

Carbohydrate Polymers

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Novel microparticulate systems for the vaginal delivery of nystatin: Development and characterization

Original Research Article

Pages 1-11

M.J. Martín-Villena, F. Fernández-Campos, A.C. Calpena-Campmany, N. Bozal-de Febrer, M.A. Ruiz-Martínez, B. Clares-Naveros

Highlights

► New nystatin microparticles for *Candida* vaginitis treatment have been developed. ► Alginate, chitosan and poloxamer have been utilized in the elaboration. ► Physicochemical characterization showed the effectiveness of the method. ► Antifungal effects without toxic systemic absorption were observed.



Effect of media components on cell growth and bacterial cellulose production from *Acetobacter aceti* MTCC 2623

Original Research Article

Pages 12-16

Manmeet Singh Dayal, Navendu Goswami, Anshuman Sahai, Vibhor Jain, Garima Mathur, Ashwani Mathur

Highlights

► Comparison of bacterial cellulose production in three different complex media. ► Effect of media composition on structural and spatial arrangement of cellulose. ► FTIR analysis for determination of crystallinity of cellulose. ► Fractional factorial design for bacterial cellulose production from *A. aceti* MTCC 2623.



Novel chitosan derivative for temperature and ultrasound dual-sensitive liposomal microbubble gel

Original Research Article

Pages 17-23

Daquan Chen, Hongyun Yu, Hongjie Mu, Junhua Wei, Zhenkun Song, Hong Shi, Rongcai Liang, Kaoxiang Sun, Wanhui Liu

Highlights

► We design a novel *N*-cholesteryl hemisuccinate-*O*-sulfate chitosan (NCHOSC). ► We developed a liposomal microbubble gel with chitosan/glycerol phosphate. ► NCHOSC was carried to modified liposomal microbubble gel to enhance stability. ► The ultrasound-sensitive induced release of curcumin was about 85%. ► The anti-tumor efficacy in vivo by ultrasound suppressed tumor growth efficiently.

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The preparation optimization and immune effect of epimedium polysaccharide-propolis flavone liposome

Original Research Article

Pages 24-30

Yunpeng Fan, Jiaguo Liu, Deyun Wang, Xiaoping Song, Yuanliang Hu, Cunshuai Zhang, Xiaojuan Zhao, The Luong Nguyen

Highlights

► Preparation conditions of EPL were optimized by response surface method. ► The optimal preparation condition for EPL was set up. ► EPL could significantly promote T and B lymphocytes proliferation. ► EPL could promote mRNA expression of IL-2 and IL-6 and secretion of IgG and IgM.

5□

Effect of NaCl on the thermal behaviour of wheat starch in excess and limited water

Original Research Article

Pages 31-37

Li Day, Claire Fayet, Stephen Homer

Highlights

► Thermal transition temperature of starch decreases with increasing NaCl content at 25% moisture. ► At 45% moisture content NaCl reduces starch granule swelling. At 25% the opposite is seen. ► NaCl decreases the enthalpy of the thermal transition in limited water environments. ► NaCl changes the solvent environment to induce the starch thermal transition with less water. ► Reducing NaCl will cause processing implications for low moisture cereal based foods.

6□

Wheat straw cellulose dissolution and isolation by *tetra-n*-butylammonium hydroxide

Original Research Article

Pages 38-45

Chao Zhong, Chunming Wang, Fan Huang, Honghua Jia, Ping Wei

7□

Fractionation and structural characterization of LiCl–DMSO soluble hemicelluloses from tomato

Original Research Article

Pages 46-55

Carole Assor, Bernard Quemener, Jacqueline Vigouroux, Marc Lahaye

Highlights

► Acetylated hemicelluloses were purified from LiCl–DMSO extracts of tomato cell wall. ► The hemicelluloses structure was analyzed by enzymatic degradation and MALDI-TOF MS. ► A novel substitution of tomato glucomannan side chains by pentose is revealed.

8□

Hypolipidemic and antioxidant activities of polysaccharides from *Rosae Laevigatae Fructus* in rats

Original Research Article

Pages 56-62

Chen-Huan Yu, Xiao-Yan Dai, Qin Chen, Jia-Na Zang, Li-Li Deng, Yue-Huan Liu, Hua-Zhong Ying

Highlights

► Two polysaccharides (RLP-1 and RLP-2) were purified from *Rosae Laevigatae Fructus*. ► RLP-1 was composed of Xyl, Man and Gal while RLP-2 was only composed of Glu. ► RLP-1 ameliorated high fat diet-induced hyperlipidemia in rats but RLP-2 could not. ► RLP-1 improved lipid profiles through regulating PPAR- γ /LPL pathway.

9□

The composites based on plasticized starch and graphene oxide/reduced graphene oxide

Original Research Article

Pages 63-70

Tiantian Ma, Peter R. Chang, Pengwu Zheng, Xiaofei Ma

Highlights

► The graphite was oxidized to obtain GO, and GO was reduced to obtain RGO sheet. ► GO and RGO were characterized. ► GO and RGO were used as the fillers of PS matrix in the casting process. ► The properties of GO/PS and RGO/PS composites were researched. ► GO endowed PS with UV shielding, and RGO endowed PS with electrical conductivity.

10□

Isolation of cellulose from rice straw and its conversion into cellulose acetate

catalyzed by phosphotungstic acid

Original Research Article

Pages 71-76

Guozhi Fan, Min Wang, Chongjing Liao, Tao Fang, Jianfen Li, Ronghui Zhou

Highlights

► Cellulose was isolated from rice straw via treatment with KOH and CH₃COOH. ► Cellulose derived from rice straw was employed to synthesize cellulose acetate. ► Phosphotungstic acid was found to be an effective catalyst for the acetylation of cellulose. ► Degree substitution of cellulose acetate is dependent on the amount of catalyst.

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Synthesis and characterization of Eu(III) complexes of modified cellulose and poly(*N*-isopropylacrylamide)

Original Research Article

Pages 77-81

Guihua Cui, Yanhui Li, Tiantian Shi, Zhengguo Gao, Nannan Qiu, Toshifumi Satoh, Toyoji Kakuchi, Qian Duan

Highlights

► A series of copolymers of PNIPAM and cellulose were synthesized via ATRP. ► The copolymer had narrow polydispersity indexes and well-defined thermoresponsive. ► Prepared fluorescence complexes by adding a certain amount of europium(III) ion. ► The complexes exhibited a LCST and excellent fluorescence performance.

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Diffusion of ions in a calcium alginate hydrogel-structure is the primary factor controlling diffusion

Original Research Article

Pages 82-87

Mahmood Golmohamadi, Kevin J. Wilkinson

Highlights

► Diffusion in alginate depends more on structural effects than Donnan effects. ► Ca²⁺ had the greater effect on gel structure and diffusivity than did Na⁺ or H⁺. ► The charge of probe had a moderate impact on its self diffusion in alginate.

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Preparation of peach gum polysaccharides using hydrogen peroxide

Original Research Article

Pages 88-90

Xin-Cun Yao, Yan Cao, Sai-Kun Pan, Sheng-Jun Wu

Highlights

► The concept of peach gum polysaccharides extraction with H₂O₂ is modest. ► The extraction conditions were optimised. ► The product was partially characterised.

