DJ, Seal KJ// Cranfield Inst Technol, Ctr Biotechnol, Cranfield MK43 0AL, Beds, England

Int Biodeterior Biodegrad 1993 31 (2) 115

Detection of cellulolytic enzymes in waterborne paint

4 CYCLODEXTRINS

Ahmed SM, Abdel-Rahman AA*, Saleh SI, Ahmed MO// *Univ Assiut, Fac Pharm, Dept Ind Pharm, Assiut, Egypt

Int J Pharm 1993 96 (1-3) 5

Comparative dissolution characteristics of bropiramine- β -cyclodextrin inclusion complex and its solid dispersion with PEG-6000

Bender H// Univ Freiburg, Inst Organ Chem & Biochem, Albertstr 21, D-79104 Freiburg, FRG

Appl Microbiol Biotechnol 1993 39 (6) 714

Purification and characterization of a cyclodextrin-degrading enzyme from *Flavobacterium* sp

Berthod A, Chang, Armstrong DW// Univ Lyon 1, Sci Analyt Lab, CNRS, UA 435, F-69622 Villeurbanne, France

Talanta 1993 40 (9) 1367

β -Cyclodextrin chiral stationary phases for liquid chromatography - Effect of the spacer arm on chiral recognition

Bonomo RP, Cucinotta V, D'Allessandro F, Impellizzeri G, Maccarrone G, Rizzarelli E*// *Univ Catania, Dipt Sci Chim, viale A Doria 6, I-95125 Catania, Italy

J Inclusion Phenom Mol Recogn 1993 15 (2) 167

Coordination properties of 6-deoxy-6[1-(2-amino) ethylamino]- β -cyclodextrin and the ability of its copper(II) complex to recognize and separate amino acid enantiomeric pairs

Bortolus P, Grabner G, Kohler G, Monti S// CNR, Ist Fotochim & Radiaz Alta Energia, via de Castagnoli 1, I-40126 Bologna, Italy

Coord Chem Rev 1993 125 (1-2) 261

Photochemistry of cyclodextrin host-guest complexes

Chun IK, Yun DS// Dongduk Womens Univ, Coll Pharm, Dept Pharmaceut, Sungbuk ku, Seoul 136714, South Korea

Int J Pharm 1993 96 (1-3) 91

Inclusion complexation of hydrocortisone butyrate with cyclodextrins and dimethyl- β -cyclodextrin in aqueous solution and in solid state

De la Pena AM, Salinas F, Gomez MJ, Acedo MI, Pena MS// Univ Extremadura, Dept Analyt Chem, E-06071 Badajoz, Spain

J Inclusion Phenom Mol Recogn 1993 15 (2) 131

Absorptiometric and spectrofluorimetric study of the inclusion complexes of 2-naphthylacetic acid and 1-naphthylacetic acid with β -cyclodextrin in aqueous solution

Fercejtemeljotov D, Kmet M, Kocjan D, Kotnik S, Resman A, Urleb U, Vernjak K, Zver I, Zmitek J// Pharmaceut & Chem Co, Led DD Ljubljana, Dept Res & Dev, Celovska 135, 61000 Ljubljana, Slovenia

Chirality 1993 5 (4) 288

Stereoselectivity in β -cyclodextrin complexation of 1,4-dihydropyridine derivatives

Freedman KA, Klein JW, Crosson CE// Texas Tech Univ, Hlth Sci Ctr, Dept Ophthalmol & Visual Sci, Lubbock, TX 79430, USA

Curr Eye Res 1993 12 (7) 641

β -Cyclodextrins enhance bioavailability of pilocarpine

He BL, Ho PL, Hao XB// Nankai Univ, Inst Polymer Chem, Tianjin 300071, Peoples Rep China

Sci China Ser B 1993 36 (7) 785

Study on the synthesis and characterization of novel immobilized β -cyclodextrin polymer. I.

Hoshino T, Uekama K, Pitha J*// *NIA, GRC, 4940 Eastern Ave, Baltimore, Md 21224, USA

Int J Pharm 1993 98 (1-3) 239

Increase in temperature enhances solubility of drugs in aqueous solutions of hydroxypropylcyclodextrins

Imonigie JA, Macartney DH// Queens Univ, Dept Chem, Kingston, Ontario, Canada K7L 3N6

J Inclusion Phenom Mol Recogn 1993 15 (2) 195

The effects of cyclodextrin inclusion of the ferrocenemonocarboxylate anion on the kinetics of its oxidation by bis(pyridine-2,6-dicarboxylato)cobaltate(III) in aqueous solution

Jung M, Schurig V// Univ Tubingen, Inst Organ Chem, W-7400 Tubingen 1, FRG

J High Res Chromatogr 1993 16 (5) 289

Chirasil-Dex-TFA - A new polysiloxane-bonded and immobilizable cyclodextrin stationary phase for enantiomer separation by GC

