

BIBLIOGRAPHY ON CARBOHYDRATE POLYMERS

1 Books, Reviews and Symposia

Legge RL//Univ Waterloo, Dept Chem Engr, Biochem Engr Grp, Waterloo, Ontario, Canada, Canada N2L 3G1

BIOTECHNOL ADV 1990, 8 (2) 303

Microbial cellulose as a speciality chemical (Review)

Roffael E//Address not available

HOLZFORSCHUNG 1990, 44 (5) 324

32nd round table of cellulose chemists - Structure, accessibility and reactivity of cellulose (Review)(German)

Chaika LA, Khadzhai YI, Libina VV//All Union Drug Chem & Technol Res Inst, Kharkov, Ukraine, USSR

KHIM-FARM ZH SSSR 1990, 24 (7) 19

Pharmacotoxicological aspects in the use of cyclodextrins as drug vehicles (Review)

Verstraete M//Catholic Univ Leuven, Ctr Thrombosis & Vasc Res, Herestr 49, B-3000 Louvain, Belgium

DRUGS 1990, 40 (4) 498

Pharmacotherapeutic aspects of unfractionated and low molecular weight heparins (Review)

Glass JE, Swift G (Eds)

Agricultural and Synthetic Polymers

Biodegradability and Utilization

ACS Symposium Series, Vol 433

Symp at the 197th National meeting of the American Chemical Soc - Agricultural and Synthetic Polymers: Biodegradability and Utilization, Dallas, Tx, Apr 9-14, 1989

Amer Chem Soc (Washington), 1990, 323pp, \$69.95 Hardbound, ISBN: 0-8412-1816-1

Morvan C, Jauneau A, Voreux H, Morvan O, Demarty M//Fac Sci Rouen, SCUEOR, CNRS, URA 203, BP 118, F-76134 Mt St Aignan, France

C R SOC BIOL 1990, 184 (1) 18

Role of the cell wall hydrosoluble polysaccharides in the physicochemical behaviour of the flax fibres - Application to an enzymatic retting (Review)

2 Cellulose

Lazareva TG, Alimov IF, Petrovich IA, Ermolenko IN//Acad Sci BeSSR, Inst Gen & Inorganic Chem, Minsk, Belorussia, USSR

DOKL AKAD NAUK BSSR 1990, 34 (10) 908

Polyvinyl alcohol-based and carboxymethyl cellulose-based film composites (Russian, English Abstract)

Meler J, Wendt L*//UL Szewska 38, PL-50139 Wroclaw, Poland

PHARMAZIE 1990, 45 (9) 692

Pharmaceutical interaction of lidocaine hydrochloride and sodium carboxymethylcellulose in hydrocortisonum suspension

Turayev AS, Grachev AN, Dusniyazov B, Arustamov DL, Nadzhimutdinov S//Tashkent Cotton Cellulose Chem & Technol Res Inst, Tashkent, Uzbekistan, USSR

KHIM-FARM ZH SSSR 1990, 24 (8) 47

Hemostatic activity and resolution capacity of carboxymethyl cellulose

Andersson R, Hoffman J, Nahar N, Scholander E*//Medicarb AB, Bjornnasvagen 21, S-11347 Stockholm, Sweden

CARBOHYD RES 1990, 206 (2) 340

An NMR study of the products of oxidation of cellulose and (1-4)-beta-D-xylan with sodium nitrite in orthophosphoric acid

Brandao MSB, Galembeck F//Univ Estadual Campinas, Inst Quim, Caixa Postal 6154, BR-13081 Campinas, SP, Brazil

COLLOID SURFACE 1990, 48 (4) 351

Copper, lead and zinc adsorption on MnO₂-impregnated cellulose acetate

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 and 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 the subject. When there are no publications to appear under one of these headings, that section will be omitted.

Burns DS, Converse AO*, Holland JE, Grethlein HE, Wallis GB//^{*}Dartmouth Coll, Thayer Sch Engr, Hanover, NH 03755, USA

BIOPROCESS ENG 1990, 5 (6) 247

One-dimensional model of the acid hydrolysis of cellulosic substrates in a solid-liquid cyclone reactor

Deleens E, Schwebeldugue N, Caer V, Naulet N, Martin ML*//^{*}Univ Nantes, CNRS, URA 472, Rmn & React Chim Lab, 2 Rue Houssiniere, F-44072 Nantes 03, France

CARBOHYD RES 1990, 207 (2) 287

Site-specific natural hydrogen isotope ratios in the characterization of plant cellulose

Devi TG, Kannan MP, Richards GN//Univ Montana, Wood Chem Lab, Missoula, Mt 59812, USA

FUEL 1990, 69 (11) 1440

Copper catalysis in the air gasification of cellulosic chars

Donges R//Hoechst AG, Werk Kalle Albert, Rheingaustr 190, W-6200 Wiesbaden, FRG

BRIT POLYM J 1990, 23 (4) 315

Non-ionic cellulose ethers

Fernandez MJ, Casinos I*, Guzman GM//^{*}Univ Pais Vasco, Fac Quim, Dept Ciencia & Tecnol Polimeros, POB 1072, E-20080 San Sebastian, Spain

MAKROMOL CHEM-MACRO CHEM PHYS 1990, 191 (6) 1287

Grafting of a vinyl acetate-methyl acrylate mixture onto cellulose - Effect of temperature and nature of substrate

Fernandez MJ, Casinos I, Guzman GM//Univ Pais Vasco, Fac Quim, Dept Ciencia & Tecnol Polimeros, POB 1072, E-20080 San Sebastian, Spain

J MACMOL SCI-CHEM 1990, A27 (7) 947

Grafting of vinyl acetate-methyl acrylate mixture onto cellulose - Effect of agitation

Fernandez MJ, Casinos I, Guzman GM//Univ Pais Vasco, Fac Quim, Dept Ciencia & Tecnol Polimeros, POB 1072, E-20080 San Sebastian, Spain

J MACMOL SCI-CHEM 1990, A27 (7) 969

Grafting of vinyl acetate-methyl acrylate mixture onto cellulose - Effect of monomer concentration and feed composition

Galgut PN//Univ Coll Hosp London, Sch Dent, Dept Periodontol, Mortimer Market, London WC1E 6AU, England

BIOMATERIALS 1990, 11 (8) 561

Oxidized cellulose mesh. 1. Biodegradable membrane in periodontal surgery

Galgut PN//Univ Coll Hosp London, Sch Dent, Dept Periodontol, Mortimer Market, London WC1E 6AU, England

BIOMATERIALS 1990, 11 (8) 565

Oxidized cellulose mesh. 2. Using Hydroxyapatite bone grafting material in the treatment of infrabony defects

Gertsev VV, Nesterenko LY, Romanov YA//Moscow Light Ind Technol Inst, Moscow, USSR KHIM-FARM ZH SSSR 1990, 24 (6) 34

Boric cellulose, a modified polymer having anti-septic, antifungal, and hemostatic properties (Russian)

Knospe WH, Husseini SG, Schwartz D//Rush Presbyterian St Lukes Med Ctr, Dept Med, Hematol Sect, 1653 W Congress Pkwy, Chicago, IL 60612, USA

INT J CELL CLONING 1990, 8 (6) 425

Hematopoiesis on cellulose ester membranes (CEM). 12. Effect of membrane enrichment by purified matrix proteins

Lazareva TG, Korobko EV, Ermolenko IN, Shulman ZP//Acad Sci BeSSR, Inst Gen & Inorgan Chem, Minsk, Belorussia, USSR

COLLOID J USSR-ENGL TR 1990, 52 (1) 119

Effect of an electric field on the rheological properties of a suspension of titanium dioxide in solutions of cellulose ethers

Levin PP, Ferreira LFV, Costa SMB//Acad Sci USSR, Inst Chem Phys, UL Kosygina 4, Moscow 117334, USSR

CHEM PHYS LETT 1990, 173 (4) 277

Diffuse-reflectance laser photolysis studies of geminate recombination kinetics of triplet radical pairs adsorbed on microcrystalline cellulose

Leza ML, Casinos I, Guzman GM//Univ Pais Vasco, Fac Quim, Dept Ciencia & Tecnol Polimeros, POB 1072, E-20080 San Sebastian, Spain

BRIT POLYM J 1990, 23 (4) 341

Graft copolymerization of 4-vinylpyridine on to celluloses - Effects of stirring and inorganic salts

Martos R, Rodriguez Puyol M*, Sevillano G, Diez Marques ML, Duque I, Lamas S, Rodriguez Puyol D/**Univ Alcala de Henares, Hosp Principe Asturias, Secc Nefrol, Campus Univ, E-28880 Alcala de Henares, Spain

NEFROLOGIA 1990, 10 (3) 255

Red blood cell oxidation and biocompatibility - A short term study with cellulose acetate (Spanish, English Abstract)