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***Agaricus bisporus* and *Agaricus brasiliensis* (1 → 6)-β-D-glucans show immunostimulatory activity on human THP-1 derived macrophages**

Original Research Article

Pages 91-99

Fernanda R. Smiderle, Giovana Alquini, Michelle Z. Tadra-Sfeir, Marcello Iacomini, Harry J. Wichers, Leo J.L.D. Van Griensven

Highlights

► β-(1 → 6)-Glucans were isolated and characterized from *Agaricus bisporus* and *Agaricus brasiliensis*. ► The glucans were analyzed by GC-MS, HPSEC and ¹³C NMR. ► THP-1 cells were used to study their capacity to induce the expression of proinflammatory genes. ► Both β-glucans showed immunostimulatory activity when administered to the THP-1 macrophages.

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Oral administration of heparin or heparosan increases the *Lactobacillus* population in gut microbiota of rats

Original Research Article

Pages 100-105

Rongshuai Duan, Xiang'e Chen, Fengshan Wang, Tianmin Zhang, Peixue Ling

Highlights

► Heparin and heparosan increased *Lactobacillus* spp. in rat gut microbiota. ► Heparin and heparosan decreased *Enterococcus* sp. in rat gut microbiota. ► Heparin or heparosan can be an effective gut microbiota modulator.

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Composite polyelectrolyte multilayer membranes for oligosaccharides nanofiltration separation

Original Research Article

Highlights

► Composite polyelectrolyte multilayer (C-PEM) membranes are fabricated. ► Efficient saccharides nanofiltration separation is achieved by C-PEM membranes. ► C-PEM membranes exhibit higher performance than single-paired PEM membranes.

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Extraction optimization of *Angelica sinensis* polysaccharides and its antioxidant activity in vivo

Original Research Article

Pages 114-119

Fang Yu, Huali Li, Yu Meng, Di Yang

Highlights

► Extraction of *Angelica sinensis* polysaccharides was optimized by RSM. ► Optimum operational conditions for maximizing polysaccharides yield (5.6%) were achieved. ► Hepatoprotective activity of ASP was evaluated. ► ASP substantially elevated serum enzymatic levels of serum AST, ALT and ALP. ► ASP significantly increased the levels of antioxidant enzymes.

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Microwave-assisted synthesis of alkyl cellulose in aqueous medium

Pages 120-123

Atanu Biswas, S. Kim, G.W. Selling, H.N. Cheng

Highlights

► Cellulose was converted to methyl and ethyl cellulose in a fast microwave-assisted reaction. ► This green method uses water and provides the advantage of decreased reaction time and energy. ► This method should be adaptable to the synthesis of other cellulose ethers.

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Aspects of determining the molecular weight of cyclodextrin polymers and oligomers by static light scattering

Original Research Article

Pages 124-128

Highlights

► Use of static/dynamic light scattering to characterize cyclodextrin polymers. ► Determining molecular weight of cyclodextrin poly- and oligomers. ► Study on neutral, charged and fluorescent cyclodextrin poly- and oligomers.

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***Lactarius rufus* (1→3),(1→6)-β-D-glucans: Structure, antinociceptive and anti-inflammatory effects**

Original Research Article

Pages 129-136

Andrea Caroline Ruthes, Elaine R. Carbonero, Marina Machado Córdova, Cristiane Hatsuko Baggio, Adair Roberto Soares Santos, Guilherme Lanzi Sasaki, Thales Ricardo Cipriani, Philip Albert James Gorin, Marcello Iacomini

Highlights

► Two β-d-glucans from wild mushroom *Lactarius rufus* were structurally characterized. ► β-Glucans inhibited significantly inflammatory pain caused by formalin injection. ► β-Glucans branching degree seems to be important for their antinociceptive effect. ► Linear β-glucon inhibitory effect was more marked in response to neurogenic pain. ► FSHW with higher branching degree inhibited more significantly inflammatory pain.

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The effect of poly-L-lysine structure on the pH response of polygalacturonic acid-based multilayers

Original Research Article

Pages 137-146

Marta Westwood, Timothy R. Noel, Roger Parker

Highlights

► The effect of crosslinker structure on pH response of PGaA multilayers was studied. ► Increasing crosslinker molecular weight and branching leads to thicker multilayers. ► Partial disassembly over a neutral to acid to neutral pH cycle is observed. ► The lowest molecular weight PLL crosslinker shows the largest irreversible response.

22

Electrospun curcumin-loaded fibers with potential biomedical applications

Original Research Article

Highlights

► Nanofibers containing curcumin or its CD complex were prepared by electrospinning. ► The CD complexes showed a more even distribution in fibers than curcumin alone. ► Two sequential stages for drug release were observed with both fiber types. ► Release was found to be largely governed by a diffusion-controlled mechanism.

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Production of nanocrystalline cellulose from lignocellulosic biomass: Technology and applications

Review Article

Pages 154-169

L. Brinchi, F. Cotana, E. Fortunati, J.M. Kenny

Highlights

► This work provides an up-to date review on methods for extraction of NCC. ► A special focus is devoted to the use of lignocellulosic biomass as starting material. ► Opportunities of NCC-based materials for the future are presented and discussed. ► Challenges and obstacles remaining for a wider use of NCC are discussed.

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Ice-templated hydrogels based on chitosan with tailored porous morphology

Original Research Article

Pages 170-178

Maria Valentina Dinu, Martin Příkladný, Ecaterina Stela Drăgan, Jiří Michálek

Highlights

► Ice-templated hydrogels based on chitosan with tailored morphology. ► Poly(methylmethacrylate) (PMMA) as fractionated particles as polymer porogen. ► Internal morphology of the gels controlled by the speed of crystallization. ► Microstructure of chitosan hydrogels controlled by the mesh of PMMA particles.

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Structure and antiviral activity of arabinogalactan with (1→6)-β-D-galactan core from *Stevia rebaudiana* leaves

Original Research Article

Pages 179-184

Arildo José Braz de Oliveira, Lucimara M.C. Cordeiro, Regina Aparecida Correia Gonçalves, Ligia Fernanda Ceole, Tania Ueda-Nakamura, Marcello Iacomini

Highlights

► Arabinogalactans with unusual main chain was isolated from *Stevia rebaudiana* leaves. ► The arabinogalactans have (1→6)-β-d-galactan main chain. ► The polysaccharide showed antiviral activity against Herpes Simplex Virus *in vitro*.

26

Efficient gene transfection in the neurotypic cells by star-shaped polymer consisting of β-cyclodextrin core and poly(amidoamine) dendron arms

Original Research Article

Pages 185-192

Bing Liang, Jun Jie Deng, Fang Yuan, Ning Yang, Wei Li, Jian Rui Yin, Shu Xiang Pu, Long Chang Xie, Cong Gao, Li Ming Zhang

Highlights

► Tested the β-CD-(D₃)₇ as the vector to transfect the human neuroblastoma SH-SY5Y cells. ► Exhibited good physicochemical properties of the β-CD-(D₃)₇/plasmid DNA (pDNA) complexes. ► Exhibited a low cytotoxicity and efficient pDNA transfection capability in SH-SY5Y cells. ► β-CD-(D₃)₇ might be a promising candidate for neurotypic cells gene delivery.