- Kobor F, Angermund K, Schomburg G// Max Planck Inst Coal Res, Dept X-ray Struct Anal, W-4330 Mulheim, FRG
J High Res Chromatogr 1993 16 (5) 299
 Molecular modelling experiments on chiral recognition in GC with specially derivatized cyclodextrins as selectors
- Kometani T, Tanimoto H, Nishimura T, Okada S// Ezaki Glico Co Ltd, Biochem Res Lab, Utajima 4-6-5, Nishiyodogawa, Osaka 555, Japan
Biosci Biotechnol Biochem 1993 57 (7) 1185
 A new method for precipitation of various glucosides with cyclodextrin glucanotransferase
- Ling CC, Miocque M, Coleman AW// Univ Paris 11, Ctr Pharm, Chim Organ Lab, CNRS, SDI 6233, F-92290 Chateaufort, France
J Coord Chem 1993 28 (3-4) 313
 1st sphere coordination chemistry of modified cyclodextrins. 2. The bis(*cis*-PtCl₂) complex of 6A,6B,6D,6E-tetra-*O*-nicotinoyl- α -cyclodextrin
- Liu GY, Goodall DM*, Loran JS// *Univ York, Dept Chem, York YO1 5DD, England
Chirality 1993 5 (4) 220
 Quantification of trace levels of β -cyclodextrin and substitution patterns in hydroxypropyl- β -cyclodextrin using high-performance liquid chromatography with polarimetric detection
- Loftsson T, Baldvinsdottir J, Sigurdardottir AM// Univ Iceland, Dept Pharm, IS-101 Reyjavik, Iceland
Int J Pharm 1993 98 (1-3) 225
 The effect of cyclodextrins on the solubility and stability of medroxyprogesterone acetate and megestrol acetate in aqueous solution
- Manabe M, Ito T, Kawamura H, Ikusima K, Kagimoto H// Niihama Natl Coll Technol, Dept Ind Chem, Yagumo cho 7-1, Niihama 792, Japan
Nippon Kagaku Kaishi 1993 (8) 957
 Partial molar volume of crystalline water in solid hydrate of α -, β - and γ -cyclodextrins (Japanese, English Abstract)
- Matsuda H, Ito K, Sato Y, Yoshizawa D, Tanaka M, Taki A, Sumiyoshi H, Utsuki T, Hirayama F, Uekama K*// *Shiseido Res Labs, 1050 Nippa cho, Kohoku ku, Yokohama, Kanagawa 223, Japan
Chem Pharm Bull Tokyo 1993 41 (8) 1448
 Inclusion complexation of *p*-hydroxybenzoic acid esters with 2-hydroxypropyl- β -cyclodextrins on changes in solubility and antimicrobial activity
- Oguma T, Horiuchi T, Kobayashi M// Noda Inst Sci Res, 399 Noda, Noda-shi, Chiba 278, Japan
Biosci Biotechnol Biochem 1993 57 (7) 1225
 Novel cyclic dextrins, cycloisomaltooligosaccharides, from *Bacillus* sp T-3040 culture
- Sawamura M, Kitayama K, Ito Y*// *Kyoto Univ, Dept Synthet Chem, Kyoto 60601, Japan
Tetrahedron-Asymmetry 1993 4 (8) 1829
 Synthesis and properties of a new chiral diphosphine ligand bearing a cyclodextrin-based molecular recognition site and its palladium(II) complex
- Schalchli A, Benattar JJ*, Tchoreloff P, Zhang P, Coleman AW// *CEA Saclay, Serv Phys Etat Condense, F-91191 Gif sur Yvette, France
Langmuir 1993 9 (8) 1968
 Structure of a monomolecular layer of amphiphilic cyclodextrins
- Shiraishi T, Hiraiwa M, Uda Y*// *Niigata Coll Pharm, Hlth Chem Lab, 5-13-2 Kamishinei cho, Niigata 95021, Japan
Glycoconjugate J 1993 10 (2) 170
 Effects of cyclodextrins on the hydrolysis of ganglioside GM1 by acid β -galactosidases
- Tinwalla AY, Hoesterey BL, Xiang TX, Lim K, Anderson BD*// *Univ Utah, Coll Pharm, Dept Pharmaceut & Pharmaceut Chem, Salt Lake City, Ut 84112, USA
Pharmaceut Res 1993 10 (8) 1136
 Solubilization of thiazolobenzimidazole using a combination of pH adjustment and complexation with 2-hydroxypropyl- β -cyclodextrin
- Uekama K, Shiotani K, Irie T, Ishimaru Y, Pitha J// Kumamoto Univ, Fac Pharmaceut Sci, 5-1 Oe-honmachi, Kumamoto 862, Japan
J Pharm Pharmacol 1993 45 (8) 745
 Protective effects of cyclodextrin sulphates against gentamicin-induced nephrotoxicity in the rat
- Vierstein H, Stumpf C, Spiegl P, Reiter S// Univ Vienna, Inst Pharmaceut Technol, Wahringer Str 25, A-1090 Vienna, Austria
Arzneim-Forsch-Drug Res 1993 43-2 (8) 818
 Preparation and central action of propofol hydroxypropyl- β -cyclodextrin complexes in rabbits
- Wang Y, Ikeda T, Ueno A*, Toda F// *Tokyo Inst Technol, Fac Biosci & Biotechnol, Dept Bioengn, 4259 Nagatsuta cho, Midori ku, Yokohama, Kanagawa 227, Japan
Tetrahedron Lett 1993 34 (31) 4971
 Fluorescein modified β -cyclodextrin as a charge-changeable receptor
- Wan H, Wang Y, Ou QY*, Yu WL// *Chinese Acad Sci, Lanzhou Inst Chem Phys, Lanzhou 730000, Peoples Rep China
J Chromatogr 1993 644 (1) 202
 Improved enantiomeric separation with a 2,6-di-*O*-pentyl-3-*O*-trifluoroacetylated β -cyclodextrin and OV-7 mixed stationary phase chiral capillary column
- Yamada S, Shibata K, Murata A// Shizuoka Univ, Fac Engr, Analyt Chem Lab, Hamamatsu, Shizuoka 432, Japan
Anal Sci 1993 9 (4) 467
 Spectrofluorometric study on the inclusion reaction of flavanols with β -cyclodextrin

5 LIGNIN

- Dave V, Prasad A, Marand H, Glasser WG*// *Virginia Polytech Inst & State Univ, Dept Wood Sci & Forest Prod, Blacksburg, Va 24061, USA
Polymer 1993 34 (15) 3144
 Molecular organization of lignin during carbonization
- Kuzina SI, Demidov SV, Brazgunov AY, Poluektov OG, Grinberg OY, Dubinskii AA, Mikhailov AI, Lebedev YS// Russian Acad Sci, Inst Chem Phys, Chernogolovka 142432, Russia
Vysokomol Soedin 1993 35 (7) A798
 Study of free radical centers in lignin 29th 2 mm band ESR spectroscopy
- Rodriguez-Vazquez R, Areyza M, Parada A, Riosleal E, Anguisterrazas C// CINVESTAV IPN, Dept Biotechnol & Bioingn, Avda IPN 2508, Mexico City 07000, DF, Mexico
J Sci Food Agr 1993 62 (1) 101
 Isolation and characterization of lignin from rice hull
- Zhao BJ, Depew MC, Weir NA, Wan JKS// Queens Univ, Dept Chem, Kingston, Ontario, Canada K7L 3N6
Res Chem Intermediates 1993 19 (5) 449
 Some mechanistic aspects of the light-induced yellowing of lignin - A further study of the photochemical reactions of α -guaiacoxyl- β -hydroxy-propioveratone, and some substituted methoxybenzenes

6 POLYSACCHARIDES - NAMED

- Acebes JL, Moral R, Zarra I*// *Univ Santiago de Compostela, Fac Biol, Fisiol Vegetal Lab, E-15706 Santiago de Compostela, Spain
Phytochemistry 1993 33 (6) 1343
 Purification and structure of xyloglucan in pine hypocotyls
- Asp NG, Björck I, Nyman M// Lund Univ, Chem Ctr, Dept Appl Nutr & Food Chem, POB 124, S-221 00 Lund, Sweden
Carbohydr Polym 1993 21 (2-3) 183
 Physiological effects of cereal dietary fibre
- Bonferoni MC, Rossi S, Tamayo M, Pedraz JL, Dominguez-Gil A, Caramella C*// *Univ Pavia, Dept Pharmaceut Chem, Viale Taramelli 12, I-27100 Pavia, Italy
J Control Release 1993 26 (2) 119
 On the employment of λ -carrageenan in a matrix system. 1. Sensitivity to dissolution medium and comparison with Na-carboxymethylcellulose and xanthan gum
- Brookshier KA, Tarbell JM// Penn State Univ, Dept Chem Engr, Univ Pk, Pa 16802, USA
Biorheology 1993 30 (2) 107
 Evaluation of a transplant blood analog fluid - Aqueous xanthan gum/glycerin
- Bruneel D, Schacht E*, De Bruyn A// *State Univ Ghent, Organ Chem Lab, Krijgslaan 281 S4, B-9000 Ghent, Belgium
J Carbohydr Chem 1993 12 (6) 769
 Structural analysis of succinoylated and chloroformate activated pullulan - NMR study in DMSO solution
- Chang CY, Tsai YR, Chang WH// Natl Taiwan Univ, Grad Inst Food Sci & Technol, Taipei 106, Taiwan
Food Chem 1993 48 (2) 145
 Models for the interactions between pectin molecules and other cell-wall constituents in vegetable tissues
- Chopin T, Whalen E// Univ New Brunswick, Dept Biol, Marine & Estuarine Res Grp, POB 5050, St John, New Brunswick, Canada E2L 4L5
Carbohydr Res 1993 246 51
 A new and rapid method for carrageenan identification by FT-IR diffuse reflectance spectroscopy directly on dried, ground algal material
- Coromili V, Chang TMS// McGill Univ, Artificial Cells & Organs Res Ctr, Montreal, Quebec, Canada H3A 2T5