Natchimuthu N, Rajalingam P, Radhakrishnan G*, Francis DJ/**Cent Leather Res Inst, Div Polymer, Madras 600020, India

J APPL POLYM SCI 1990, 41 (11-12) 3059

Interpenetrating polymer networks of cellulose nitrate and castor oil based polyurethanes - Development and characterization

Newman RH, Hemmingson JA//DSIR, Div Chem, Private Bag, Petone, New Zealand

HOLZFORSCHUNG 1990, 44 (5) 351

Determination of the degree of cellulose crystallinity in wood by ¹³C-nuclear magnetic resonance spectroscopy

Nishioka N, Uno M, Kosai K//Osaka Electrocommun Univ, Fac Engn, Neyagawa, Osaka 572, Japan

J APPL POLYM SCI 1990, 41 (11-12) 2857

Permeability through cellulose membranes grafted with vinyl monomers in a homogeneous system. 7. Acrylamide grafted cellulose membranes

Saika CN, Dutta NN, Baruah JN, Dass NN//Reg Res Lab, Jorhat 785006, India

THERMOCHIM ACTA 1990, 168 (OCT) 9

Thermal behaviour of high alpha-cellulose pulp from fast growing plant species and its acetylation product

Shukla SR, Sakhardande VD//Univ Bombay, Dept Chem Technol, Bombay 400019, India

J APPL POLYM SCI 1990, 41 (11-12) 2655

Cyprie ion removal by dyed cellulosic materials

Teh JW, Rudin A**Univ Waterloo, Dept Chem, Waterloo, Ontario, Canada N2L 3G1

J POLYM SCI C-POLYM LETT 1990, 28 (12) 363

Mechanism of adhesion of resole phenolics to cellulosic materials

Tyukova IS, Tager AA, Morozov EV, Lavrikova

YG//AM Gorkii State Univ, Sverdlovsk, USSR

VYSOKOMOL SOEDIN SER A SSSR 1990, 32 (9) 2002

Thermodynamic parameters of interaction of cellulose nitrate with solvents obtained by reversed gas chromatography method (Russian, English Abstract)

Wallis AFA, Wearne RH//CSIRO, Div Forestry & Forest Prod, Private Bag 10, Clayton, Vic 3168, Australia

EUR POLYM J 1990, 26 (11) 1217

Side reactions of phenylisocyanate during amine-catalysed carbanilation of cellulose

Zhang YX, Da AH, Chen JC, Butler GB, Hogenesch TE**Univ South Calif, Dept Chem, Los Angeles, Ca 90089, USA

J MACROMOL SCI-CHEM 1990, A27 (5) 593

Synthesis and solution properties of water-soluble sulfonated cellulose-based polymers and their polyacrylamide copolymers

Dubey V, Khare P, Saraf KK//Dr Hari Singh Gaur Vishwavidyalaya, Dept Phys, Solid State Lab, Sagar 470003, India

INDIAN J PURE APPL PHYS 1990, 28 (10) 579

Thermally stimulated discharge current studies in composite (ferrocene mixed ethyl cellulose) films

Huang Y//Acad Sinica, Guangzhou Inst Chem, POB 1122, Guangzhou 510650, Peoples R China

MOL CRYST LIQUID CRYST 1990, 188 167

The planar texture of ethyl-acetyl cellulose mesophase

Huang Y, Zou JY//Acad Sinica, Guangzhou Inst Chem, Guangzhou, Peoples R China

J MACROMOL SCI-PHYS 1990, B29 (2-3) 117

Influence of temperature on mesophase textures of ethyl-acetyl cellulose dichloroacetic acid solution

Malmsten M, Claesson PM*, Pezron E, Pezron I/**Chem Ctr, Lund, POB 124, S-22100 Lund, Sweden

LANGMUIR 1990, 6 (10) 1572

Temperature-dependent forces between hydrophobic surfaces coated with ethyl(hydroxyethyl)cellulose

Iob A, Abbas NM//King Fahd Univ Petr &

Minerals, Res Inst, Cent Analyt & Mat Characterisat Labs, Dhahran, Saudi Arabia

ANALYST 1990, 115 (10) 1375

Turbidimetric method for the determination of water-soluble hydroxyethylcellulose in dry blended cement

Sivadasan K, Somasundaran P//Columbia Univ, Henry Krumb Sch Mines, Langmuir Ctr Colloid & Interfaces, New York, NY 10027, USA

COLLOID SURFACE 1990, 49 (3-4) 229

Polymer surfactant interactions and the association behavior of hydrophobically modified hydroxyethylcellulose

Tadros TF, Zsednai A//ICI PLC, Agrochem, Jealotts Hill Res Stn, Bracknell RG12 6EY, Berks, England

COLLOID SURFACE 1990, 49 (1-2) 103

Effect of addition of hydroxyethyl cellulose on the viscoelastic properties of concentrated sterically stabilised latex dispersions

Pauvrel E, Navard P*//Ecole Natl Super Mines, Ctr Mise Forme Mat, CNRS, URA 1374, Sophia Antipolis, F-06560 Valbonne, France

MACROMOLECULES 1990, 23 (22) 4874

Shear velocity profiles in (hydroxypropyl)cellulose solutions

Kararli TT, Catalano T//Searle Prod Dev, 4901 Searle Pkwy, Skokie, IL 60077, USA

PHARMACEUT RES 1990, 7 (11) 1186

Stabilization of misoprostol with hydroxypropyl methylcellulose (HPMC) against degradation by water

Kararli TT, Needham TE, Seul CJ, Finnegan PM, Hidvegi MI, Hurlbut J//Searle Prod Dev, 4901 Searle Pkwy, Skokie, IL 60077, USA

PHARMACEUT RES 1990, 7 (11) 1181

Physical state of misoprostol in hydroxypropyl methylcellulose films

Goldblum S, Bae YK, Hink WF, Chalmers J*//Ohio State Univ, Dept Chem Engr, 140 W 19th Ave, Columbus, OH 43210, USA

BIOTECHNOL PROGR 1990, 6 (5) 383

Protective effect of methylcellulose and other polymers on insect cells subjected to laminar shear stress

Huang Y, Wu BK, Jiang SH//Acad Sinica, Guangzhou Inst Chem, POB 1122, Guangzhou

510650, Peoples R China

MOL CRYST LIQUID CRYST 1990, 188 177

Textures of methyl cellulose dichloroacetic acid mesomorphic solutions

Merhari L, Moliton JP, Belorgeot C//Lab Electr Polymeres Faisceaux Ion, 123 Ave Albert Thomas, F-87060 Limoges, France

J APPL PHYS 1990, 68 (9) 4837

Fourier transform infrared study of ion irradiated nitrocellulose

Stephan B, Zinner H, Kastner F, Mannschreck A*//Univ Regensburg, Inst Organ Chem, W-8400 Regensburg, FRG

CHIMIA 1990, 44 (10) 336

Chiral 2H-pyrans. 2. Enantiomers of 2,2'-spirobichromenes - Energy barrier for thermal racemization during HPLC on tribenzoylcellulose

3 Cellulose-degrading Enzymes

Breuil C, Chan M, Saddler JN*//Forintek Canada Corp, 800 Montreal Rd, Ottawa, Ontario, Canada K1G 3Z5

APPL MICROBIOL BIOTECHNOL 1990, 34 (1) 31

Comparison of the hydrolytic activity of commercial cellulase preparations

Kolbe J, Kubicek CP*//Vienna Tech Univ, Inst Biochem Technol & Mikrobiol, Mikrobielle Biochem Abt, A-1060 Vienna, Austria

APPL MICROBIOL BIOTECHNOL 1990, 34 (1) 26

Quantification and identification of the main components of the Trichoderma cellulase complex with monoclonal antibodies using an enzyme-linked immunosorbent assay (ELISA)

Marxfigini M, Blanco S, Von Ellenrieder G//Natl Univ La Plata, Fac Exact Sci, Inst Theoret & Appl Physiochem Res, Div Polym, CC 16, RA-1900 La Plata, Argentina

MAKROMOL CHEM-MACRO CHEM PHYS 1990, 191 (7) 1649

Action of the cellulase multienzyme complex on the degree of polymerization of high-molecular-weight cellulose

4 Cyclodextrins

Arima H, Adachi H, Irie T, Uekama K*, Pitha

J//Kumamoto Univ, Fac Pharmaceut Sci, 5-1
Oe Honmachi, Kumamoto 862, Japan
PHARMACEUT RES 1990, 7 (11) 1152

Enhancement of the antiinflammatory effect of
ethyl 4-biphenyl acetate in ointment by beta-cy-
clodextrin derivatives - Increased absorption and
localized activation of the prodrug in rats

Bender H//Univ Freiburg, Inst Organ Chem &
Biochem, Albertstr 21, W-7800 Freiburg, FRG
CARBOHYD RES 1990, 206 (2) 257