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Effect of preparation method on the properties of potato starch acetates with an equal degree of substitution

Original Research Article

Pages 193-198

T. Zięba, M. Kapelko, A. Szumny

Highlights

► Preparation method of retrograded starch affects its susceptibility to acetylation. ► Preparation method influences properties of the resultant acetylated starch. ► Resistance of acetylated starch is positively correlated with substitution at carbon atom 2 and 3.

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Physical-mechanical and antimicrobial properties of nanocomposite films with pediocin and ZnO nanoparticles

Original Research Article

Pages 199-208

Paula Judith Perez Espitia, Nilda de Fátima Ferreira Soares, Reinaldo F. Teófilo, Jane Sélia dos

Highlights

► Nanocomposite films of methyl cellulose were made using central composite design. ► ZnO nanoparticles and pediocin were incorporated in nanocomposite films. ► Antimicrobial activity and physical–mechanical changes were evaluated. ► Antimicrobials affected significantly nanocomposite films properties. ► Nanocomposite films had activity against *S. aureus* and *L. monocytogenes*.

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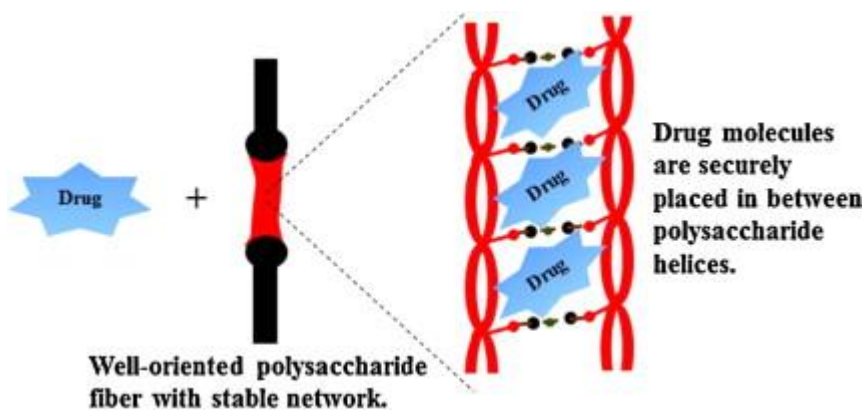
Organized polysaccharide fibers as stable drug carriers

Original Research Article

Pages 209-215

Srinivas Janaswamy, Kristin L. Gill, Osvaldo H. Campanella, Rodolfo Pinal

Graphical abstract



Highlights

► Novel polysaccharide-based drug delivery vehicles. ► Iota-carrageenan fibers maintain crystalline network after encasing drug molecules. ► Drug molecules gain protection upon embedding in the iota-carrageenan network. ► Encapsulated drugs are released in a sustained manner from the fiber network.

30

Simultaneous analysis of 18 mineral elements in *Cyclocarya paliurus* polysaccharide by ICP-AES

Original Research Article

Pages 216-220

Jian-Hua Xie, Ming-Yue Shen, Shao-Ping Nie, Xin Liu, Jun-Yi Yin, Dan-Fei Huang, Hui Zhang,
Ming-Yong Xie

Highlights

► ICP-AES for mineral elements determination in polysaccharide was proposed. ► Good values of LOD, repeatability, reproducibility and recoveries are achieved. ► ICP-AES is a rapid and simple method to determine mineral elements in polysaccharide.

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Synthesis, physiochemical and optical properties of chitosan based dye containing naphthalimide group

Original Research Article

Pages 221-228

Santosh Kumar, Joonseok Koh

Highlights

► Synthesis of chitosan based dye containing naphthalimide group by a greener approach. ► Physiochemical characterization of different techniques of chitosan biopolymer dye. ► The solubility of material in different organic and inorganic solvents. ► UV-vis and photoluminescence showed red shift.

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Green synthesis of polysaccharide/gold nanoparticle nanocomposite: An efficient ammonia sensor

Original Research Article

Pages 229-234

Sadanand Pandey, Gopal K. Goswami, Karuna K. Nanda

Highlights

► Green synthesis of gold nanoparticles using guar gum. ► Gold nanoparticle is characterized by using UV-vis, XRD, SEM and TEM. ► Gold nanoparticle is used for room temperature optical ammonia sensor. ► It show high sensitivity, ultra low detection limit and fast response.

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Effect of castor oil enrichment layer produced by reaction on the properties of PLA/HDI-g-starch blends

Original Research Article

Pages 235-243

Zhu Xiong, Lisheng Zhang, Songqi Ma, Yong Yang, Chuanzhi Zhang, Zhaobin Tang, Jin Zhu

Highlights

► It has no report about the location of castor oil (CO) in PLA/starch blends. ► The grafting content of hexamethylenediisocyanate (HDI) determined the properties of the PLA/starch/CO blends. ► The size of CO droplets in PLA matrix became smaller and less CO droplets for the blend with HDI grafted starch.

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Mucoadhesive 4-carboxybenzenesulfonamide-chitosan with antibacterial properties

Original Research Article

Pages 244-252

Phruetchika Suvannasara, Kotchakorn Juntapram, Nalena Praphairaksit, Krisana Siralermukul, Nongnuj Muangsin

Highlights

► Synthesis of mucoadhesive 4-carboxybenzenesulfonamide-chitosan without a thiol group. ► High mucoadhesive and swelling properties of 4-CBS-chitosan in acid conditions. ► Antibacterial activity of 4-CBS-chitosan conjugates against *Escherichia coli* and *Staphylococcus aureus*.

35 

Structure of a novel exopolysaccharide produced by *Burkholderia vietnamiensis*, a cystic fibrosis opportunistic pathogen

Original Research Article

Pages 253-260

Paola Cescutti, Bruno Cuzzi, Yury Herasimenka, Roberto Rizzo

Highlights

► *B. vietnamiensis* is an opportunistic pathogen for cystic fibrosis patients. ► *B. vietnamiensis* exopolysaccharide (EPS) has a novel primary structure. ► The EPS is negatively charged, branched, acetylated and contains fucose. ► It is the only EPS produced by *Burkholderia* species to contain fucose.

36 

Homogeneous synthesis of chitin-based acrylate superabsorbents in NaOH/urea solution

Original Research Article

Pages 261-271

Tingguo Liu, Liwu Qian, Bin Li, Jing Li, Kunkun Zhu, Hongbing Deng, Xiaohong Yang, Xin Wang

Highlights

► Chitin was dissolved in NaOH/urea solution and directly involved in synthesis reaction. ► Chitin based superabsorbent was synthesized under homogeneous conditions with better water absorption properties. ► Acrylic acid used directly without prior neutralization with NaOH. ► The polymerization reaction can carry out in a small beaker without nitrogen protection. ► Products exist as hydrogel without excess reagent emissions, which is conducive to reducing the environmental pollution.