- Biomater Artif Cell Immobil Biotech* 1993 21 (3) 427
Polydisperse dextran as a diffusing test solute to study the membrane permeability of alginate polylysine microcapsules
- Delgado L, Trejo BA, Huitron C, Aguilar G*// *Natl Autonomous Univ Mexico, Fac Chem Sci, Dept Food Sci & Biotechnol, Ciudad Univ, Mexico City, DF, Mexico
Appl Microbiol Biotechnol 1993 39 (4-5) 515
Pectin lyase from *Aspergillus* sp CH-Y-1043
- Dellacherie E, Bonneaux F*// *Fac Pharm Nancy, 7 rue Albert Lebrun, F-54000 Nancy, France
Polym Bull 1993 31 (2) 145
A new approach to aldehydic dextrans
- Desai UR, Wang HM, Ampofo SA, Linhardt RJ*// *Univ Iowa, Coll Pharm, Iowa City, Ia 52242, USA
Anal Biochem 1993 213 (1) 120
Oligosaccharide composition of heparin and low molecular weight heparins by capillary electrophoresis
- Draget KI, Simensen MK, Onsoyen E, Smidsrod O// Pronova Biopolymer A-S, POB 494, N-3002 Drammen, Norway
Hydrobiologia 1993 261 563
Gel strength of Ca-limited alginate gels made *in situ*
- Fadel M, Fouda MS// Natl Res Ctr, Dept Microbial Chem, Cairo, Egypt
Zbl Mikrobiol 1993 148 (4) 304
Physiological studies on xylanase production by *Penicillium funiculosum* on some agricultural wastes (German, English Abstract)
- Faulds CB, Williamson G*// *AFRC Inst Food Res, Dept Food Molec Biochem, Norwich Res Pk, Norwich NR4 7UA, England
Carbohydr Polym 1993 21 (2-3) 153
Release of ferulic acid from plant polysaccharides by ferulic acid esterase from *Streptomyces olivochromogenes*
- Galea CF, Inkerman PA// Sugar Res Inst, Mackay, Qld 4740, Australia
Int Sugar J 1993 95 (1136) 309
Dextran analysis of raw sugar. 1. A specific method for total dextran
- Ganter JLMS, Zawadzki-Baggio SF, Leitner SCS, Sierakowski MR, Reicher F*// *Univ Fed Parana, Dept Biochem, POB 19046, BR-81531 Curitiba, Parana, Brazil
J Carbohydr Chem 1993 12 (6) 753
Structural studies on galactomannans from Brazilian seeds
- Ghosh M, Nanda G*// *Bose Inst, Dept Microbiol, P-1-12, CIT Scheme VII M, Calcutta 700054, India
Lett Appl Microbiol 1993 17 (2) 68
High activity xylanase from *Aspergillus sydowii* MG49 during growth on jute stalk lignocellulose
- Ghosh S, Kobal I, Zanette D, Reed WF*// *Tulane Univ, Dept Phys, New Orleans, La 70118, USA
Macromolecules 1993 26 (17) 4685
Conformational contraction and hydrolysis of hyaluronate in sodium hydroxide solutions
- Giraud E, Gosselin L, Raimbault M// Orstom Biotechnol Lab, 911 Ave Agropolis, BP 5045, F-34032 Montpellier 1, France
J Sci Food Agr 1993 62 (1) 77
Production of a *Lactobacillus plantarum* starter with linamarase and amylase activities for cassava fermentation
- Gomes J, Purkarthofer H, Hayn M, Kapplmuller J, Sinner M, Steiner W// Graz Tech Univ, Inst Biotechnol, Petergasse 12, A-8010 Graz, Austria
Appl Microbiol Biotechnol 1993 39 (6) 700
Production of a high level of cellulase-free xylanase by the thermophilic fungus *Thermomyces lanuginosus* in laboratory and pilot scales using lignocellulosic materials
- Graf J, Neusel E, Schneider E, Niethard FU// Orthoped Univ Hosp Heidelberg, Dept Exptl Orthoped, Schlierbacher Landstr 200, W-6900 Heidelberg, FRG
Clin Exp Rheumatol 1993 11 (4) 367
Intra-articular treatment with hyaluronic acid in osteoarthritis of the knee joint - A controlled clinical trial versus mucopolysaccharide polysulfuric acid ester
- Guan K, Cecchini DJ, Giese RW*// *Northwestern Univ, Coll Pharm & Allied Hlth Profess, Dept Pharmaceut Sci, Boston, Ma 02115, USA
Carbohydr Res 1993 246 205
Chitin leash - A polysaccharide heterobifunctional cross-linking agent which can be cleaved by lysozyme
- Guiseley KB, Kirkpatrick FH, Provonchee RB, Dumais MM, Nochumson S// FMC Bioprod, 191 Thomaston St, Rockland, Me 04841, USA
Hydrobiologia 1993 261 505
A further fractionation of agarose
- Gunning AP, McMaster TJ, Morris VJ*// *AFRC Inst Food Res, Norwich Lab, Norwich Res Pk, Norwich NR4 7UA, England
Carbohydr Polym 1993 21 (1) 47
Scanning tunnelling microscopy of xanthan gum
- Henriksen I, Skaugrud O, Karlsen J*// *Univ Oslo, Fac Sci, Dept Pharmaceut, POB 1068, Blindern, N-0316 Oslo 3, Norway
Int J Pharm 1993 98 (1-3) 181
Use of chitosan and chitosan malate as an excipient in wet granulation of three water soluble drugs
- Hirsh J// Hamilton Civic Hosp Res Ctr, 711 Concess St, Hamilton, Ontario, Canada L8V 1C3
Thromb Haemost 1993 70 (1) 204
Low molecular weight heparin
- Hoffman OA, Olson EJ, Limper AH*// *Mayo Clin & Mayo Fdn, Thorac Dis, E-188, Rochester, Mn 55905, USA
Immunol Lett 1993 37 (1) 19
Fungal β -glucans modulate macrophage release of tumor necrosis factor- α in response to bacterial lipopolysaccharide
- Hogfeldt E, Miyajima T, Yoshida K// Royal Inst Technol, Dept Inorgan Chem, S-10044 Stockholm 70, Sweden
React Polym 1993 20 (3) 175
Ion exchange equilibrium on carboxymethyldextran - The system $\text{Na}^+\text{-H}^+$
- Houbouyan LL, Goguel AF// Hop Ambroise Pare, Fac Med Paris Ouest, Serv Cent Immunohematol, 9 Ave Charles de Gaulle, F-92104 Boulogne, France
Ann Biol Clin Paris 1993 51 (2) 109
Comparative evaluation of unfractionated and low molecular weight heparins - Data from the French Etalonorme quality control surveys (French, English Abstract)
- Jaffar MB, Oommen S*// *Wilson Coll, Postgrad Dept Biochem, Bombay 400007, India
J Food Biochem 1993 17 (1) 53
Production, purification and characterization of pectin methylesterase (PME) from *Arthrobotrys oligospora*
- Katsikas L, Jeremic K, Jovanovic S, Velickovic JS, Popovic IG*// *Univ Belgrade, Fac Technol & Met, Karnegijeva 4, POB 494, YU-11001 Belgrade, Yugoslavia
J Therm Anal 1993 40 (2) 511
The thermal degradation kinetics of dextran and pullulan
- Knutsen SH, Moe ST, Larsen B, Grasdalen H// Univ Trondheim, Norwegian Inst Technol, Div Biotechnol, N-7034 Trondheim, Norway
Hydrobiologia 1993 261 667
Molecular cut off values of dialysis membranes for alginate and κ -carrageenan oligosaccharides
- Komatsu H, Yoshii K, Ishimitsu S, Okada S, Takahata T// Natl Inst Hyg Sci, Div Drugs, Osaka Branch, 1-1-43 Hoenzaka, Chuo ku, Osaka 540, Japan
J Chromatogr 1993 644 (1) 17
Molecular mass determination of low molecular mass heparins - Application of wide collection angle measurements of light scattering using a high-performance gel permeation chromatographic system equipped with a low angle laser light-scattering photometer
- Kubota H, Nambu Y, Endo T// Meiji Seika Kaisha Ltd, Pharmaceut Technol Labs, 788 Kayama, Odawara 250, Japan
Nippon Kagaku Kaishi 1993 (8) 978
The effect of mannuronic:glucuronic acid ratio on gelation by Mg^{2+} ions of alginate aqueous solution (Japanese, English Abstract)
- Larsen B, Hoenen K, Ostgaard K// Univ Trondheim, Biotechnol Lab, N-7034 Trondheim, Norway
Hydrobiologia 1993 261 557
Kinetics and specificity of alginate lyases
- Letourneur D, Logeart D, Avramoglou T, Jozefonvicz J// Univ Paris 13, Rech Macromolec Lab, CNRS, URA 502, F-93430 Villetaneuse, France
J Biomater Sci-Polym Ed 1993 4 (5) 431
Antiproliferative capacity of synthetic dextrans on smooth muscle cell growth - The model of derivatized dextrans as heparin-like polymers
- Li W, Li ZY, Liao WS, Feng XD// Beijing Univ, Dept Chem, Beijing 100871, Peoples Rep China
J Biomater Sci-Polym Ed 1993 4 (5) 557
Modification of biopolymers - Mechanism of model graft copolymerization of chitosan
- Martin DW, Schurr MJ, Mudd MH, Deretic V*// *Univ Texas, Hlth Sci Ctr, Dept Microbiol, 7703 Floyd Curl Dr, San Antonio, Tx 78284, USA
Mol Microbiol 1993 9 (3) 497
Differentiation of *Pseudomonas aeruginosa* into the alginate producing form - Inactivation of *mucB* causes conversion to mucoidy
- Ma SC, Yang VC*, Fu B, Meyerhoff ME// *Univ Michigan, Coll Pharm, Ann Arbor, Mi 48109, USA