Studies of the mechanism of the cyclisation reac-
tion catalysed by the wildtype and a truncated
alpha-cyclodextrin glycosyltransferase from Kleb-
siella pneumoniae strain M-5 A1, and the beta-
cyclodextrin glycosyltransferase from Bacillus cir-
culans strain-8

Briggner LE, Wadso I//Univ Lund, Ctr Chem,
Div Thermochem, POB 124, S-22199 Lund,
Sweden

J CHEM THERMODYN 1990, 22 (1) 1067

Heat capacities of maltose maltotriose, maltote-
trose and alpha-cyclodextrin, beta-cyclodextrin,
and gamma-cyclodextrin in the solid state and in
dilute aqueous solution

Denamor AFD, Traboulssi R, Lewis DFW//Univ
Surrey, Dept Chem, Guildford GU2 5XH, Sur-
rey, England

J AMER CHEM SOC 1990, 112 (23) 8442

Host properties of cyclodextrins toward anion
constituents of antigenic determinants - A ther-
modynamic study in water and in N,N-dimethyl-
formamide

Djedaini F, Perly B//CENS, DPHG SCM, F-
91191 Gif Sur Yvette, France

J MOL STRUCT 1990, 239 (OCT) 161

Organic shift reagents for the NMR analysis of
cyclodextrins

El Shaboury MH//Islam Ctr Med Ctr, Kuwait,
Kuwait

INT J PHARM 1990, 63 (2) 95

Physical properties and dissolution profiles of ta-
blets directly compressed with beta-cyclodextrin

Fielden PR, Packham AJ//UMIST, Dept In-
strumentat & Analyt Sci, POB 88, Manchester
M60 1QD, England

J CHROMATOGR 1990, 516 (2) 355

Retention of benzo[a]pyrene on cyclodextrin-
bonded phases

Fujimura K, Suzuki S, Hayashi K, Masuda
S//Kyoto Univ, Fac Engr, Dept Ind Chem, Sakyo
ku, Kyoto 606, Japan

ANAL CHEM 1990, 62 (20) 2198

Retention behavior and chiral recognition mech-
anism of several cyclodextrin-bonded stationary
phases for dansyl amino acids

Fukushi K, Hiirō K//Kobe Univ Mercantile
Marine, Higashinada, Kobe 658, Japan

J CHROMATOGR 1990, 518 (1) 189

Use of cyclodextrins in the isotachophoretic
determination of various inorganic anions

Kitamura S, Koda S, Yasuda T//Fujisawa Phar-
maceut Co Ltd, Analyst Res Labs, 1-6 2-chome
Kashima, Yodogawa ku, Osaka 532, Japan

J PHARM PHARMACOL 1990, 42 (9) 611

Moisture adsorption-desorption effect on the
structure of inclusion complex of 6-chloro-2-pyri-
dylmethyl nitrate and beta-cyclodextrin

Litwiler KS, Catena GC, Bright FV//SUNY
Buffalo, Dept Chem, Acheson Hall, Buffalo, NY
14214, USA

ANAL CHIM ACTA 1990, 237 (2) 485

Simple fiber-optic sensor based on immobilized
beta-cyclodextrin

Nardi A, Fanali S*, Foret F//CNR, Ist Croma-
tog, Area Ric Roma, CP 10, I-00016 Montero-
tondo Scal, Italy

ELECTROPHORESIS 1990, 11 (9) 774

Capillary zone electrophoretic separation of cy-
clodextrins with indirect UV photometric detec-
tion

Schurig V, Nowotny HP//Univ Tubingen, Inst
Organ Chem, Morgenstelle 18, W-7400 Tubing-
en 1, FRG

ANGEW CHEM INT ED 1990, 29 (9) 939

Gas chromatographic separation of enantiomers
on optically active metal-complex-free stationary
phases. 2. Gas chromatographic separation of
enantiomers on cyclodextrin derivatives

Seo T, Kajihara T, Iijima T//Tokyo Inst Technol,
Dept Polymer Sci, Meguro ku, Tokyo 152, Japan
MAKROMOL CHEM-MACRO CHEM PHYS
1990, 191 (7) 1665

Catalytic hydrolysis of nitrophenyl esters by
means of cyclodextrins in presence of poly(so-
dium styrenesulfonate)

Starnes RL//Novo Nordisk Co, Entotech Inc, Davis, Ca 95616, USA

CEREAL FOOD WORLD 1990, 35 (11) 1094

Industrial potential of cyclodextrin glycosyl transferases

Tamaki T, Sakuragi M, Ichimura K, Aoki K, Arima I//Res Inst Polymers & Text, 1-1-4 Higashi, Tsukuba, Ibaraki 305, Japan

POLYM BULL 1990, 24 (5) 559

The photochromism of nitrospiropyran included in gamma-cyclodextrin

Oguma T, Kikuchi M, Mizusawa K//Kikkoman Foods Inc, Div Res & Dev, 399 Noda, Noda, Chiba 278, Japan

BIOCHIM BIOPHYS ACTA 1990, 1036 (1) 1

Purification and some properties of cyclodextrin-hydrolyzing enzyme from *Bacillus sphaericus*

Uekama K, Kurihara M, Hirayama F//Kumamoto Univ, Fac Pharmaceut Sci, Oehon machi, Kumamoto 862, Japan

NIPPON KAGAKU KAISHI 1990, (10) 1195

Release control of prostaglandin E₁ by utilizing hydrophilic and hydrophobic beta-cyclodextrin derivatives

Yoshimura Y, Kitahata S, Okada S, Satomura Y, Fujita K//Tokuyama Soda Co Ltd, Tsukuba Res Lab, 40 Wadai, Tsukuba Res Lab, 40 Wadai, Tsukuba 30042, Japan

AGR BIOL CHEM TOKYO 1990, 54 (10) 2585

Structure of di-O-alpha-maltosyl cyclodextrins produced from alpha-maltosylfluoride and cyclodextrins

5 Lignin

Dosoretz CG, Dass SB, Reddy CA, Grethlein HE*//Michigan State Univ, Dept Chem Engr, E Lansing, Mi 48824, USA

APPL ENVIRON MICROBIOL 1990, 56 (11) 3429

Protease-mediated degradation of lignin peroxidase in liquid cultures of *Phanerochaete chrysosporium*

Funaoka M, Shibata M, Abe I//Mie Univ, Fac Bioresources, Dept Forest Prod, 1515 Kamihamma, Tsu, Mie 514, Japan

HOLZFORSCHUNG 1990, 44 (5) 357

Structure and depolymerization of acid-condensed lignin

Kaplunova TS, Abdurazimov KA, Ismailova PL, Shermatov BE//Address not available

KHIM PRIR SOEDIN SSSR 1990, (3) 420

Gas-chromatographic study of products of hydrolysis lignin thermolysis

Kelley SS, Ward TC, Glasser WG//Dept Forest Prod, Dept Chem, Blacksburg, Va 24061, USA

J APPL POLYM SCI 1990, 41 (11-12) 2813

Multiphase materials with lignin. 8. Interpenetrating polymer networks from polyurethanes and polymethyl methacrylate

Lee DY, Sumimoto M//Kyushu Univ, Fac Agr, Dept Forest Prod, Higashi ku, Fukuoka 812, Japan

HOLZFORSCHUNG 1990, 44 (5) 347

Mechanochemistry of lignin. 3. Mechanochemical reactions of beta-O-4 lignin model compounds

Nagieb ZA//Nat'l Res Ctr, Cellulose & Paper Lab, Cairo, Egypt

J APPL POLYM SCI 1990, 41 (11-12) 2951

Utilization of lignin P-aminophenyl carbamate as a coupler for dyeing wool and nylon

Timofeeva SS, Beim AM, Bessalova VZ//All Union Sci Ind Cellulose Paper Ind Assoc, Ulan Ude, Mongolian Peoples Republic

IND LAB-ENGL TR 1990, 56 (3) 276

Determination of lignin in purified wastewaters from chemical wood-conversion plants (exchange of experience)

Vasudevan N, Mahadevan A//Univ Madras, Ctr Adv Study Bot, Guindy Campus, Madras 600025, Tamil Nadu, India

HOLZFORSCHUNG 1990, 44 (5) 325

Degradation of black liquor lignin by microorganisms

6 Polysaccharides - Named

Bird KT, Ryther JH//Univ N Carolina, Ctr Marine Sci Res, 7205 Wrightsville Ave, Wilmington, NC 28403, USA

HYDROBIOLOGIA 1990, 204 (SEP) 347

Cultivation of *Gracilaria verrucosa* (*Gracilariales*, *Rhodophyta*) strain G-16 for agar

Durairatnam M, Medeiros TMD, Desena AM//Univ Fed Rio Grande Norte, Dept Oceanograf & Limnol, Div Algal, Via Costeira Mac Luiza,