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Chitosan and oligochitosan enhance the resistance of peach fruit to brown rot

Original Research Article

Pages 272-277

Zengxin Ma, Lingyu Yang, Haixia Yan, John F. Kennedy, Xianghong Meng

Highlights

► Chitosan and oligochitosan showed significant effect on controlling fruit brown rot. ► They could increase antioxidant and defense-related enzymes activities. ► They could enhance the corresponding gene transcript expression. ► Chitosan and oligochitosan treatments also delayed fruit softening and senescence.

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Preparation of entangled nanocellulose fibers from APMP and its magnetic functional property as matrix

Original Research Article

Pages 278-285

Wei Li, Xin Zhao, Shouxin Liu

Highlights

► Nanocellulose fibers were prepared from poplar alkaline peroxide mechanical pulp. ► Long and entangled nanocellulose fibers were prepared by high intensity ultrasonication. ► Nanocellulose fibers were used to prepared magnetic composites as a matrix. ► An excellent dispersity of magnetic nanocellulose fibers aerogels was prepared.

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Evaluation of tropicamide-loaded tamarind seed xyloglucan nanoaggregates for ophthalmic delivery

Original Research Article

Pages 286-291

Neeraj Dilbaghi, Harmanmeet Kaur, Munish Ahuja, Sandeep Kumar

Highlights

► Preparation of tamarind seed xyloglucan nanoaggregates. ► Optimization of tropicamide-loaded TSX nanoaggregates using face centred design. ► Corneal permeation characteristics of tropicamide-loaded TSX nanoaggregates. ► Ocular tolerance of tropicamide-loaded TSX nanoaggregates. ► Biocompatibility of tropicamide-loaded TSX nanoaggregates.

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Supramolecular complexes of maltodextrin and furosemide polymorphs: a new approach for delivery systems

Original Research Article

Pages 292-300

Claudia Garnero, Ana Karina Chattah, Marcela Longhi

Highlights

► Supramolecular complexes based on maltodextrin and furosemide were obtained. ► The complexation in solution and solid state has been established. ► These complexes improved solubility and dissolution of furosemide forms I and II. ► The complexes are promising candidates for efficient matrices in oral formulations.

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Stimulation of lymphocyte proliferation by oyster glycogen sulfated at C-6 position

Original Research Article

Pages 301-308

Jingfeng Yang, Beiwei Zhu, Jie Zheng, Liming Sun, Dayong Zhou, Xiuping Dong, Chenxu Yu

Highlights

► The oyster glycogen structure was elucidated. ► Sulfated glycogen SOG that sulfate substitution at C-6 position was prepared. ► Another sulfated glycogen SOG1 with sulfate substituent at C-2 and C-3 was prepared. ► Stronger bioactivity with C-6 sulfate substitution was reported.

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Self-assembled nanoparticles based on amphiphilic chitosan derivative and hyaluronic acid for gene delivery

Original Research Article

Pages 309-316

Ya Liu, Ming Kong, Xiao Jie Cheng, Qian Qian Wang, Li Ming Jiang, Xi Guang Chen

Highlights

► OD NPs were successfully prepared by complex coacervation process. ► The optimum N/P ratio was found to be 5 with the ideal OCMCS/HA weight ratio of 4. ► The MTT survival assay indicated no significant cytotoxicity. ► Involving HA in NPs was beneficial for the DNA release as well as cellular uptake. ► The transfection efficiency of OHD NPs was 5-fold higher than OD NPs.

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Amphiphilic copolymers of sucrose methacrylate and acrylic monomers: Bio-based materials from renewable resource

Original Research Article

Pages 317-322

Heitor F.N. de Oliveira, Maria Isabel Felisberti

Highlights

► Copolymers of sucrose 1'-O-methacrylate were obtained free radical polymerization. ► The copolymers present a random distribution of comonomers. ► The solubility of the copolymers depends strongly on the composition. ► The water soluble copolymers are thermoresponsive. ► The water insoluble copolymers behave as hydrogels.

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Anionic ring-opening polymerization of ethylene oxide in DMF with cyclodextrin derivatives as new initiators

Original Research Article

Pages 323-331

Cécile Huin, Zahra Eskandani, Nezha Badi, Aurica Farcas, Véronique Bennevault-Celton, Philippe Guégan

Highlights

► Control of ethylene oxide anionic polymerization in DMF. ► New family of star polymers with a cyclodextrin core. ► DOSY NMR characterization of star polymers with various discrete number of arms.

45 

Structure and antioxidant activity of a novel poly-N-acetylhexosamine produced by a medicinal fungus

Original Research Article

Pages 332-338

Shiguo Chen, Ka-Chai Siu, Wen-Qiang Wang, Xing-Xun Liu, Jian-Yong Wu

Highlights

► Exopolysaccharide (EPS) fractions were collected from liquid medium of a medicinal fungus. ► A novel polyhexNAc about 6 kDa was purified from the low-MW EPS fraction. ► It had a ManNAc–GalNAc–ManNAc main chain with Gal branches. ► It showed significant antioxidant activities in chemical and cell culture assays.

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Sodium alginate/graphene oxide composite films with enhanced thermal and mechanical properties

Original Research Article

Pages 339-344

Mariana Ionita, Madalina Andreea Pandele, Horia Iovu

Highlights

► Casting method was used to prepare sodium alginate/graphene oxide (Al/GO) films. ► Structure, morphology, thermal and mechanical properties of the films were studied. ► The structural and morphological properties were studied by FT-IR, XRD, SEM and TEM. ► Al/GO films showed superior thermal and mechanical properties compared with Al.

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Physicochemical and electrokinetic properties of silica/lignin biocomposites

Original Research Article

Pages 345-355

Łukasz Klapiszewski, Magdalena Nowacka, Grzegorz Milczarek, Teofil Jesionowski

Highlights

► Silica and Kraft lignin as precursors of advanced composite materials. ► Synthesis of silica/lignin biocomposites. ► Electrokinetic stability of silica, Kraft lignin and silica/lignin biocomposites. ► Characterisation of hybrid biomaterials applying NIBS, FTIR, XPS and SEM techniques.

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Aluminium and radiation cross-linked carboxymethyl sago pulp beads for colon targeted delivery

Original Research Article

Pages 356-363

Sathasivam Thenapakiam, Devakumar Ganesh Kumar, Janarthanan Pushpamalar, Muniyandy Saravanan

Highlights

► AlCl₃ cross-linked 5-ASA loaded carboxymethyl sago pulp beads were prepared. ► Ionotropically cross-linked beads were irradiated to further control drug release. ► FT-IR and drug content analysis confirmed stable nature of the drug in beads. ► XRD revealed different level of drug crystallinity depending on drug loading. ► Beads resisted drug release at pH 1.2 and sustained the release at pH 7.4 over 9 h.

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Antimicrobial electrospun membranes of chitosan/poly(ethylene oxide) incorporating poly(hexamethylene biguanide) hydrochloride

Original Research Article

Pages 364-371

M. Dilamian, M. Montazer, J. Masoumi

Highlights

► Introducing novel chitosan/PHMB nanofibers with improved characteristics. ► Enhanced antibacterial properties of chitosan with adding PHMB. ► Producing easier and finer chitosan nanofiber by adding PHMB. ► Increasing medical application of chitosan nanofibers.