- Anal Chem* 1993 **65** (15) 2078
Electrochemical sensor for heparin - Further characterization and bioanalytical applications
- Masler L, Kogan G, Simkovicova V, Sandula J// Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Slovak Rep
Chem Pap-Chem Zvesti 1993 **47** (2) 127
Mannans of the cell walls of the yeast and mycelial forms of *Candida tropicalis*
- Melandri G, Semprini F, Cervi V, Candiotti N, Branzi A, Palazzini E, Magnani B// Policlin S Orsola, Ist Cardiol, via Massarenti 9, I-40138 Bologna, Italy
Amer J Cardiol 1993 **72** (5) 450
Comparison of efficacy of low molecular weight heparin (parnaparin) with that of unfractionated heparin in the presence of activated platelets in healthy subjects
- Mukhiddinov ZK, Khailkov DK, Grigoreva EE, Panov VP// Moscow Blood-subst & Hormone Preparat Technol Res Inst, Moscow, Russia
Khim Prii Soedin 1993 (1) 91
Structure of pectin homogalacturonan (Russian)
- Mulloy B, Forster MJ, Jones C, Davies DB// Natl Inst Biol Stand & Controls, Blanche Lane, Potters Bar EN6 3QG, Herts, England
Biochem J 1993 **293** (3) 849
NMR and molecular modelling studies of the solution conformation of heparin
- Murata Y, Maeda T, Miyamoto E, Kawashima S// Hokuriku Univ, Sch Pharm, Kanazawa, Ishikawa 92011, Japan
Int J Pharm 1993 **96** (1-3) 139
Preparation of chitosan-reinforced alginate gel beads - Effects of chitosan on gel matrix erosion
- Nakamura M, Hikida M, Nakano T, Ito S, Hamano T, Kinoshita S// Santen Pharmaceut Co Ltd, Cent Res Labs, 9-19 Shimoshinjo, 3-chome, Higashi-yodogawa ku, Osaka 533, Japan
Cornea 1993 **12** (5) 433
Characterization of water-retentive properties of hyaluronan
- Nilsson M, Svahn CM, Westman J// Kabi Pharmacia AB, S-11287 Stockholm, Sweden
Carbohydr Res 1993 **246** 161
Synthesis of the methyl glycosides of a tri-saccharide and a tetra-saccharide related to heparin and heparan sulphate
- Oda YJ, Komaki T, Tonomura K// Fukuyama Univ, Dept Food Sci & Technol, Fukuyama, Hiroshima 72902, Japan
J Ferment Bioeng 1993 **76** (1) 14
Purification and properties of extracellular β -mannanases produced by *Enterococcus casseliflavus* FL2121 isolated from decayed konjac
- Ostgaard K, Larsen B// Univ Trondheim, Biotechnol Lab, N-7034 Trondheim, Norway
Carbohydr Res 1993 **246** 229
Kinetics and specificity of alginate lyases. 2. Substrate conversion and product inhibition of mannuronate lyase from *Halimnion*
- Ostgaard K// Univ Trondheim, Biotechnol Lab, N-7034 Trondheim, Norway
Hydrobiologia 1993 **261** 513
Determination of alginate composition by a simple enzymatic assay
- Oyieke HA// Kenya Marine & Fisheries Res Inst, POB 81651, Mombasa, Kenya
Hydrobiologia 1993 **261** 613
The yield, physical and chemical properties of agar gel from *Gracilaria* species (Gracilariales, Rhodophyta) on the Kenya coast
- Parker A// Sanofi Bioind, Res Lab, F-50500 Carentan, France
Hydrobiologia 1993 **261** 583
Using elasticity temperature relationships to characterise gelling carrageenans
- Parsons CL, Benson G, Childs SJ, Hanno P, Sant GR, Webster G// Univ Calif San Diego, La Jolla, Ca 92093, USA
J Urol 1993 **150** (3) 845
A quantitatively controlled method to study prospectively interstitial cystitis and demonstrate the efficacy of pentosanpolysulfate
- Pollock TJ// Shin Etsu Bio Inc, 6650 Lusk Blvd, Ste B106, San Diego, Ca 92121, USA
J Gen Microbiol 1993 **139** (8) 1939
Gellan-related polysaccharides and the genus *Sphingomonas*
- Potter K, Carpenter TA, Hall LD// Univ Cambridge, Sch Clin Med, Herchel Smith Lab Medicinal Chem, Univ Forvie Site, Robinson Way, Cambridge CB2 2PZ, England
Carbohydr Res 1993 **246** 43
Mapping of the spatial variation in alginate concentration in calcium alginate gels by magnetic resonance imaging (MRI)
- Rao MA, Cooley HJ// Cornell Univ, Dept Food Sci & Technol, Geneva, NY 14456, USA
J Food Sci 1993 **58** (4) 876
Dynamic rheological measurement of structure development in high methoxyl pectin fructose gels
- Rao SJ, Prasad MS, Rao GV// *Cent Food Technol Res Inst, Dept Milling & Baking Technol, Mysore 570013, Karnataka, India
J Food Sci Technol-Mysore 1993 **30** (4) 265
Effect of xanthan gum on the quality of bread
- Raymond L, Morin FG, Marchessault RH// McGill Univ, Ctr Pulp & Paper Res, 3420 Univ St, Montreal, Quebec, Canada H3A 2A7
Carbohydr Res 1993 **246** 331
Degree of deacetylation of chitosan using conductometric titration and solid state NMR
- Ren LD, Miura Y, Nishi N, Tokura S// Hokkaido Univ, Fac Sci, Dept Polymer Sci, Sapporo, Hokkaido 060, Japan
Carbohydr Polym 1993 **21** (1) 23
Modification of chitin by ceric salt-initiated graft polymerisation - Preparation of poly(methyl methacrylate)-grafted chitin derivatives that swell in organic solvents
- Rincones RE, Yu S, Pedersen M// Uppsala Univ, Dept Physiol Bot, Box 540, S-75236 Uppsala, Sweden
Hydrobiologia 1993 **261** 633
Effect of dark treatment on the starch degradation and the agar quality of cultivated *Gracilaria lemaneiformis* (Rhodophyta, Gracilariales) from Venezuela
- Rodde RSH, Ostgaard K, Larsen BA// Univ Trondheim, NTH, Biotechnol Lab, N-7034 Trondheim, Norway
Hydrobiologia 1993 **261** 577
Mannuronan C-5 epimerase activity in protoplasts of *Laminaria digitata*
- Somers WAC, Lojenga AK, Bonte A, Rozie HJ, Visser J, Rombouts FM, Van't Riet K// TNO Food & Nutr, Dept Biochem & Phys Chem, POB 360, 3700 AJ Zeist, The Netherlands
Biotechnol Appl Biochem 1993 **18** (1) 9
Alginate-starch co-polymers and immobilized starch as affinity adsorbents for α -amylase
- Song YH, Onishi H*, Nagai T// *Hoshi Univ, Fac Pharmaceut Sci, Ebara 2-4-41, Shinagawa ku, Tokyo 142, Japan
Int J Pharm 1993 **98** (1-3) 121
Conjugate of mitomycin C with *N*-succinyl chitosan - *In vitro* drug release properties, toxicity and antitumor activity
- Srivastava R, Srivastava AK// Cent Drug Res Inst, Div Microbial Genet, Lucknow 226001, Uttar Pradesh, India
Biotechnol Lett 1993 **15** (8) 847
Characterization of a bacterial xylanase resistant to repression by glucose and xylose
- Stokke BT, Smidsrod O, Zanetti F, Strand W, Skajbraek G// Univ Trondheim, Dept Phys, Norwegian Biopolymer Lab, N-7034 Trondheim, Norway
Carbohydr Polym 1993 **21** (1) 39
Distribution of uronate residues in alginate chains in relation to alginate gelling properties. 2. Enrichment of β -D-mannuronic acid and depletion of α -L-gulonic acid in sol fraction
- Strecker G// Univ Sci & Technol Lille, CNRS, UMR 111, Chim Biol Lab, F-59655 Villeneuve Dascq, France
Biofutur 1993 **125** 46
Structural analysis of glycan side chains - Progress and problems (French)
- Tako M// Univ Ryukyus, Dept Biosci & Biotechnol, Nishihara, Okinawa 90301, Japan
Biosci Biotechnol Biochem 1993 **57** (7) 1182
Molecular origin of thermal stability of rhamosan gum in aqueous media
- Terayama H, Takahashi S, Kuzuhara H// Address not available.
J Carbohydr Chem 1993 **12** (6) 807
Large-scale preparation of *N,N'*-diacetylchitobiose by enzymatic degradation of chitin and its chemical modifications (*J Carbohydr Chem* 1993, **12** 84) (Correction)
- Thacharodi D, Rao KP// *Cent Leather Res Inst, Div Biomat, Madras 600020, Tamil Nadu, India
Int J Pharmaceut 1993 **96** (1-3) 33
Release of nifedipine through crosslinked chitosan membranes
- Tomida H, Mizuo C, Nakamura C, Kiryu S// Fukuyama Univ, Fac Pharm & Pharmaceut Sci, 985 Higashimura cho, Fukuyama 72902, Japan
Chem Pharm Bull Tokyo 1993 **41** (8) 1475
Imipramine release from Ca-alginate gel beads
- Truhaut R// Address not available.
Bull Acad Natl Med 1993 **177** (4) 587
Approval requested for use of gellan gum in dry dessert mixes, puddings and gels (French, English Abstract)