BR-59020 Natal, Brazil

HYDROBIOLOGIA 1990, 204 (SEP) 551

Studies on the yield and gel strength of agar from *Gracilaria domingensis* Sonder ex Kuetzing (Gracilariales, Rhodophyta) following the addition of calcium

Furneaux RH, Miller LJ, Stevenson TT/DSIR, Div Chem, Petone, New Zealand

HYDROBIOLOGIA 1990, 204 (SEP) 645

Agaroids from New Zealand members of the Gracilariaceae (Gracilariales, Rhodophyta) - A novel dimethylated agar

Matsuhiro B, Urzua CC/Univ Santiago Chile, Fac Ciencia, Dept Quim, Casilla 5659, Santiago 2, Chile

HYDROBIOLOGIA 1990, 204 (SEP) 545

Agars from *Gelidium rex* (Gelidiales, Rhodophyta)

Murano E, Brandolin C, Zanetti F, Paoletti S, Rizzo R/Lab Biopolimeri Tecnol, Area Ric, Padriciano 99, I-34012 Trieste, Italy

HYDROBIOLOGIA 1990, 204 (SEP) 567

Characterization of an agar fraction extracted from *Gracilaria dura* (Gracilariales, Rhodophyta)

Delucca AJ, Connick WJ, Fravel DR, Lewis JA, Bland JM/USDA ARS, South Reg Res Ctr, 1100 Robert E Lee Blvd, New Orleans, La 70124, USA

J IND MICROBIOL 1990, 6 (2) 129

The use of bacterial alginates to prepare biocontrol formulations

Hannoun BJM, Stephanopoulos G*/MIT, Dept Chem Engr, Cambridge, Ma 02139, USA

BIOTECHNOL PROGR 1990, 6 (5) 341

Intrinsic growth and fermentation rates of alginate-entrapped *Saccharomyces cerevisiae*

Hannoun BJM, Stephanopoulos G*/MIT, Dept Chem Engr, Cambridge, Ma 02139, USA

BIOTECHNOL PROGR 1990, 6 (5) 349

Growth and fermentation model for alginate-entrapped *Saccharomyces cerevisiae*

Kawakami K, Tsuruda S, Miyagi K/Kyushu Univ, Dept Chem Engr, Fukuoka 812, Japan

BIOTECHNOL PROGR 1990, 6 (5) 357

Immobilization of microbial cells in a mixed matrix of silicone polymer and calcium alginate gel -

Epoxidation of 1-octene by *Nocardia corallina* B-276 in organic media

Kawarada H, Hirai A, Odani H, Lida T, Nakajima A*/Osaka Inst Technol, Dept Appl Chem, Asahi ku, Osaka 535, Japan

POLYM BULL 1990, 24 (5) 551

Structure characterization of alginate and conformational behaviours of various alkali-metal alginates in solution

Schaumann K, Weide G/Alfred Wegener Inst Polar & Marine Res, Columbusstr, W-2850 Bremerhaven, FRG

HYDROBIOLOGIA 1990, 204 (SEP) 589

Enzymatic degradation of alginate by marine fungi

Mabusela WT, Stephen AM*/Univ Cape Town, Dept Chem, Rondebosch 7700, South Africa

CARBOHYD RES 1990, 207 (2) 332

An arabinoglucuronomannoglycan from the leaves of *Ornithogalum thyrsoides*

Azanza Corrales R, Saa P/Univ Philippines Dili-man, Inst Marine Sci, Quezon City 1101, Philippines

HYDROBIOLOGIA 1990, 204 (SEP) 521

The farmed *Eucheuma* species (Gigartinales, Rhodophyta) in Danajon Reef, Philippines - Carrageenan properties

Cosson J, Deslandes E, Braud JP/Univ Caen, Algol Fondamentale & Appl Lab, 39 Rue Desmouleux, F-14000 Caen, France

HYDROBIOLOGIA 1990, 204 (SEP) 539

Preliminary approach to the characterization and seasonal variation of carrageenans from four Rhodophyceae on the Norway coast (France)

Juillet P/Address not available

BULL ACAD NATL MED 1990, 174 (4) 481

Use of carrageenans in tea extracts concentrated, frozen and placed in beverage vending machines

Knutsen SH, Myslabodski DE, Grasdalen H/Univ Trondheim, Norwegian Inst Technol, Marine Biochem Lab, N-7034 Trondheim, Norway

CARBOHYD RES 1990, 206 (2) 367

Characterization of carrageenan fractions from Norwegian *Furcellaria lumbricalis* (Hudd) Lamour by ¹H-NMR spectroscopy

- Li R, Li JJ, Wu CY//Acad Sinica, Inst Oceanol, 7 Nan Hai Rd, Qingdao, Peoples R China
HYDROBIOLOGIA 1990, 204 (SEP) 499
Effect of ammonium on growth and carrageenan content in *Kappaphycus alvarezii* (Gigartinales, Rhodophyta)
- Matulewicz MC, Cancia M, Nosedá MD, Cerezo AS//Univ Buenos Aires, Fac Ciencias Exactas & Nat, Dept Quím Organ, Pabellón 2, Ciudad Univ, RA-1428 Buenos Aires, Argentina
PHYTOCHEMISTRY 1990, 29 (11) 3407
Methylation analysis of carrageenans from tetrastrophic and cystocarpic stages of *Gigartina skottsbergii*
- Rivera Carro H, Craigie JS, Shacklock PF//Inst Nacl Pesca, Secretar Pesca, AP 1306, Ensenada, Baja California, Mexico
HYDROBIOLOGIA 1990, 204 (SEP) 533
Influence of tissue source and growth rates on dry weight and carrageenan composition of *Chondrus crispus* (Gigartinales, Rhodophyta)
- Saito RM, De Oliveira FC//Inst Pesquisas Tecnol Estado Sao Paulo SA, Av Prof Almeida Prado 532, Cidade Univ, BR-05508 Sao Paulo, Brazil
HYDROBIOLOGIA 1990, 204 (SEP) 585
Chemical screening of Brazilian marine algae producing carrageenans
- Hirano S, Yamamoto T, Hayashi M, Nishida T, Inui H//Tottori Univ, Dept Agr Biochem & Biotechnol, Tottori 680, Japan
AGR BIOL CHEM TOKYO 1990, 54 (10) 2719
Chitinase activity in seeds coated with chitosan derivatives
- Koga D, Mizuki K, Ide A, Kono M, Matsui T, Shimizu C//Yamaguchi Univ, Fac Agr, Biochem Lab, Yamaguchi 753, Japan
AGR BIOL CHEM TOKYO 1990, 54 (10) 2505
Kinetics of a chitinase from a prawn, *Penaeus japonicus*
- Sashiwa H, Saimoto H, Shigemasa Y, Ogawa R, Tokura S//Tottori Univ, Fac Engr, Dept Mat Sci, Tottori 680, Japan
INT J BIOL MACROMOL 1990, 12 (5) 295
Lysozyme susceptibility of partially deacetylated chitin
- Rech Macromolec Vegetales, BP 53X, F-38041 Grenoble, France
INT J BIOL MACROMOL 1990, 12 (5) 289
Single crystals of chitosan
- Onsoyen E, Skaugrud O//Protan AS, POB 420, N-3002 Drammen, Norway
J CHEM TECHNOL BIOTECHNOL 1990, 49 (4) 395
Metal recovery using chitosan
- Thomas DP, Gray E, Merton RE//Natl Inst Biol Stand & Controls, Div Haematol, Potters Bar EN6 3QG, Herts, England
THROMB HAEMOST 1990, 64 (2) 290
Potentiation of the antithrombotic action of dermatan sulphate by small amounts of heparin
- Galeone F, Giuntoli F, Brunelleschi G, Saba P//c/o Spignoli G, Manetti & Roberts, Pharmacol Res Labs, Via Baldanzese 177, Florence, Italy
ACTA THERAP 1990, 16 (4) 313
Double-blind placebo-controlled crossover study of DEAE-dextran in hyperlipoproteinaemia secondary to non-insulin-dependent diabetes mellitus
- Planas R, Gines P, Arroyo V*, Llach J, Panes J, Vargas V, Salmeron JM, Gines A, Toledo C, Rimola A et al//Hosp Clin Barcelona, Liver Unit, Villarroel 170, E-08036 Barcelona, Spain
GASTROENTEROLOGY 1990, 99 (6) 1736
Dextran-70 versus albumin as plasma expanders in cirrhotic patients with tense ascites treated with total paracentesis - Results of a randomized study
- Calub TM, Waterhouse AL*, French AD//Tulane Univ, Dept Chem, New Orleans, La 70118, USA
CARBOHYD RES 1990, 207 (2) 221
Conformation analysis of fructans. 2. Conformational analysis of inulobiose by molecular mechanics
- Soja G, Dersch G, Praznik W//Res Ctr Seibersdorf, Inst Agr, A-2444 Seibersdorf, Austria
J AGRON CROP SCI 1990, 165 (2-3) 181
Harvest dates, fertilizer and varietal effects on yield, concentration and molecular distribution of fructan in Jerusalem artichoke (*Helianthus tuberosus* L.)
- Cartier N, Domard A, Chanzy H//CNRS, Ctr
- Tanner SF, Morris VJ, Belton PS//AFRC, Inst