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Thermal stability and flame resistance of cotton fabrics treated with whey proteins

Original Research Article

Pages 372-377

Francesca Bosco, Riccardo Andrea Carletto, Jenny Alongi, Luca Marmo, Alessandro Di Blasio, Giulio Malucelli

Highlights

► Cotton fabrics have been treated with whey protein isolate. ► The deposited coatings have modified the thermal properties of cotton. ► Flame resistance of cotton has been significantly enhanced by the deposited coatings.

51 

Protective effect of the polysaccharide from *Ophiopogon japonicus* on streptozotocin-induced diabetic rats

Original Research Article

Pages 378-385

Xiaoming Chen, Jia Tang, Wenyan Xie, Junjun Wang, Jing Jin, Jun Ren, Liqin Jin, Jianxin Lu

Highlights

► OJP1 had protective effect on the STZ-induced oxidative stress in diabetic rats. ► OJP1 improved the lipid metabolism in diabetic rats. ► OJP1 decreased the TGF- β 1 and CTGF mRNA expressions in the kidneys of diabetic rats. ► OJP1 had protective effects on the liver and kidney in diabetic rats. ► OJP1 might serve as a potential drug and functional food for the diabetes and its complications.

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Structure and properties of β -cyclodextrin/cellulose hydrogels prepared in NaOH/urea aqueous solution

Original Research Article

Pages 386-393

Lingzhi Zhang, Jinping Zhou, Lina Zhang

Highlights

► β -CD was crosslinked with cellulose in NaOH/urea aqueous solution. ► The swelling degree and water uptake of β -CD/cellulose hydrogels decreased with increasing β -CD content. ► The *in vitro* release of 5-FU displayed an inclusion complex formed between 5-FU and β -CD. ► Hydrogels contained β -CD could form complex with AnB, and lead to a fluorescence enhancement.

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Amphiphilic *N*-(2,3-dihydroxypropyl)-chitosan-cholic acid micelles for paclitaxel delivery

Original Research Article

Pages 394-399

Zheng Pan, Yunling Gao, Linseng Heng, Yi Liu, Gan Yao, Yun Wang, Yuping Liu

Highlights

► Chitosan derivative, *N*-(2,3-dihydroxypropyl)-chitosan-cholic acid was synthesized. ► Spherical chitosan derivative micelle was prepared and characterized by DLS and TEM. ► PTX released from PTX loaded chitosan derivative micelles in a sustainable manner. ► PTX loaded chitosan derivative micelle showed good antitumor activity to MCF-7 cells.

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Improved biosorption potential of *Thuja orientalis* cone powder for the biosorptive removal of Basic Blue 9

Original Research Article

Pages 400-408

Sibel Tunali Akar, Yasemin Yetimoglu Balk, Okan Tuna, Tamer Akar

Highlights

► An efficient biosorbent was prepared from *Thuja orientalis* cones by modification. ► Modification significantly enhanced the decolorization potential of biosorbent. ► High biosorption yields were obtained by small amount of modified biosorbent. ► Modified sorbent was successfully used for BB9 removal in batch and column mode. ► Modified biosorbent showed excellent desorption potential up to 10 cycles.

55 □

Thermostable, haloalkaline cellulase from *Bacillus halodurans* CAS 1 by conversion of lignocellulosic wastes

Original Research Article

Pages 409-415

Neelamegam Annamalai, Mayavan Veeramuthu Rajeswari, Sivaramasamy Elayaraja, Thangavel Balasubramanian

Highlights

► Develop efficient and cost effective process to convert lignocellulosic biomass. ► Proposed for inexpensive cellulase production through utilization of waste. ► First report on cellulase from *B. halodurans* by bioconversion of cellulosic biomass. ► Cellulase was stable at higher temperature, pH, NaCl, detergent and organic solvent. ► Considering production cost and reclamation of waste seems to be novel approach.

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Effects of extractives on some properties of bagasse/high density polypropylene composite

Original Research Article

Pages 416-419

Shabnam Sheshmani

Highlights

► Composites made with extracted bagasse had higher water absorption (WA) and thickness swelling (TS) values. ► TS of samples showed a similar pattern to the water uptake data. ► As the bagasse content was increased, significant increased in WA and TS occurred. ► The difference in WA between extracted and unextracted composites is due to blocking of –OH groups by extractives.

57 □

Galactosylated chitosan–polycaprolactone nanoparticles for hepatocyte-targeted delivery of curcumin

Original Research Article

Pages 420-429

Highlights

► Galactosylated chitosan–polycaprolactone is synthesized for delivery of curcumin. ► Initial load of curcumin in the resulting nanoparticles reaches around 6%. ► Curcumin release from nanoparticles is controlled by polycaprolactone component. ► Nanoparticles have hepatocyte-targeted specificity toward HepG2 cells. ► Bioavailability of curcumin can be greatly improved using these nanoparticles.

58

Superadsorption of LiOH solution on chitosan as a new type of solvent for chitosan by freezing/blasting

Original Research Article

Pages 430-435

Min Fan, Qiaoling Hu

Highlights

► Chitosan could absorb a large amount of alkali solution under freezing temperature. ► The adsorption increased with increasing LiOH concentration until 4.8 wt%. ► The adsorption of LiOH and H₂O on chitosan was closely related to its DD. ► The adsorption proceeded from amorphous to crystal region. ► LiOH and the freeze-thawing treatment played key roles in the adsorption.

59

PEGylated chitosan complexes DNA while improving polyplex colloidal stability and gene transfection efficiency

Original Research Article

Pages 436-443

Gjertrud Maurstad, Bjørn T. Stokke, Kjell M. Vårum, Sabina P. Strand

Highlights

► Low degree of chitosan PEGylation does not suppress DNA polyplex formation. ► Polyplexes with low degree PEGylated chitosans and DNA are less prone to colloidal instability. ► Polyplexes between low degree PEGylated chitosans and DNA show increased transfection ability.

60

Reversible pH-responsive aggregates based on the self-assembly of functionalized POSS and hyaluronic acid

Pages 444-448

Lu Lu, Chaowen Zhang, Lihua Li, Changren Zhou

Highlights

► Hyaluronic acid and POSS nanoparticles can form reversible pH-induced aggregates. ► Micelles, sacs and membranes have been observed in this hybrid system. ► Sac after defect can be resealed by triggering additional self-assembly. ► The self-sealing macroscopic structure offer opportunities in many areas.

61 

pH-responsive sodium alginate-based superporous hydrogel generated by an anionic surfactant micelle templating

Original Research Article

Pages 449-455

Xiaoning Shi, Wenbo Wang, Aiqin Wang

Highlights

► Superporous NaAlg-based hydrogel was prepared by the self-assembling micelle templating. ► FTIR spectra demonstrated that the removing of micelle from the final hydrogel network. ► The morphology and porous structure of the hydrogel was evaluated by SEM. ► The surfactant micelle templating is an efficient technique to produce superporous hydrogel.