- Usov AI// ND Zelinskii Inst Organ Chem, Leninsky Prospect 47, Moscow 117913, Russia
Hydrobiologia 1993 261 641
 A new chemical tool for characterization and partial depolymerization of red algal galactans
- Virtanen T, Autio K// VTT, Food Res Lab, POB 203, SF-02151 Espoo, Finland
Carbohydr Polym 1993 21 (2-3) 97
 The microscopic structure of rye kernel and dough
- Wei YC, Hudson SM// *Nth Carolina State Univ, Fiber & Polymer Sci Program, Box 8301, Raleigh, NC 27695, USA
Macromolecules 1993 26 (16) 4151
 Binding of sodium dodecyl sulfate to a polyelectrolyte based on chitosan
- West TP, Reedhamer B// Sth Dakota State Univ, Dept Chem, Olson Biochem Labs, Brookings, SD 57007, USA
Microbios 1993 75 (303) 75
 Effect of pH on pullulan production relative to carbon source and yeast extract composition of growth medium
- Yenigul M// Aegean Univ, Fac Engr, Dept Chem Engr, 35100 Bornova, Turkey
Hydrobiologia 1993 261 627
 Seasonal changes in the chemical and gelling characteristics of agar from *Gracilaria verrucosa* collected in Turkey
- Yoshioka H, Kazama S, Tanizawa H, Hirota S, Kamiya M// Univ Shizuoka, Dept Environm Sci, 52-1 Yada, Shizuoka 422, Japan
Biosci Biotechnol Biochem 1993 57 (7) 1053
 Sulfated *N*-myristoyl chitosan as a surface modifier of liposomes
- Yui N, Okano T, Sakurai Y// Japan Adv Inst Sci & Technol, 15 Asahidai Tatsunokuchi, Ishikawa 92312, Japan
J Control Release 1993 26 (2) 141
 Photo-responsive degradation of heterogeneous hydrogels comprising cross-linked hyaluronic acid and lipid microspheres for temporal drug delivery
- Yu LP, Goldman R, Sullivan P, Walker GF, Fesik SW// *Abbott Labs, Div Pharmaceut Discovery, Abbott Pk, IL 60064, USA
J Biomol NMR 1993 3 (4) 429
 Heteronuclear NMR studies of ¹³C-labeled yeast cell wall β -glucan oligosaccharides
- Zertuche-Gonzalez JA, Pacheco-Ruiz I, Soria-Mercado IE// Univ Autonoma Baja Calif, Inst Invest Oceanol, Apdo Postal 453, Ensenada, Mexico
Hydrobiologia 1993 261 601
 Carrageenan yield and properties of *Eucheuma uncinatum* (Seth & Gard) Daw cultured under natural conditions
- Zhan DF, Ridout MJ, Brownsey GJ, Morris VJ// *AFRC Inst Food Res, Norwich Lab, Norwich Res Pk, Norwich NR4 7UA, England
Carbohydr Polym 1993 21 (1) 53
 Xanthan locust bean gum interactions and gelation

7 POLYSACCHARIDES - OTHER

- Andersson M, Ratnayake S, Kenne L, Ericsson L, Stack RJ// Univ Stockholm, Arrhenius Lab, Dept Organ Chem, S-10691 Stockholm, Sweden
Carbohydr Res 1993 246 291
 Structural studies of the extracellular polysaccharide from *Butyrivibrio fibrisolvens* strain X6C61
- Benhura MAN, Marume M// Univ Zimbabwe, Dept Biochem, POB MP 167, Harare, Zimbabwe
Carbohydr Polym 1993 21 (1) 13
 Degradation of the mucilaginous polysaccharide from ruredzo (*Dicerocaryum zanguebarium*) during autoclaving
- Biermann M, Schmid K, Schulz P// Henkel KGAA, Henkelstr 67, W-4000 Dusseldorf 1, FRG
Starch 1993 45 (8) 281
 Alkylpolyglucosides - Technology and properties (German, English Abstract)
- Dubois C, Cara L, Borel P, Armand M, Senft M, Portugal H, Bernard PM, Lafont H, Lairon D// Unite 130-INSERM, 18 Ave Mozart, F-13009 Marseille, France
Carbohydr Polym 1993 21 (2-3) 189
 Cereal dietary affect post-prandial lipoproteins in healthy human subjects
- Fournier JM// Inst Pasteur, Unite Cholera & Vibrions, 25-28 rue Docteur Roux, F-75724 Paris 15, France
Biofutur 1993 125 32
 Bacterial polysaccharides and vaccine design (French)
- Grue MR, Parolis H*, Parolis LAS// *Rhodes Univ, Sch Pharmaceut Sci, Grahamstown 6140, South Africa