Food Res, Colney Lane, Norwich NR4 7UA, Norfolk, England

INT J BIOL MACROMOL 1990, 12 (5) 302

Multinuclear NMR studies of group-I cations in furcellaran gels

Haines HH, Matulewicz MC, Cerezo AS//Univ Buenos Aires, Fac Ciencias Exactas & Nat, Dept Quim Organ, Pabellon 2, Ciudad Univ, RA-1428 Buenos Aires, Argentina

HYDROBIOLOGIA 1990, 204 (SEP) 637

Sulfated galactans from the red seaweed *Notogonia fastigiata* (Nemaliales, Rhodophyta)

FOOD TECHNOL 1990, 44 (11) 88

Gellan gum receives FDA approval

James PG, Cherniak R*//Georgia State Univ, Dept Chem, Atlanta, Ga 30303, USA

CARBOHYD RES 1990, 206 (1) 167

4-methylmorpholine N-oxide-methyl sulfoxide soluble glucan of *Piptoporus betulinus*

Maheshwari R, Choudari BP//Rangaraya Med Coll, Dept Biochem, Kakinada 533003, India

INDIAN J EXP BIOL 1990, 28 (10) 901

Potential of immune response against malaria in immunocompromised mice through glucan as an immunoadjuvant

Maksimov OB, Gorshkova RP, Stepanenko LS, Mishchenko NP, Krivoshchekova OE//Acad Sci USSR, Far E Sci Ctr, Pacific Oceanol Inst, Inst Bioorgan Chem, Vladivostok, USSR

KHIM PRIR SOEDIN SSSR 1990, (3) 400

Water-soluble linear beta-1,6-D-glucan and other components of *Haematomma lapponicum* lichen (Russian)

Ohno N, Emori Y, Yadomae T*, Saito K, Masuda A, Oikawa S//Tokyo Coll Pharm, Immunopharmacol Microbial Prod Lab, Hachioji, Tokyo 19203, Japan

CARBOHYD RES 1990, 207 (2) 311

Reactivity of *Limulus* amoebocyte lysate towards (1-3)-beta-D-glucans

Roy SK, Dey SK, Raha SK, Chakrabarty SL*//Bose Inst, Dept Microbiol, 93-1 Acharya Prafulla Chandra Rd, Calcutta 700009, W Bengal, India

J GEN MICROBIOL 1990, 136 (OCT) PT 10, 1967

Purification and properties of an extracellular

endoglucanase from *Myceliophthora thermophila* D-14 (ATCC 48104)

Schinzel R, Palm D*//Univ Wurzburg, Dept Physiol Chem, W-8700 Wurzburg, FRG

BIOCHEMISTRY-USA 1990, 29 (42) 9956

Escherichia coli maltodextrin phosphorylase - Contribution of active site residues glutamate-637 and tyrosine-538 to the phosphorolytic cleavage of alpha-glucans

Takeda Y, Yoshikai Y, Ohga S, Nomoto K//Sapporo Breweries Ltd, Pharmaceut Res Labs, 10 Okatome, Yaizu, Shizuoka 425, Japan

IMMUNOPHARMACOL IMMUNOTOXICOL 1990, 12 (3) 457

Augmentation of host defense against bacterial infection pretreated intraperitoneally with an alpha-glucan RBS in mice

Wagner N, Kruger E//Versuchs & Lehranstalt Brauerei Berlin, Chem Techn Analyse Forschungsinst, Seestr 13, W-1000 Berlin 65, FRG

MONATSSCHR BRAUWISSEN 1990, 43 (10) 328

Rheological properties of beta-glucans in beer. 1. Differentiation of the viscosity caused by beta-glucans (German, English Abstract)

Yoshimatsu T, Ozaki K, Shikata S, Ohta YI, Koike K, Kawai S, Ito S*//Kao Corp, Tochigi Res Labs, 2606 Akabane, Ichikai, Tochigi 32134, Japan

J GEN MICROBIOL 1990, 136 (OCT) PT 10, 1973

Purification and characterization of alkaline endo-1,4-beta-glucanases from alkalophilic *Bacillus* sp KSM-635

Kazuno C, Nishijima M, Miura H, Kamoi I//Tokyo Univ Agr & Technol, Dept Agr Chem, 1-1-1 Sakuragaoka, Setagaya ku, Tokyo 156, Japan

J JPN SOC FOOD SCI TECHNOL 1990, 37 (10) 765

Structural examination of water-soluble glycans from fruit body of *Lyophyllum ulmarium*. 1. (Japanese, English Abstract)

Kazuno C, Nishijima M, Miura H, Kamoi I//Tokyo Univ Agr & Technol, Dept Agr Chem, 1-1-1 Sakuragaoka, Setagaya ku, Tokyo 156, Japan

J JPN SOC FOOD SCI TECHNOL 1990, 37 (10) 773

Structural examination of water-soluble glycans from fruit body of *Lyophyllum ulmarium*. 2.

(Japanese, English Abstract)

Takagaki K, Nakamura T, Kawasaki H, Kon A, Ohishi S, Endo M*//Hiroaki Univ, Sch Med, Dept Biochem, 5 Zaifu cho, Hiroaki, Aomori 036, Japan

J BIOCHEM BIOPHYS METH 1990, 21 (3) 209
Determination of the reducing terminal sugars of glycosaminoglycans using 2-aminopyridine

Malo JL, Cartier A, Larcheveque J, Ghezzi H, Soucy F, Somers J, Dolovich J//Hop Sacre Coeur, Dept Chest Med, 5400 W Gouin, Montreal, Quebec, Canada H4J 1C5

J ALLERG CLIN IMMUNOL 1990, 86 (4) PT 1, 562

Prevalence of occupational asthma and immunologic sensitization to guar gum among employees at a carpet-manufacturing plant

Anderson DMW, Wang WP//Univ Edinburgh, Dept Chem, Edinburgh EH9 3JJ, Scotland
BIOCHEM SYST ECOL 1990, 18 (6) 413

Acacia gum exudates from Somalia and Tanzania - The Acacia senegal complex

Bush RK//William S Middleton Mem Vet Adm Med Ctr, 2500 Overlook Terr, Madison, WI 53705, USA

J ALLERG CLIN IMMUNOL 1990, 86 (4) PT 1, 443

Occupational asthma from vegetable gums (Editorial)

Joseleau JP, Ullmann G//Univ Joseph Fourier, Ctr Rech Macromolec Vegetales, CNRS Lab, BP 53 X, F-38041 Grenoble, France

PHYTOCHEMISTRY 1990, 29 (11) 3401

Biochemical evidence for the site of formation of gum arabic in Acacia senegal

Gervasi GB, Farina C, Catalani R, Bartoli C, Baldacci M//Baldacci SPA, Res Labs, Via S Michele 73, Pisa, Italy

THROMB RES 1990, 59 (6) 931

In vitro fibrinolytic activity of a new low molecular weight heparan sulfate

Hartford Hosp, Dept Radiol, 80 Seymour St, Hartford, Ct 06106, USA

ANGIOLOGY 1990, 41 (10) 825

Optimizing heparin utilization in angiographic flush solutions

Kandrotas RJ, Gal P, Douglas JB, Deterding J//Univ Utah, Coll Pharm, Dept Pharm Practice, Salt Lake City, Ut 84112, USA

PHARMACOTHERAPY 1990, 10 (5) 349

Pharmacokinetics and pharmacodynamics of heparin during hemodialysis - Interpatient and inpatient variability

Knot EAR//Acad Hosp Rotterdam Dijkzigt, Dept Internal Med, Dr Molewaterplein 40, 3015 GE Rotterdam, The Netherlands

NETH J MED 1990, 37 (3-4) 139

Is there a place for low molecular weight heparins

Pini M, Pattacini C, Quintavalla R, Poli T, Megha A, Tagliaferri A, Manotti C, Dettori AG//Osped Maggiore Parma, Div Med 5, Via Gramsci 14, I-43100 Parma, Italy

THROMB HAEMOST 1990, 64 (2) 222

Subcutaneous vs intravenous heparin in the treatment of deep venous thrombosis - A randomized clinical trial

Rej RN, Holme KR, Perlin AS//McGill Univ, Dept Chem, Montreal, Quebec, Canada H3A 2A7

CARBOHYD RES 1990, 207 (2) 143

Marked stereoselectivity in the binding of copper ions by heparin - Contrasts with the binding of gadolinium and calcium ions