62 

Interpenetrating polymer network of locust bean gum-poly (vinyl alcohol) for controlled release drug delivery

Original Research Article

Pages 456-467

Santanu Kaity, Jinu Isaac, Animesh Ghosh

Highlights

► No IPN microsphere system was developed by using LBG before this. ► This microsphere showed pH responsive release characteristics. ► Detailed in vitro characterizations of the IPN microspheres were evaluated. ► Particles showed zero order release.

63 

Correlations between steric/thermochemical parameters and *O*-/*N*-acylation reactions of cellulose

Original Research Article

Pages 468-478

Kesavan Devarayan, Taketoshi Hayashi, Masakazu Hachisu, Jun Araki, Kousaku Ohkawa

Highlights

► *O*-acylation of cellulose using β -Ala gave the highest DS% compared to Gly and α ,l-Ala. ► β -Ala-Cellulose is the most reactive to give highest *N*-acylation yield. ► Thermochemical/strain transitions in *O*-/*N*-acylation of cellotetraose-model. ► The lower steric energy of β -Ala-Cellulose is advantageous for *N*-acylation.

64 

Extraction of crude polysaccharides from *Gomphidius rutilus* and their antioxidant activities in vitro

Original Research Article

Pages 479-486

Chenyu Wang, Jing Zhang, Fei Wang, Zhanyong Wang

Highlights

► The extraction of crude polysaccharides from *Gomphidius rutilus* (GRCPs) was optimized. ► The predictive model of GRCPs extraction is adequate for the extraction process. ► GRCPs possessed a good antioxidant activity in vitro.

65 

Functionalisation of fabrics with conducting polymer for tuning capacitance and fabrication of supercapacitor

Original Research Article

Pages 487-495

K. Firoz Babu, S.P. Siva Subramanian, M. Anbu Kulandainathan

Highlights

► Well uniform polypyrrole-textile composite electrodes were prepared by in situ chemical polymerisation method. ► Composite formation was confirmed by SEM and FT-IR analysis. ► Compared the electrochemical performance of PPy coated natural and synthetic fibres. ► Obtained high specific capacitance of 260 F g^{-1} with PPy-Cotton textile electrode.

66 

Effects of thermal, alkaline and ultrasonic treatments on scleroglucan stability and flow behavior

Original Research Article

Pages 496-504

Highlights

► Scleroglucans showed high resistance to heating (<150 °C) and different sensitivity vs. alkali. ► Triplex sensitivity was evidenced as a denaturation-based loss of pseudoplastic behavior. ► Single coil aggregates or supramolecular assemblies may account for residual pseudoplasticity. ► A different mechanistic rationale would apply for ultrasonication variable effects. ► Downstream processing-related conformational features might explain differential behavior.

67

A novel and simple procedure to synthesize chitosan-*graft*-polycaprolactone in an ionic liquid

Original Research Article

Pages 505-510

Zhaodong Wang, Liuchun Zheng, Chuncheng Li, Dong Zhang, Yaonan Xiao, Guohu Guan, Wenxiang Zhu

Highlights

► The chitosan-*graft*-polycaprolactone was synthesized through a convenient, green and efficient method. ► The grafting content of polycaprolactone (PCL) of the copolymer could reach as high as 630%. ► The obtained graft copolymers are expected to have the advantageous properties of two polymers.

68

NMR and rheological study of *Aloe barbadensis* partially acetylated glucomannan

Original Research Article

Pages 511-519

L.H. Campestrini, J.L.M. Silveira, M.E.R. Duarte, H.S. Koop, M.D. Nosedá

Highlights

► *Aloe* extract (AE) and polysaccharidic fraction (PF) of *Aloe* leaves pulp were studied. ► PF is mainly constituted by a partially acetylated 4-linked β -d-glucomannan. ► Acetyl groups are located at C-2, C-2 and C-3, C-3 and/or C-6 of Manp units. ► AE is composed by a high amount of free glucose (61%) and the acetylated glucomannan. ► AE and PF showed pseudoplastic behavior and PF higher viscoelastic properties.

69

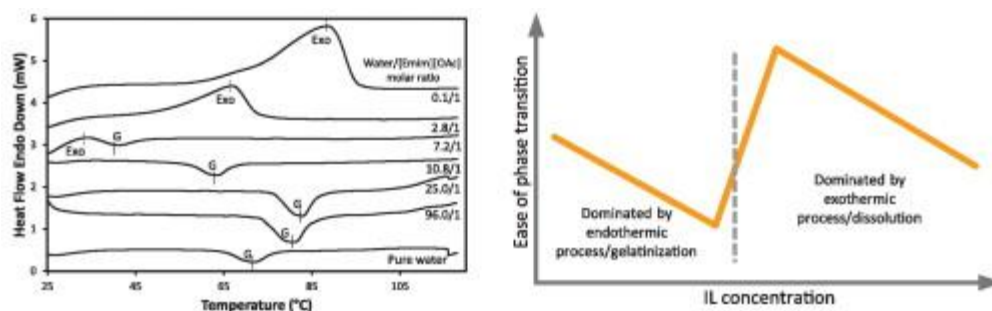
Effect of the ionic liquid 1-ethyl-3-methylimidazolium acetate on the phase transition of starch: Dissolution or gelatinization?

Original Research Article

Pages 520-530

Sainimili Mateyawa, David Fengwei Xie, Rowan W. Truss, Peter J. Halley, Timothy M. Nicholson, Julia L. Shamshina, Robin D. Rogers, Michael W. Boehm, Tony McNally

Graphical abstract



Highlights

► The water/[Emim][OAc] ratio has a great impact on the phase transition of starch. ► The ratio decides whether gelatinization or dissolution dominates. ► The dissolution of starch by [Emim][OAc] is an exothermic process. ► At a certain ratio gelatinization and dissolution occur synergistically. ► The synergic effects greatly reduced the temperature for starch phase transition.

70

Adsorption of lignocelluloses of pre-hydrolysis liquor on calcium carbonate to induce functional filler

Original Research Article

Pages 531-538

Pedram Fatehi, Fadia C. Hamdan, Yonghao Ni

Highlights

► The adsorption of lignocelluloses of prehydrolysis liquor on PCC was studied. ► 200 mg/g oligo-sugars, 80 mg/g lignin and 50 mg/g furfural on PCC were obtained. ► The addition of CPAM to PHL improved the adsorption of lignocelluloses. ► Maximum lignocelluloses adsorption was 0.36 g/g on PCC (0.22 g/g was oligo-sugars).

71

Synthesis of wheat straw cellulose-g-poly (potassium acrylate)/PVA semi-IPNs superabsorbent resin

Original Research Article

Pages 539-546

Jia Liu, Qian Li, Yuan Su, Qinyan Yue, Baoyu Gao, Rui Wang

Highlights

► Semi-IPNs superabsorbent resin (SAR) was prepared by wheat straw cellulose. ► SAR used in agriculture that can improve the water retentivity of soil. ► Polyvinyl alcohol can enhance the mechanical toughness properties of SAR. ► The effects of synthesis conditions on water absorbency were studied.