- Carbohydr Res* 1993 246 283
 Structural elucidation of the capsular polysaccharide of *Escherichia coli* serotype K101 by high resolution NMR spectroscopy
- Hoagland PD, Fishman ML, Konja G, Clauss E// USDA ARS, Eastern Reg Res Ctr, 600 E Mermaid Lane, Philadelphia, Pa 19118, USA
J Agr Food Chem 1993 41 (8) 1274
 Size exclusion chromatography with viscosity detection of complex polysaccharides - Component analysis
- Lang P, Kajiwaru K// Tech Univ Berlin, Ivan N Stranski Inst Phys & Theoret Chem, Str 17 Juni 112, W-1000 Berlin 12, FRG
J Biomater Sci-Polym Ed 1993 4 (5) 517
 Investigations of the architecture of tamarind seed polysaccharide in aqueous solution by different scattering techniques
- Li Q, Zhu J, Daugulis AJ, Hsu CC, Goosen MFA// Queens Univ, Dept Chem Engr, Kingston, Ontario, Canada K7L 3N6
Biomater Artif Cell Immobil Biotech 1993 21 (3) 391
 Polysaccharide microcapsules and macroporous beads for enhanced chromatographic separation
- Marsono Y, Topping DL// *CSIRO, Div Human Nutr, Glenthorne Lab, Majors Rd, O'Halloran Hill, SA 5158, Australia
Food Sci Technol-Lebensm Wiss 1993 26 (4) 364
 Complex carbohydrates in Australian rice products - Influence of microwave cooking and food processing
- Matricardi P, Dentini M, Crescenzi V// *Univ Roma La Sapienza, Dept Chem, P Aldo Moro 5, I-00185 Rome, Italy
Macromolecules 1993 26 (16) 4386
 Rheological gel-point determination for a polysaccharide system undergoing chemical cross linking
- Meshcheryakova D, Andrew S, Tarasova S, Sidorova M, Vafina M, Kornilaeva G, Karamov E, Khaitov R// Moscow Immunol Inst, Kashirskoye Shosse 24-2, Moscow 115478, Russia
Mol Immunol 1993 30 (11) 993
 CD4-derived peptide and sulfated polysaccharides have similar mechanisms of anti-HIV activity based on electrostatic interactions with positively charged gp120 fragments
- Meuser F, Zense TH// Tech Univ Berlin, Inst Food & Fermentat Technol, Dept Cereal Technol, D-13353 Berlin, FRG
Carbohydr Polym 1993 21 (2-3) 179
 Investigation of the flow behaviour of sourdoughs in a continuously operating fermentation system
- Miller IJ, Falshaw R, Fumeaux RH// Carina Chem Labs Ltd, POB 30366, Lower Hutt 6300, New Zealand
Hydrobiologia 1993 261 647
 The chemical structure of the polysaccharide from *Dasyscyonium incisum*
- Osman ME, Menzies AR, Williams PA*, Phillips GP, Baldwin TC// *North East Wales Inst, Polymer & Colloid Chem Grp, Connahs Quay, Deeside CH5 4BR, Clwyd, Wales
Carbohydr Res 1993 246 303
 The molecular characterisation of the polysaccharide gum from *Acacia senegal*
- Pontarolo R, Duarte JH, Feijo MAL// Univ Fed Parana, Dept Farm, Caixa Postal 19046, BR-81531 Curitiba, Parana, Brazil
Placenta 1993 14 (4) 439
 Some structural studies on the galactose-containing polysaccharide from bovine placenta
- Sieberth V, Jann B, Jann K// *Max Planck Inst Immunobiol, Stubeweg 51, D-79108 Freiburg, FRG
Carbohydr Res 1993 246 219
 Structure of the K10 capsular antigen from *Escherichia coli* O11-K10-H10, a polysaccharide containing 4,6-dideoxy-4-malonylamino-D-glucose
- Swanson CL, Fanta GF, Salch JH// USDA ARS, Natl Ctr Agr Utilizat Res, Plant Polymer Lab, 1815 N Univ, Peoria, IL 61604, USA
J Appl Polym Sci 1993 49 (10) 1683
 Skin and layer formation in films prepared from carbohydrates, poly(ethylene-co-acrylic acid), and polyethylene
- Yoshida H, Hatakeyama T, Hatakeyama H// Tokyo Metropolitan Univ, Dept Ind Chem, Hachioji, Tokyo 19203, Japan
J Therm Anal 1993 40 (2) 483
 Characterization of water in polysaccharide hydrogels by DSC

8 LIPOPOLYSACCHARIDES

- Aspinall GO, McDonald AG, Pang H, Kurjanczyk LA, Penner JL// York Univ, Dept Chem, Nth York, Ontario, Canada M3J 1P3
J Biol Chem 1993 268 (24) 18321
 An antigenic polysaccharide from *Campylobacter coli* serotype O:30 - Struc-

ture of a teichoic acid-like antigenic polysaccharide associated with the lipopolysaccharide

Aucken HM, Oxley D, Wilkinson SG// *Univ Hull, Sch Chem, Kingston, Hull HU6 7RX, England

FEMS Microbiol Lett 1993 111 (2-3) 295

Structural and serological characterisation of an O-specific polysaccharide from *Serratia plymuthica*

Chernyak AY, Weintraub A, Kochetkov NK, Lindberg AA// *Karolinska Inst, Huddinge Hosp, Dept Clin Bacteriol, S-14186 Huddinge, Sweden

Mol Immunol 1993 30 (10) 887

The β -configuration of the rhamnosidic linkage in *Salmonella* serogroups C2 and C3 lipopolysaccharide is important for the immunochemistry of the O-antigen-8

Hatano K, Goldberg JB, Pier GB// *Harvard Univ, Brigham & Womens Hosp, Sch Med, Dept Med, Channing Lab, Boston, Ma 02115, USA

J Bacteriol 1993 175 (16) 5117

Pseudomonas aeruginosa lipopolysaccharide - Evidence that the O-side chains and common antigens are on the same molecule

Katzenellenbogen E, Gamian A, Romanowska E*, Dabrowski U, Dabrowski J// *Inst Immunol & Exptl Therapy, Wroclaw, Poland

Biochem Biophys Res Commun 1993 194 (3) 1058

3-Deoxy-octulosonic acid-containing trisaccharide fragment of an unusual core type of some *Hafnia alvei* lipopolysaccharides

Schweda EKH, Hegedus OE, Borrelli S, Lindberg AA, Weiser JN, Maskell DJ, Moxon ER// Karolinska Inst, Huddinge Hosp, Dept Clin Bacteriol, S-14186 Huddinge, Sweden

Carbohydr Res 1993 246 319

Structural studies of the saccharide part of the cell envelope lipopolysaccharide from *Haemophilus influenzae* strain AH1-3(ltc3+)

Taylor DN, Trofa AC, Sadoff J, Chu CY, Bryla D, Shiloach J, Cohen D, Ashkenazi S, Lerman Y, Egan W, Schneerson R, Robbins JB// Walter Reed Army Inst Res, Div Communicable Dis & Immunol, Washington, DC 20307, USA

Infect Immunity 1993 61 (9) 3678

Synthesis characterization, and clinical evaluation of conjugate vaccines composed of the O-specific polysaccharides of *Shigella dysenteriae* type 1, *S. flexneri* type 2a, and *S. sonnei* (*Plesiomonas shigelloides*) bound to bacterial toxoids

9 STARCH

Carbohydr Polym 1993 21 (1) 61

What happens to starch in the extruder? (News and Views)