Deeble DJ, Bothe E, Schuchmann HP, Parsons BJ, Phillips GO, Von Sonntag C*//Max Planck Inst Strahlenchem, Stiftstr 34-36, W-4330 Muelheim, FRG

Z NATURFORSCH C 1990, 45 (9-10) 1031

The kinetics of hydroxyl radical-induced strand breakage of hyaluronic acid - A pulse radiolysis study using conductometry and laser-light-scattering

Gurny R, Ryser JE, Tabatabay C, Martenet M, Edman P, Camber O//Univ Geneva, Dept Pharmaceut Technol, 30 Quai Ernest Ansermet, CH-1211 Geneva 4, Switzerland

GRAEF ARCH CLIN EXP OPHTHAL 1990, 228 (6) 510

Precorneal residence time in humans of sodium hyaluronate as measured by gamma-scintigraphy

Rouwenhorst RJ, Ritmeester WS, Scheffers WA, Van Dijken JP*//Delft Univ Technol, Kluyver Lab Biotechnol, Dept Microbiol & Enzymol, Julianalaan 67, 2628 BC Delft, The Netherlands

APPL ENVIRON MICROBIOL 1990, 56 (11) 3329

Localization of inulinase and invertase in *Kluyveromyces* species

Rouwenhorst RJ, Ritmeester WS, Scheffers WA, Van Dijken JP*//Delft Univ Technol, Kluyver Lab Biotechnol, Dept Microbiol & Enzymol, Julianalaan 67, 2628 BC Delft, The Netherlands
APPL ENVIRON MICROBIOL 1990, 56 (11) 3337

Structure and properties of the extracellular inulinase of *Kluyveromyces marxianus* CBS-6556

Yoshida Y, Suzuki R, Yagi Y//Mercian Corp, Cent Res Labs, 9-1 Johnan 4-chome, Fujisawa, Kanagawa 251, Japan

J FERMENT BIOENG 1990, 70 (4) 269

Production of levan by a *Zymomonas* sp

Saeki K, Miyashita Y, Watanabe Y, Tamai Y*//Ehime Univ, Fac Agr, Matsuyama, Ehime 790, Japan

J FERMENT BIOENG 1990, 70 (4) 215

Purification and properties of mannanase from *Oerskovia xanthineolytica*

Talbot G, Sygusch J*//Univ Sherbrooke, Fac Med, Dept Biochim, Sherbrooke, Quebec, Canada J1H 5N4

APPL ENVIRON MICROBIOL 1990, 56 (11) 3505

Purification and characterization of thermostable beta-mannanase and alpha-galactosidase from *Bacillus stearothermophilus*

Colquhoun LJ, Deruiter GA, Schols HA, Voragen AFJ//AFRC, Inst Food Res, Norwich Lab, Colney Lane, Norwich NR4 7UA, England

CARBOHYD RES 1990, 206 (1) 131

Hairy (ramified) regions of pectins. 3. Identification by NMR spectroscopy of oligosaccharides obtained by treatment of the hairy regions of apple pectin with rhamnogalacturonase

Lin TP, Feng TY, Chung YH, Lan CL//Taiwan Forestry Res Inst, Plant Physiol Lab, 53 Nan Hai Rd, Taipei, Taiwan

BOT BULL ACAD SINICA 1990, 31 (4) 273

Quantification of methyl ester content of pectin by pectinesterase

Plat D, Benshalom N*, Levi A//Agr Res Org, Volcani Ctr, Dept Food Sci, POB 6, IL-50250 Bet Dagan, Israel

FOOD CHEM 1991, 39 (1) 1

Changes in pectic substances in carrots during dehydration with and without blanching

Quemener B, Thibault JF//INRA, Ctr Rech Agroalimentaires Nantes, Biochim & Technol Glucides Lab, Rue Geraudiere, BP 257, F-44026 Nantes 03, France

CARBOHYD RES 1990, 206 (2) 277

Assessment of methanolysis for the determination of sugars in pectins

Ralet MC, Thibault JF, Hallaert J, Van Damme E, Van Loo J//INRA, Ctr Rech Agroalimentaires Nantes, Biochim & Technol Glucides Lab, Rue Geraudiere, BP 527, F-44026 Nantes 03, France

SCI ALIMENT 1990, 10 (4) 865

Characteristics of pectins extracted from sugar-beet pulp by *Geotrichum penicillatum*

Ryzhenkov VE, Chistyakova AM, Tryufanov VF, Vasilyeva LE, Prolova YV, Solovyeva MA, Re-mezova OV, Lozovsky VT, Hanefeld M, Leonhardt W et al//Acad Med Sci USSR, Inst Exptl Med, Leningrad P-22, USSR

KARDIOLOGIYA 1990, 30 (8) 77

Experimental and clinical study of Vasosan-P, a new form of pectin-enriched cholestyramine (Russian, English Abstract)

Salomov KT, Kadyrov FM, Sultanov K//Cent Asian Food Ind Sci Res & Design Inst, Tashkent, Uzbekistan, USSR

KHIM PRIR SOEDIN SSSR 1990, (3) 401

Effect of ammonium citrate on specific viscosity of pectin solutions (Russian)

Schols HA, Geraeds CCJM, Searle van Leeuwen MF, Kormelink FJM, Voragen AFJ*//Agr Univ Wageningen, Dept Food Sci, Bomenweg 2, 6703 HD Wageningen, The Netherlands

CARBOHYD RES 1990, 206 (1) 105

Hairy (ramified) regions of pectins. 2. Rhamnogalacturonase - A novel enzyme that degrades the hairy regions of pectins

Schols HA, Geraeds CCJM, Searle van Leeuwen MF, Kormelink FJM, Voragen AFJ*//Agr Univ Wageningen, Dept Food Sci, Bomenweg 2, 6703 HD Wageningen, The Netherlands

CARBOHYD RES 1990, 206 (1) 117

Hairy (ramified) regions of pectins. 1. Structural features of hairy regions of pectins isolated from apple juice produced by the liquefaction process

Yordanov ND, Velcheva BI//Bulgarian Acad Sci, Inst Kinet & Catalysis, BU-1113 Sofia, Bulgaria
DOKL BOLG AKAD NAUK 1990, 43 (6) 57
EPR investigation of the complexing of copper (II) with chelating xanthate sorbents based on pectin and starch

Solis S, Flores ME, Huitron C*//Nat'l Autonomous Univ Mexico, Inst Biomed Res, Dept Biotechnol, AP 70-228, Mexico City 04510, DF, Mexico

BIOTECHNOL LETT 1990, 12 (10) 751

Isolation of endopolygalacturonase hyperproducing mutants of *Aspergillus* sp CH-Y-11043

Thorn W, Mohazzeb S//Inst Biochem & Lebensmittelchem, Martin Luther King Pl 6, W-2000 Hamburg 13, FRG

STARCH 1990, 42 (10) 373

Molecular weights, lengths, and distribution of side-chains in alpha-D-polyglucans

Garg HG, Lippay EW, Burd DAR, Neame PJ//Harvard Univ, Sch Med, Shriners Burns Inst, Dept Pathol, 51 Blossom St, Boston, Ma 02114, USA

CARBOHYD RES 1990, 207 (2) 295

Purification and characterization of iduronic acid-rich and glycyronic acid-rich proteoglycans implicated in human post-burn keloid scar

Kimura T, Horikoshi K*//Riken Inst Phys & Chem Res, Wako, Saitama 35101, Japan

APPL MICROBIOL BIOTECHNOL 1990, 34 (1) 52

Characterization of pullulan-hydrolysing enzyme from an alkalopsychrotrophic *Micrococcus* sp

Shatwell KP, Sutherland IW, Dea ICM, Ross-Murphy SB//Univ Cambridge, Dept Biochem, Tennis Court Rd, Cambridge CB2 1QW, England

CARBOHYD RES 1990, 206 (1) 87

The influence of acetyl and pyruvate substituents on the helix-coil transition behaviour of xanthan

Lindberg B, Mosihuzzaman M, Nahar N, Abeysekera RM, Brown RG, Willison JHM//Univ Stockholm, Arrhenius Lab, Dept Organ Chem, S-10691 Stockholm, Sweden

CARBOHYD RES 1990, 207 (2) 307

An usual (4-O-methyl-D-glucurono)-D-xylan isolated from the mucilage of seeds of the quince tree (*Cydonia oblonga*)

Rajaram S, Varma A*//Jawaharlal Nehru Univ, Sch Life Sci, Microbiol Unit, New Delhi 110067, India

APPL MICROBIOL BIOTECHNOL 1990, 34 (1) 141

Production and characterization of xylanase from *Bacillus thermoalkalophilus* grown on agricultural wastes

Vrsanska M, Hirsch J, Kovac P, Biely P*//Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Czechoslovakia