72

Rheological characterization of galactomannans extracted from seeds of *Caesalpinia pulcherrima*

Original Research Article

Pages 547-554

Nilima A. Thombre, Paraag S. Gide

Highlights

► *Caesalpinia pulcherrima* gum was extracted from legume endosperms of *C. pulcherrima* L. ► Steady shear and dynamic viscoelastic properties were studied. ► The rate of entanglement of the polymer is dependent on concentration of the polymer and exhibits shear thinning nonNewtonian behavior. ► The rheological characteristics of the galactomannan demonstrated the suitability of gum as a viscosity modifier in food industry as well as in pharmaceutical industry.

73

Improvement on the freeze–thaw stability of corn starch gel by the polysaccharide from leaves of *Corchorus olitorius* L.

Original Research Article

Pages 555-560

Eiji Yamazaki, Toru Sago, Yoshiaki Kasubuchi, Kazuhito Imamura, Toshio Matsuoka, Osamu Kurita, Hironobu Nambu, Yasuki Matsumura

Highlights

► The polysaccharide from *Corchorus olitorius* (PLC) reduced syneresis of starch gel. ► PLC stabilized rheological properties of starch gel during freeze–thaw cycles. ► SEM images showed that PLC maintained the gel matrix surrounding pores.

74

Hydrolysis of macroalgae using heterogeneous catalyst for bioethanol production

Original Research Article
Pages 561-566
Inn Shi Tan, Man Kee Lam, Keat Teong Lee

Highlights

► *Eucheuma cottonii* which has no lignin is a potential feedstock for ethanol production. ► Amberlyst 15 was explored as a potential catalyst to hydrolyze carbohydrate from macroalgae. ► Yield of galactose obtained using Amberlyst 15 is superior as compared to H₂SO₄.

75

Branching pattern of gluco-oligosaccharides and 1.5 kDa dextran grafted by the α -1,2 branching sucrase GBD-CD2

Original Research Article

Pages 567-576

Yoann Brison, Sandrine Laguerre, François Lefoulon, Sandrine Morel, Nelly Monties, Gabrielle Potocki-Véronèse, Pierre Monsan, Magali Remaud-Simeon

Highlights

► GBD-CD2 is an α -1,2 branching sucrase engineered from DSR-E dextransucrase ► New poly-branched α -1,2 gluco-oligosaccharides were synthesized ► Branching occurring onto vicinal α -1,6 linked glucosyl units was first demonstrated ► 1.5 kDa dextran was shown to be glucosylated at random ► A vast panel of structures showing dietary properties can thus be obtained.

76

Improving wet and dry strength properties of recycled old corrugated carton (OCC) pulp using various polymers

Original Research Article

Pages 577-583

Yahya Hamzeh, Sanaz Sabbaghi, Alireza Ashori, Ali Abdulkhani, Farshid Soltani

Highlights

► Applications of chitosan, cationic starch and poly vinyl alcohol (PVA) were investigated ► Tensile strength of handsheets was significantly affected by the addition of polymeric agents ► Enhancing effect of additives on dry tensile property was much higher than wet condition ► The best results in wet and dry tensile strengths were achieved using sequential of PVA-Chi-CS.

77

Biocompatibility and characterization of renewable agricultural residues and

polyester composites

Original Research Article

Pages 584-593

Chin-San Wu, Yi-Chiang Hsu, Jen-taut Yeh, Hsin-Tzu Liao, Jheng-Jie Jhang, Yong-Yu Sie

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Highlights

► Using polyester and agricultural residues (sesame husks) composites are prepared to explore their biocompatibilities. ► Both of polyester and sesame husks were biodegradable and absolutely harmless on environment. ► Polyester and sesame husks showed good performance on cell viabilities and collagen production.

78 

Chemical composition and functional properties of native chestnut starch (*Castanea sativa* Mill)

Original Research Article

Pages 594-602

Bruno R. Cruz, Ana S. Abraão, André M. Lemos, Fernando M. Nunes

Highlights

► Native chestnut starch was isolated using a simple and soft method. ► Physicochemical, morphological and functional properties were determined. ► Native chestnut starch can be an advantageous alternative to corn starch.

79 

Bacterial cellulose and bacterial cellulose–chitosan membranes for wound dressing applications

Original Research Article

Pages 603-611

Wen-Chun Lin, Chun-Chieh Lien, Hsiu-Jen Yeh, Chao-Ming Yu, Shan-hui Hsu

Highlights

► Bacterial cellulose (BC) was produced in large scale from culture of *Acetobacter xylinum*. ► The addition of chitosan (Ch) into BC (BC–Ch) increased the antibacterial activities. ► BC and BC–Ch membranes helped maintain a moist wound healing environment. ► Wounds treated with BC–Ch epithelialized faster than those treated with Tegaderm.

80 

A smart approach to add antibacterial functionality to cellulosic pigment prints

Highlights

► An eco-friendly pigment printing of cellulosic substrates. ► Modification of pigment paste using bio-active ingredients. ► High quality pigment prints with remarkable antibacterial activity. ► Noticeable durability to wash.

81

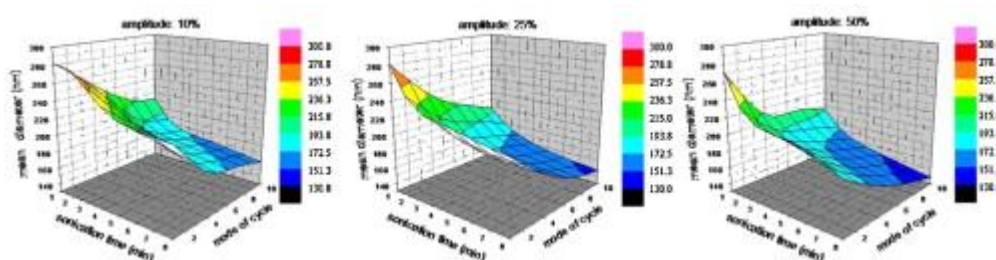
Cavitation effect on chitosan nanoparticle size: A possible approach to protect drugs from ultrasonic stress

Original Research Article

Pages 619-625

Alice Floris, Maria Cristina Meloni, Francesco Lai, Francesca Marongiu, Anna Maria Maccioni, Chiara Sinico

Graphical abstract



Highlights

► Chitosan (CH) nanoparticles were prepared by means of the ionotropic gelation method. ► We verified the influence of different ultrasonic radiations on CH nanoparticle size. ► All the ultrasonic parameters showed important influences on nanoparticle size. ► Ultrasound application only to the chitosan dispersion preserve drug loading.

82

Microwave superheated water extraction of polysaccharides from spent coffee grounds

Original Research Article

Pages 626-633

Cláudia P. Passos, Manuel A. Coimbra

Highlights

► Microwave assisted extraction (MAE) allows the recovery of arabinogalactans (AG). ► Re-extraction of the material left (MAE2) allowed to recover galactomannans (GM). ► 74% and 66% of total galactose and mannose could be extracted from spent coffee grounds. ► Oligosaccharides, mainly derived from GM, can be obtained in MAE2. ► Different proportions of GM/AG can be obtained depending on operating conditions.