Biliaderis CG, Juliano BO// Univ Manitoba, Dept Food Sci, Winnipeg, Manitoba, Canada R3T 2N2

Food Chem 1993 48 (3) 243

Thermal and mechanical properties of concentrated rice starch gels of varying composition

Bornet F// Eridania Beghin-Say Ferruzzi Grp, Nutr & Hlth Dept, 54 Ave Hoche, F-75008 Paris, France

Carbohydr Polym 1993 21 (2-3) 195

Technological treatments of cereals - Repercussions on the physiological properties of starch

Chinnaswamy R// Midwest Grain Prod Inc, 1300 Main St, Atchison, Ks 66002, USA

Carbohydr Polym 1993 21 (2-3) 157

Basis of cereal starch expansion

Coffin DR, Fishman ML// USDA ARS, Eastern Reg Res Ctr, Plant Sci Res Unit, 600 E Mermaid Lane, Philadelphia, Pa 19118, USA

J Agr Food Chem 1993 41 (8) 1192

Viscoelastic properties of pectin/starch blends

Eggleston G, Omoaka PE, Arowshegbe AU// 3001 S Providence Rd, Apt 19A, Columbus, Mo 65203, USA

J Sci Food Agr 1993 62 (1) 49

Flour, starch and composite breadmaking quality of various cassava clones

Eggleston G, Omoaka PE, Arowshegbe AU// 3001 S Providence Rd, Apt 19A, Columbus, Mo 65203, USA

J Sci Food Agr 1993 62 (1) 61

Flour, starch and alternative (wheatless) breadmaking quality of various cassava clones

Emneus J, Nilsson G, Gorton L// Lund Univ, Dept Analyt Chem, POB 124, S-22100 Lund, Sweden

Starch 1993 45 (8) 264

A flow injection system for the determination of starch in starch from different origins with immobilized α -amylase and amyloglucosidase reactors

Faisant N, Champ M*, Colonna P, Buleon A// *INRA, BP 527, F-44026 Nantes 03, France

Carbohydr Polym 1993 21 (2-3) 205

Structural discrepancies in resistant starch obtained *in vivo* in humans and *in vitro*

Fanta GF, Trimnell D, Salch JH// USDA ARS, NCAUR, 1815 N Univ St, Peoria, Il 61604, USA

J Appl Polym Sci 1993 49 (9) 1679

Graft polymerization of methyl acrylate vinyl acetate mixtures onto starch

Ferrero C, Martino MN, Zaritzky NE// *Natl Univ La Plata, CIDCA, 47 & 116, RA-1900 La Plata, Argentina

J Food Process Preserv 1993 17 (3) 191

Stability of frozen starch pastes - Effect of freezing, storage and xanthan gum addition

Godet MC, Buleon A, Tran V, Colonna P// INRA, BP 527, F-44026 Nantes, France

Carbohydr Polym 1993 21 (2-3) 91

Structural features of fatty acid-amylose complexes

Guraya HS, Toledo RT// Univ Georgia, Dept Food Sci & Technol, Athens, Ga 30602, USA

J Food Sci 1993 58 (4) 888

Determining gelatinized starch in a dry starchy product

Hamann C// Address not available.

J Amer Dent Assn 1993 124 (8) 14

Hold the talc, pass the cornstarch (Letter)

Hoover R, Swanmides G, Vasanthan T// Mem Univ Newfoundland, Dept Biochem, St Johns, Newfoundland, Canada A1B 3X9

Carbohydr Res 1993 246 185

Studies on the physicochemical properties of native, defatted, and heat moisture treated pigeon pea (*Cajanus cajan* L.) starch

Huang YW, Mithani R, Takahashi K, Fan LT*, Seib PA// *Kansas State Univ Agr & Appl Sci, Dept Chem Engr, Artificial Intelligence Proc Engr Lab, Manhattan, Ks 66506, USA

Biotechnol Progr 1993 9 (4) 401

Modular neural networks for identification of starches in manufacturing food products

Kaczynska B, Autio K*, Fornal J// *Tech Res Ctr Finland, Food Res Lab, POB 203, SF-02151 Espoo, Finland

Food Struct 1993 12 (2) 217

Heat-induced structural changes in faba bean starch paste - The effect of steaming of faba bean seeds

Katz FR, Furcsik SL, Tenbarger FL, Hauber RJ, Friedman RB// Amer Maize Prod Co, Hammond, In 46320, USA

Carbohydr Polym 1993 21 (2-3) 133

Behaviour of starches derived from varieties of maize containing different genetic mutations - Effects of starch genotypes on granular morphology

Le Bail P, Bizot H, Buleon A// INRA, Lab Physicochim Macromolec, BP 527, F-44026 Nantes 03, France

Carbohydr Polym 1993 21 (2-3) 99

B type and A type phase transition in short amylose chains

Maciejewska W, Polewski K, Grundwald-Wyspianska M// Acad Agr Poznan, Dept Phys, Wojska Polskiego 38-42, PL-60637 Poznan, Poland

Carbohydr Res 1993 246 253

Amylose-rose bengal complexes. 2. FT-IR and Raman spectroscopy study of the amylose-rose bengal complex

Maga JA, Liu MB, Rey T// Colorado State Univ, Dept Food Sci & Human Nutr, Ft Collins, Co 80523, USA

Carbohydr Polym 1993 21 (2-3) 177

Taro (*Colocasia esculenta*) extrusion

Mizuno K, Kawasaki T, Shimada H, Satoh H, Kobayashi E, Okumura S, Arai Y, Baba T// *Univ Tsukuba, Inst Appl Biochem, Tsukuba Sci Ctr, Tsukuba, Ibaraki 305, Japan

J Biol Chem 1993 268 (25) 19084

Alteration of the structural properties of starch components by the lack of an isoform of starch branching enzyme in rice seeds

Modderman JP// Keller & Heckman, 1001 G St NW, Washington, DC 20001, USA

Regul Toxicol Pharmacol 1993 18 (1) 80

Safety assessment of hydrogenated starch hydrolysates

Nakanishi Y, Norisuye T*, Teramoto A, Kitamura S// *Osaka Univ, Dept Macromolec Sci, Toyonaka, Osaka 560, Japan