CARBOHYD RES 1990, 206 (2) 251

Hydrolysis of (1-3)-beta-D-xylosidic and (1-2)-beta-D-xylosidic linkages by and endo-(1-4)-beta-D-xylanase of *Cryptococcus albidus*

Furneaux RH, Stevenson TT//DSIR, Div Chem, Petone, New Zealand

HYDROBIOLOGIA 1990, 204 (SEP) 615

The xylogalactan sulfate from *Chondria macrocarpa* (Ceramiales, Rhodophyta)

7 Polysaccharides - Other

Cerning J//INRA, CRJ, Stn Rech Laitieres, F-78350 Jouy en Josas, France

FEMS MICROBIOL REV 1990, 87 (1-2) 113

Exocellular polysaccharides produced by lactic acid bacteria

Das S, Ghosal PK*, Ray B//Univ Burdwan Golapbag, Dept Chem, Nat Prod Lab, Burdwan 713104, W Bengal, India

CARBOHYD RES 1990, 207 (2) 336

Structural studies of a polysaccharide from the seeds of *Salmalia malabarica*

Donnelly JJ, Deck RR, Liu MA//Merck Sharp & Dohme Ltd, Dept Canc Res, W Point, Pa 19486, USA

J IMMUNOL 1990, 145 (9) 3071

Immunogenicity of a *Haemophilus influenzae* polysaccharide-*Neisseria meningitidis* outer membrane protein complex conjugate vaccine

Giammatteo PJ, Stipanovic AJ, Nero VP, Robison PD//Texaco USA Inc, Res Ctr, POB 509, Beacon, NY 12508, USA

INT J BIOL MACROMOL 1990, 12 (5) 311

Evidence for microbial polysaccharide preparations containing polyester substituents

Gibson GR, MacFarlane S, Cummings JH//

MRC, Dunn Clin Nutr Ctr, 100 Tennis Court Rd, Cambridge CB2 1QL, England

LETT APPL MICROBIOL 1990, 11 (5) 251

The fermentability of polysaccharides by mixed human faecal bacteria in relation to their suitability as bulk-forming laxatives

Hetherington SV, Rutkowski AF//St Jude Childrens Hosp, Dept Infect Dis, POB 318, Memphis, Tn 38101, USA

J INFECTION 1990, 162 (5) 1185

Antibody affinity in infants after immunization with conjugated capsular polysaccharide from *Haemophilus influenzae* type-b

Ishii T, Hiroi T//Forestry & Forest Prod Res Inst, POB 16, Tsukuba Norin Kenkyu Danchinai, Ibaraki 305, Japan

CARBOHYD RES 1990, 206 (2) 297

Linkage of phenolic acids to cell-wall polysaccharides of bamboo shoot

Li XY, Wang JF, Zhu PP, Liu L, Ge JB, Yang SX//Chinese Acad Sci, Shanghai Inst Mat Med, Shanghai 200031, Peoples R China

ACTA PHARMACOL SIN 1990, 11 (6) 542

Immune enhancement of a polysaccharides peptides isolated from *Coriolus versicolor*

Lin CS, Lim HC//Univ Calif Irvine, Biochem Engn Program, Irvine, Ca 92717, USA

J BIOTECHNOL 1990, 16 (1-2) 137

A kinetic model and steady-state analysis for polysaccharide production by *Methylomonas mucosa*

Mabusela WT, Stephen AM, Botha MC//Univ Cape Town, Dept Chem, Rondebosch 7700, South Africa

PHYTOCHEMISTRY 1990, 29 (11) 3555

Carbohydrate polymers from *Aloe ferox* leaves

Mitra A, Chakrabarti A, Nath RK, Chakraborty AK//Tripura Univ, Dept Chem, Phys & Biol Chem Sect, Tripura 799004, India

INDIAN J BIOCHEM BIOPHYS 1990, 27 (5) 291

Chromotropic character of bacterial acidic polysaccharides. 3. Interaction of cationic dye pinacyanol chloride with *Klebsiella* K15 capsular polysaccharide

Nakajima T, Ichikawa S, Uchida S, Komada T//Juntendo Univ, Sch Med, Dept Med, Liver Unit,

Tokyo 113, Japan

CLIN THER 1990, 12 (5) 385

Effects of a protein-bound polysaccharide from a *Basidiomycetes* against hepatocarcinogenesis induced by 3'-methyl-4-dimethylaminoazobenzene in rats

Nishide E, Anzai H, Uchida N, Nisizawa K//Nihon Univ, Coll Agr & Vet Med, Tokyo 154, Japan

HYDROBIOLOGIA 1990, 204 (SEP) 573

Sugar constituents of fucose-containing polysaccharides from various Japanese brown algae

Nomura H, Kods S, Hattori F//Nagoya Univ, Sch Engr, Dept Chem Engr, Furo cho, Chikusa ku, Nagoya, Aichi 464, Japan

J APPL POLYM SCI 1990, 41 (11-12) 2959

Viscosity of aqueous solutions of polysaccharides and their carboxylate derivatives

O'Neill MA, Darvill AG, Albersheim P*, Chou KJ//Univ Georgia, Complex Carbohydrate Res Ctr, 220 Riverbend Rd, Athens, Ga 30602, USA

CARBOHYD RES 1990, 206 (2) 289

Structural analysis of an acidic polysaccharide secreted by *Xanthobacter* sp (ATCC-53272)

Severn WB, Richards JC//Nat'l Res Council Canada, Div Biol Sci, Ottawa, Ontario, Canada K1A 0R6

CARBOHYD RES 1990, 206 (2) 311

Structural analysis of the specific capsular polysaccharide of *Rhodococcus equi* serotype-2

Slaghek TM, Van Qijen AH, Maas AAM, Kamerling JP, Vliegthart JFG//State Univ Utrecht, Dept Bioorgan Chem, Transitorium 3, POB 80075, 3508 TB Utrecht, The Netherlands

CARBOHYD RES 1990, 207 (2) 237

Synthesis of structural elements of the capsular polysaccharides of *Streptococcus pneumoniae* type-6A and type-6B

Sledjeski D//Univ Maryland, Dept Microbiol, College Pk, Md 20742, USA

BIOTECHNIQUES 1990, 9 (4) 414

Analysis of an acidic polysaccharide by electrophoretic transfer to nitrocellulose and immunostaining

Slominski BA, Campbell LD//Univ Manitoba, Dept Anim Sci, Winnipeg, Manitoba, Canada R3T 2N2

J SCI FOOD AGR 1990, 53 (2) 175

Non-starch polysaccharides of canola meal - Quantification, digestibility in poultry and potential benefit of dietary enzyme supplementation

Stasinopoulos SJ, Seviour RJ//Bendigo Coll Adv Educ, Dept Biol & Chem Sci, Biotechnol Res Ctr, Bendigo, Vic 3550, Australia

BIOTECHNOL BIOENG 1990, 36 (8) 778

Stimulation of exopolysaccharide production in the fungus *Acremonium persicinum* with fatty acids

Usmanov TI, Karimova UG//Tashkent Cotton Cellulose Chem & Technol Res Inst, Tashkent, Uzbekistan, USSR

VYSOKOMOL SOEDIN SER A SSSR 1990, 32 (9) 1871

NMR-spectroscopic study of substituents distribution in polysaccharides acetates (Russian, English Abstract)

Viswanathan T, Toland A, Liu RQ, Lay JO// *Natl Ctr Toxicol Res, Div Biochem Toxicol, Jefferson, Ar 72079, USA

J APPL POLYM SCI 1990, 41 (11-12) 2595

Fast atom bombardment mass spectrometry of disaccharide polyether polyols

Watson MB, White AR*, Elmore HW// *N Dakota State Univ, Dept Bot, Fargo, ND 58105, USA

PHYTOCHEMISTRY 1990, 29 (12) 3815

Extracellular polysaccharides from *Pteridium aquilinum* suspension cultures

Yang M, Wang BX, Jin YL, Wang Y, Cui ZY// Acad Tradit Med & Mat Med Jilin Prov, Changchun 130021, Peoples R China

ACTA PHARMACOL SIN 1990, 11 (6) 520

Effects of ginseng polysaccharides on reducing blood glucose and liver glycogen (Japanese, English Abstract)

8 Lipopolysaccharides

Holst O, Brade H//Forschungsinstit Borstel, Inst Exptl Biol & Med, Parkallee 22, W-2061 Borstel, FRG

CARBOHYD RES 1990, 207 (2) 327

Isolation and identification of 3-deoxy-5-O-alpha-L-rhamnopyranosyl-D-manno-2-octulopyranosonate from the inner core region of the lipopolysaccharide of *Escherichia coli*

9 Starch

Sanchez Chaves M, Arranz F//Inst Ciencia & Tecnol Polimeros, Juan Cierva 3, E-28006 Madrid, Spain