83

Construction of hyaluronic acid niosome as functional transdermal nanocarrier for tumor therapy

Original Research Article

Pages 634-641

Ming Kong, Hyunjin Park, Chao Feng, Lin Hou, Xiaojie Cheng, Xiguang Chen

Highlights

► Hyaluronic acid niosome as functional transdermal carrier for tumor therapy. ► HA-niosome has small size, elastic multilayer structure and hydrophilic interface. ► The incorporation of HA promotes the endocytosis of nanocarrier by tumor cell. ► HA-niosome is efficient and secure for transdermal permeation. ► HA-niosome is potential carrier for tumor therapy by percutaneous administration.

84

Direct fluorination applied to wood flour used as a reinforcement for polymers

Original Research Article

Pages 642-646

Florence Saulnier, Marc Dubois, Karine Charlet, Lawrence Frezet, Alexis Beakou

Highlights

► Direct fluorination is applied to wood flour to reduce its hydrophilia. ► The graft of fluorine on wood constituents is successfully obtained. ► A decrease in water content of wood is effectively noted after the treatment.

85

A heparin-like compound isolated from a marine crab rich in glucuronic acid 2-O-sulfate presents low anticoagulant activity

Original Research Article

Pages 647-654

Giulianna P.V. Andrade, Marcelo A. Lima, Airton A. de Souza Junior, Jawed Fareed, Debra A. Hoppensteadt, Elizeu A. Santos, Suely F. Chavante, Fernanda W. Oliveira, Hugo A.O. Rocha, Helena B. Nader

Highlights

► Report of a crab heparin-like compound rich in 2-*O*-sulfated glucuronic acid units. ► COSY, TOCSY, NOESY and HSQC were used to trace the spin systems of the compound. ► Degradation products of the compound by heparinases confirmed the NMR data. ► Degree of sulfation of the compound is not sufficient for anticoagulant activity.

86□

Structure and properties of polypyrrole/bacterial cellulose nanocomposites

Original Research Article

Pages 655-662

Daliana Muller, Carlos R. Rambo, Luismar. M. Porto, Wido H. Schreiner, Guilherme M.O. Barra

Highlights

► Conducting nanocomposites based on bacterial cellulose/polypyrrole were obtained. ► The composites were prepared using ammonium persulfate or iron III hydrochloride. ► The morphology of composites prepared with two types of oxidant is different. ► The properties of composites were influenced by the oxidant used in the reaction.

87□

Synthesis of gas barrier starch by dispersion of functionalized multiwalled carbon nanotubes

Original Research Article

Pages 663-668

Sarat K. Swain, Ajaya K. Pradhan, Hari S. Sahu

Highlights

► Starch/MWCNT nanocomposites were prepared by low cost solution casting green method. ► The interaction of f-MWCNT with starch was achieved by FTIR, XRD, FESEM and HRTEM. ► Electrical conductivity was increased sixteen times as compared virgin starch. ► Oxygen permeability of starch was reduced to half with addition of small amount of f-MWCNT.

88□

A comparative study of chitosan shielding effect on nano-carriers hydrophilicity and biodistribution

Original Research Article

Pages 669-676

Rania A.H. Ishak, Gehanne A.S. Awad, Noha M. Zaki, Abd El-Hamid A. El-Shamy, Nahed D. Mortada

Highlights

► Chitosan compared to other shielding materials was exploited for shielding PLA NPs. ► The shielding effect on particles zeta potential and hydrophilicity was studied. ► The outcome of protection on NPs pharmacokinetics and biodistribution was examined. ► Both chitosan and polysorbate-coated NPs exhibited comparable hydrophilic characters. ► *In vivo* uptake in RES was inhibited with chitosan-coated NPs.

89 □

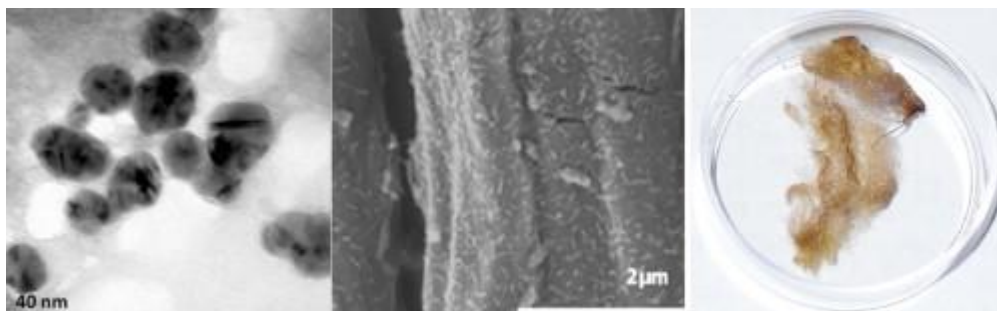
In situ preparation of silver nanocomposites on cellulosic fibers – Microwave vs. conventional heating

Original Research Article

Pages 677-686

Doris Breitwieser, Mojtaba Mirhosseini Moghaddam, Stefan Spirk, Mostafa Baghbanzadeh, Tanja Pivec, Hubert Fasl, Volker Ribitsch, C. Oliver Kappe

Graphical abstract



Highlights

► In situ synthesis of silver nanoparticles on viscose fibers using sulfated chitosan. ► Conventional and microwave heating are applied and compared. ► All fibers exhibited antimicrobial behavior toward *Escherichia coli* bacteria. ► Microwave treated fibers showed slightly elongated silver nanoparticles. ► Differences in nanoparticle shape are not due to different heating methods.

90 □

Use of polysaccharide based surfactants to stabilize organically modified clay particles aqueous dispersion

Original Research Article

Pages 687-694

Manja Kurečič, Majda Sfiligoj Smole, Karin Stana-Kleinschek

Highlights

► Polysaccharide based surfactant Inutec SP1 used for stabilization of O-MMT particle dispersion. ► Inutec SP1 surfactant concentration above CMC improves dispersion stability. ► Stabilization is achieved upon adsorption of Inutec SP1 surfactant.

91

Chitosan–gellan electrostatic complexes: Influence of preparation conditions and surfactant presence

Original Research Article

Pages 695-703

Carolina Siqueira Franco Picone, Rosiane Lopes Cunha

Highlights

► Particle charge and size were dependent on the polysaccharide ratio. ► Some particles exhibited structural reorganization during storage. ► The mixing protocol determined PEC size. ► PEC properties were not affected by the addition of polysorbate-20.

92

Structural characterization of a glucuronoarabinoxylan from pineapple (*Ananas comosus* (L.) Merrill) gum exudate

Original Research Article

Pages 704-711

Fernanda F. Simas-Tosin, Lauro M. de Souza, Ricardo Wagner, Graciele C.Z. Pereira, Ruth R. Barraza, Cinthia F. Wendel, Guilherme L. Sasaki, Marcello Iacomini, Philip A.J. Gorin

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Highlights

► A glucuronoarabinoxylan was isolated from pineapple gum exudate. ► The main chain was composed of (1→4)-linked β -Xylp units. ► The side chains were composed of α -Araf, β -Arap, β -Xylp, β -Galp, and α -GlcAp units. ► Oligosaccharides were analyzed by ESI-MS as multi-charged or singly charged ions.

93

Editorial Board

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