Macromolecules 1993 26 (16) 4220

Conformation of amylose in dimethyl sulfoxide

Nicol NT, Wiseman J, Norton G// Univ Nottingham, Fac Agr & Food Sci,

- Sutton Bonnington Campus, Loughborough LE12 5RD, England
Carbohydr Polym 1993 21 (2-3) 211
 Factors determining the nutritional value of wheat varieties for poultry
- Oostergetel GT, Van Bruggen EFJ// Univ Groningen, Bioson Res Inst, Nijenborgh 16, 9747 AG Groningen, The Netherlands
Carbohydr Polym 1993 21 (1) 7
 The crystalline domains in potato starch granules are arranged in a helical fashion
- Polewski K, Maciejewska W*// *Acad Agr Poznan, Dept Phys, Wojska Polskiego 38-42, PL-60637 Poznan, Poland
Carbohydr Res 1993 246 243
 Amylose-rose bengal complexes. 1. UV visible absorption, fluorescence, and optical rotatory study of the amylose-rose bengal complex
- Roger P, Colonna P// INRA, rue Geraudiere, PB 527, F-44026 Nantes 03, France
Carbohydr Polym 1993 21 (2-3) 83
 Evidence of the presence of large aggregates contaminating amylose solutions
- Sahlstrom S, Mosleth E, Baevre AB, Gloria H, Fayard G// Norwegian Food Res Inst, MATFORSK, Osloveien 1, N-1430 As, Norway
Carbohydr Polym 1993 21 (2-3) 169
 Influence of starch, gluten proteins and extraction rate on bread and pasta quality
- Sarazin D, Francois J, Roqueta C, Fleche G// Inst Charles Sadron, CRM-EAHP, CNRS-ULP, 6 rue Boussingault, F-67083 Strasbourg, France
Carbohydr Polym 1993 21 (1) 29
 Aqueous size exclusion chromatography of hydroxyethyl-amylopectin
- Schreiber MM, Hickman MV, Vail GD// Purdue Univ, USDA ARS, Dept Bot & Plant Pathol, West Lafayette, IN 47907, USA
J Environ Qual 1993 22 (3) 443
 Starch-encapsulated atrazine - Efficacy and transport
- Shogren RL, Fanta GF, Doane WM// USDA ARS, Natl Ctr Agr Utilizat Res, Plant Polymer Res, 1815 N Univ St, Peoria, IL 61604, USA
Starch 1993 45 (8) 276
 Development of starch-based plastics - A reexamination of selected polymer systems in historical perspective
- Slade L, Levine H*// *Nabisco Brands Inc, Fundamental Sci Grp, POB 1944, East Hanover, NJ 07936, USA
Carbohydr Polym 1993 21 (2-3) 105
 Water relationships in starch transitions
- Svegmark K, Hermansson AM*// *Swedish Inst Food Res, POB 5401, S-40229 Gothenburg, Sweden
Food Struct 1993 12 (2) 181
 Microstructure and rheological properties of composites of potato starch granules and amylose - A comparison of observed and predicted structures
- Takeda C, Takeda Y*, Hizukuri S// *Kagoshima Univ, Fac Agr, Dept Biochem Sci & Technol, Korimoto 1, Kagoshima 890, Japan
Carbohydr Res 1993 246 273
 Structure of the amylopectin fraction of amylo maize
- Takeda Y, Tomooka S, Hizukuri S// Kagoshima Univ, Fac Agr, Dept Biochem Sci & Technol, Kagoshima 890, Japan
Carbohydr Res 1993 246 267
 Structures of branched and linear molecules of rice amylose
- Tziboula A, Muir DD// Hannah Res Inst, Ayr KA6 5HL, Scotland
Milchwissenschaft 1993 48 (6) 314
 Effect of phosphorylated starches on the heat stability of milk
- Vazquez B, Gurruchaga M, Goni I, Valero M, Guzman GM, Roman JS*// *CSIC, Inst Ciencia & Tecnol Polimeros, Juan Cierva 3, E-28006 Madrid, Spain
Macromolecules 1993 26 (16) 4298
 Microstructure of copolymers of methacrylonitrile *n*-alkyl methacrylate mixtures grafted onto amylo maize by ¹³C-NMR spectroscopy
- Wang JJ, Hayakawa K*// *Rutgers Univ, Cook Coll, New Jersey Agr Expt Stn, Dept Food Sci, POB 231, New Brunswick, NJ 08903, USA
J Food Sci 1993 58 (4) 884
 Thermal conductivities of starch gels at high temperature influenced by moisture
- Warburton SC, Donald AM, Smith AC// ICI Paints, Wexham Rd, Slough SL2 5DS, Berks, England
Carbohydr Polym 1993 21 (1) 17
 The deformation of thin films made from extruded starch
- Wierik GHPT, Eissens AC, Lerk CF*// *Univ Groningen, Dept Pharmaceut Technol & Biopharm, Ant Deusinglaan 1, 9713 AV Groningen, The Netherlands
Int J Pharm 1993 98 (1-3) 219
 Preparation, characterization and pharmaceutical application of linear dextrans
4. Drug release from capsules and tablets containing amylo dextrin
- Wootton M, Mahdar D// Univ New Sth Wales, Dept Food Sci & Technol, POB 1, Kensington, NSW 2033, Australia
Starch 1993 45 (8) 255
 Properties of starches from Australian wheats. 1. Separation of starch and gluten
- Zhang BW, Fischer K, Bieniek D, Ketrup A// Minist Med Ind, Cent Iron & Steel Res Inst, Xueyuan Nanlu 76, Beijing, Peoples Rep China
React Polym 1993 20 (3) 207
 Synthesis of aminodioxime-containing modified starch and application for the removal of heavy metals

10 STARCH-DEGRADING ENZYMES

- Bertoft E, Manelius R, Qin Z// Abo Akad Univ, Dept Biochem & Pharm, POB 66, SF-20521 Turku, Finland
Starch 1993 45 (8) 258
 Studies on the structure of pea starches. 2. α -Amylolysis of granular wrinkled pea starch
- Brown SH, Kelly RM*// *Nth Carolina State Univ, Dept Chem Engr, Campus Box 7905, Raleigh, NC 27695, USA
Appl Environ Microbiol 1993 59 (8) 2614
 Characterization of amyolytic enzymes, having both α 1,4 and α 1,6 hydrolytic activity, from the thermophilic archaea *Pyrococcus furiosus* and *Thermococcus litoralis*
- Castro GR, Ferrero MA, Mendez BS, Sineriz F// Univ Nacl Tucuman, PROIMI, Mircen, Fac Quim Bioquim & Farmacia, Catedra Microbiol Super, RA-4000 Tucuman, Argentina
Acta Biotechnol 1993 13 (2) 197
 Screening and selection of bacteria with high amyolytic activity
- Kelly CT, Collins BS, Fogarty WM, Doyle EM// Natl Univ Ireland, Univ Coll Dublin, Dept Ind Microbiol, Dublin 4, Rep Ireland
Appl Microbiol Biotechnol 1993 39 (4-5) 599
 Mechanisms of action of the α -amylase of *Micromonospora melanosporea*
- Lauro M, Lappalainen A, Suortti T, Autio K, Poutanen K// VTT, Food Res Lab, POB 203, SF-02151 Espoo, Finland
Carbohydr Polym 1993 21 (2-3) 151
 Modification of barley starch by α -amylase and pullulanase
- Linko YY, Wu XY// Helsinki Univ Technol, Biotechnol & Food Engr Lab, SF-02150 Espoo 15, Finland
Biotechnol Technique 1993 7 (8) 551
 Improvement and estimation of enzymic starch saccharification process
- Mathupala SP, Ziekus JG*// *Michigan State Univ, Dept Biochem, East Lansing, MI 48824, USA
Appl Microbiol Biotechnol 1993 39 (4-5) 487
 Improved purification and biochemical characterization of extracellular amylo pullulanase from *Thermoanaerobacter ethanolicus* 39E
- Miranda EA, Berglund KA*// *Michigan State Univ, Dept Agr Engr, East Lansing, MI 48424, USA
Biotechnol Progr 1993 9 (4) 411
 Evaluation of column flotation in the downstream processing of fermentation products - Recovery of a genetically engineered α -amylase
- Sadhukhan R, Roy SK, Chakrabarty SL*// *Bose Inst, Dept Microbiol, P-1-12, CIT Scheme VII M, Calcutta 700054, India
Enzyme Microb Technol 1993 15 (9) 801
 Immobilization of α -amylase from *Myceliophthora thermophila* D-14 (ATCC-48104)
- Sogaard M, Abe J, Martin-Eauclaire MF, Svensson B*// *Carlsberg Lab, Dept Chem, Gamle Carlsberg Vej 10, DK-2500 Copenhagen Valby, Denmark
Carbohydr Polym 1993 21 (2-3) 137
 α -Amylases - Structure and function
- Valetudie JC, Colonna P, Bouchet B, Gallant DJ// Address not available.
Starch 1993 45 (8) 270
 Hydrolysis of tropical tuber starches by bacterial and pancreatic α -amylases
- Williamson G, Belshaw NJ// AFRC Inst Food Res, Norwich Res Pk, Norwich NR4 7UA, England
Carbohydr Polym 1993 21 (2-3) 147
 Properties of the binding domain of glucoamylase