MAKROMOL CHEM-MACRO CHEM PHYS 1990, 191 (7) 1513

Synthesis and controlled release behaviour of esters from amylose and 1-naphthylacetyl chloride

Hizukuri S//Kagoshima Univ, Fac Agr Chem, Kagoshima 890, Japan

CARBOHYD RES 1990, 206 (1) 145

Fine structure of wheat amylopectin - The mode of A-chain to B-chain binding

Boldt J, Kling D, Herold C, Dapper F, Hempelmann G//Royal Preston Hosp, Publ Hlth Lab, POB 202, Sharoe Green Lane, Preston PR2 4HG, England

ANAESTHESIA 1990, 45 (11) 928

Volume therapy with hypertonic saline hydroxyethyl starch solution in cardiac surgery

Isai H, Sheil AGR, Bell R, Woodman K, Painter DM, Earl J, Kirwan PD, Liu WG//Univ Sydney, Dept Surg, Sydney, NSW 2006, Australia

TRANSPLANT PROC 1990, 22 (5) 2152

A comparison of UW solution with and without hydroxyethyl starch for liver preservation using the isolated porcine liver perfusion model

Lubbes Meyer HJ, Dehring DJ*, Theissen JL, Fleming D, Traber L, Herndon DN, Traber DL// *Univ Texas, Med Branch, Dept Anesthesiol E-91, Galveston, Tx 77550, USA

J TRAUMA 1990, 30 (10) 1246

Hydroxyethyl starch pretreatment in bacteremic sheep

Prokofyev YP, Yurin OA//All Union Blood Subst & Hormone Preparat Technol Res Inst, Moscow, USSR

KHIM-FARM ZH SSSR 1990, 24 (7) 82

Determination of the substitution and molar substitution in hydroxyethylated starches by using ¹H NMR (Russian)

Bour H, Ferrando R//Address not available

BULL ACAD NATL MED 1990, 174 (5) 599

Inquiry on the use of hydroxypropyl starches and their phosphate derivatives in food (French, English Abstract)

Bernetti R, Kochan DA, Trost VW, Young SN//CPC Int Inc, Argonne, IL 60501, USA
CEREAL FOOD WORLD 1990, 35 (11) 1100
Modern methods of analysis of food starches

Chanzy H, Vuong R, Jesior JC//CNRS, Ctr Rech Macromolec, BP 53X, F-38041 Grenoble, France
STARCH 1990, 42 (10) 377
An electron diffractions study on whole granules of lintnerized potato starch

Colonna P, Champ M//INRA, Ctr Rech Agro-alimentaires, BP 527, Rue Geraudiere, F-44026 Nantes 03, France
SCI ALIMENT 1990, 10 (4) 877
Significance of starch damage in feeds

Djakovic L, Sovilj V, Milosevic S//Fac Technol Novi Sad, Dept Colloid Chem, POB 340, YU-21000 Novi Sad, Yugoslavia
STARCH 1990, 42 (10) 380
Rheological behaviour of thixotropic starch and gelatin gels

Dolan KD, Steffe JF*//Michigan State Univ, Dept Agr Engr, E Lansing, MI 48824, USA
J TEXTURE STUD 1990, 21 (3) 265
Modeling rheological behavior of gelatinizing starch solutions using mixer viscometry data

Farkas J, Sharif MM, Barbassay S//Univ Hort & Food Ind, Inst Preservat & Livestock Prod Technol, Menesi Ut 43-45, H-1118 Budapest, Hungary
ACTA ALIMENT 1990, 19 (3) 273
Analytical studies into radiation-induced starch damage in black and white peppers

Hamid JA, Moody GJ, Thomas JDR*//Univ Coll Cardiff, Sch Chem & Appl Chem, POB 912, Cardiff CF1 3TB, Wales
ANALYST 1990, 115 (10) 1289
Multi-enzyme electrodes for the determination of starch by flow injection

Herrera Saldana RE, Huber JT, Poore MH//Colegio Postgrad Chapingo, Ctr Granaderia, Chapingo 56230, Mexico
J DAIRY SCI 1990, 73 (9) 2386
Dry matter, crude protein, and starch degradability of five cereal grains

Komiya T, Yamada T, Imai K, Hisamatsu M, Masui H, Kawakishi S//Mie Univ, Fac Bioresour-

ces, Dept Agr Chem, Tsu, Mie 514, Japan
STARCH 1990, 42 (10) 394
Study on interactions of corn starch and gamma-cyclodextrin with lipid peroxide

Light JM//Natl Starch & Chem Corp, Bridgewater, NJ 08807, USA
CEREAL FOOD WORLD 1990, 35 (11) 1081
Modified food starches - Why, what, where, and how

Lin W, Lineback DR*//North Carolina State Univ, Dept Food Sci, Box 7624, Raleigh, NC 27695, USA
STARCH 1990, 42 (10) 385
Changes in carbohydrate fractions in enzyme-supplemented bread and the potential relationship to staling

McGuire MR, Shasha BS//USDA ARS, North Reg Res Ctr, Plant Polymer Res, 1815 N Univ St, Peoria, IL 61604, USA
J ECON ENTOMOL 1990, 83 (5) 1813
Sprayable self-encapsulating starch formulations for *Bacillus thuringiensis*

Mori Y, Inaba T//Natl Food Res Inst, Tsukuba, Ibaraki 305, Japan
BIOTECHNOL BIOENG 1990, 36 (8) 849
Ethanol production from starch in a pervaporation membrane bioreactor using *Clostridium thermohydrosulfuricum*

Schooch TJ, French D//Corn Prod Refining Co, Argonne, IL, USA
CEREAL FOOD WORLD 1990, 35 (11) 1115
Studies on bread staling. 1. The role of starch

Yao KJ, Wang BL//Shandong Univ, Inst Colloidal & Interfacial Chem, Shandong, Peoples R China
J APPL POLYM SCI 1990, 41 (11-12) 3079
Synthesis and water absorbability of base-hydrolyzed starch-g-poly(acrylonitrile-co-sodium allyl-sulfonate)

10 Starch-degrading Enzymes

Kim CH, Zhang GW, Maruyama Y, Taniguchi H//Univ Tokyo, Dept Agr Chem, 1-1-1 Yayoi, Bunkyo ku, Tokyo 113, Japan
2767
Change in action pattern of *Bacillus circulans* F-2 amylase on partial hydrolysis with subtilisin

Kimura T, Horikoshi K//Toray Industries Ltd,
Chem Res Lab, 9-1 Oe cho, Minato ku, Nagoya,
Aichi 455, Japan

STARCH 1990, 42 (10) 403

Purification and characterization of alpha-amylases of an alkalopsychrotrophic *Micrococcus* sp

695019, India

BIOL WASTE 1990, 34 (1) 11

Improvements in solid-state fermentation for glucoamylase production

Kimura T, Ogata M, Kobayashi H, Yoshida M,
Oishi K, Nakakuki T//Chiyoda Corp, Ctr Res &
Dev, 3-13 Moriya cho, Kanagawa ku, Yokohama
221, Japan

BIOTECHNOL BIOENG 1990, 36 (8) 790

Continuous production of maltotetraose using a dual immobilized enzyme system of maltotetraose-forming amylase and pullulanase

Koch R, Antranikian G*//Tech Univ Hamburg,
Arbeitsbereich Biotechnol 1, Harburger Schlos-
str 37-39, W-2100 Hamburg 90, FRG

STARCH 1990, 42 (10) 397

Action of amylolytic and pullulytic enzymes from various anaerobic thermophiles on linear and branched glucose polymers

Kondo H, Nakatani H*, Hiromi K//Kyoto Univ,
Fac Agr, Dept Food Sci & Technol, Kyoto 606,
Japan

CARBOHYD RES 1990, 206 (1) 161

Effect of maltotritol on the action pattern of porcine pancreatic alpha-amylase using amylose as a substrate

Kricka LJ, Marcinkowski JM, Wilding P, Lekha-
kula S//Hosp Univ Penn, Dept Pathol & Lab
Med, Philadelphia, Pa 19104, USA

TALANTA 1990, 37 (10) 971

Enhanced chemiluminescence determination of alpha-amylase by use of amylose labelled with horseradish peroxidase

Shah NK, Upadhyay CM, Nehete PN, Kothari
RM*, Hegde MV//Thapar Corp Res & Dev
Ctr, Patiala 147001, India

J BIOTECHNOL 1990, 16 (1-2) 97

An economical, upgraded, stabilized and efficient preparation of alpha-amylase

Takase H, Ogata F, Ito A//Kyushu Univ 33, Fac
Sci, Dept Chem, Higashi ku, Fukuoka 812, Japan
AGR BIOL CHEM TOKYO 1990, 54 (10) 2741

Purification and characterization of beta-amylases from tubers of taro, *Colocasia antiquorum*

Pandey A//CSIR, Reg Res Lab, Trivandrum