



10th ICCC – Euchis' 06

10th International Conference on Chitin & Chitosan
7th International Conference of the European Chitin Society

Le Corum – Montpellier – France
September 6-9 (2006)

Organized by:

The European Chitin Society
Ecole des Mines d'Alès
Université Claude Bernard, Lyon I

Chairmen

Alain Domard (France)
Eric Guibal (France)
Kjell Morten Vårum (Norway)

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George Roberts (Great Britain)
Kensuke Sakurai (Japan)
Hitoshi Sashiwa (Japan)
Sevda Senel (Turkey)
Olav Smidsrød (Norway)

Program of the Conference

6 of September 2006

16h30-18h30: **Registration (Le Corum)**

18h30: **Welcome Reception (offered by *The City Hall of Montpellier*)**

7 of September 2006

8h30-8h45	Opening Ceremony (Auditorium Pasteur)	
8h45-9h30	Plenary 1: Olav Smidsrød: Highlights from 30 Years of Pure and Applied Research in Chitosan Chairman: Alain Domard (Auditorium Pasteur)	
	Session: Biological & Ecological Aspects (Auditorium Pasteur) Chair persons: <i>B. Moerschbacher & K.M. Vårum</i>	Session: Sources & Production (Room Joffre 1) Chair persons: <i>G.A.F. Roberts & M.M. Jaworska</i>
9h35-10h05	KB1: B. Moerschbacher Bioactivity Matrices for Partially Acetylated Chitosan Oligomers	KS1: W.F. Stevens Chitin & Chitosan Products Modification Controlled by Chemical & Enzymatic Treatment
10h05-10h25	OB1: G.B. Ouellette	OS:1: M.J. Taherzadeh
10h25-10h50	Coffee Break + Poster Session (Rooms Joffre 2 & 3)	
10h50-11h10	OB2: S. Bratskaya	OS2: N. Nwe
11h10-11h30	OB3: T. Sayo	OS3: M. Yanagisawa
11h30-11h50	OB4: S. Jaoua	OS4: C. Scholz
11h50	KB2: D. Koga Biological Roles and Application of Chitinase	^{11h50} OS5: S.P. Campana-Filho ^{12h10} OS6: B. Miralles
12h30-14h	Lunch (Central room)	
14h-14h45	Plenary 2: Marie-Thérèse Corvol: Tissue Engineering and Cartilage Repair: Limits and Perspectives Chairman: Alain Domard (Auditorium Pasteur)	
	Session: Enzymatic Aspects (Auditorium Pasteur) Chair persons: <i>D. Koga & V. Eijsink</i>	Session: Chemical Aspects I (Room Joffre 1) Chair persons: <i>K. Kurita & F. Goycoolea</i>
14h50-15h20	KE1: S. Kobayashi In Vitro Synthesis of Chitin & Chitosan Derivatives via Enzymatic Polymerization	KC1: K. Kurita Linear Polysaccharides as Precursors for Glucan-Chitin Hybrid Materials
15h20-15h40	OE1: D.M.F. Van Alten	OC1: A. Einbu
15h40-16h	OE2: T. Fukamizo	OC2: M.R. Kasaai
16h-16h30	Coffee Break + Poster Session (Rooms Joffre 2 & 3)	
16h30-16h50	OE3: G. Vaaje-Kolstad	OC3: S. Trombotto
16h50-17h10	OE4: S. Takahashi	OC4: C.-H. Chen
17h10-17h30	OE5: M.M. Jaworska	OC5: A. Gandini
17h30-17h50	OE6: M. Shimosaka	OC6: R. Auzely-Velty
17h50-18h10	OE7: V. Eijsink	OC7: R. Jayakumar
18h30	Cocktail (Offered by <i>La Région Languedoc-Roussillon</i>)	

	Session: Chemical Aspects II <i>(Room Joffre 5)</i> Chair persons: <i>M. Peter & A. Gandini</i>	Session: Physical & Physico-Chem. Aspects I <i>(Room Joffre 1)</i> Chair persons: <i>L. David & K. Sakurai</i>	Session: Applications in Life Sciences I <i>(Auditorium Pasteur)</i> Chair persons: <i>S. Senel & I. Nagaoka</i>
8h30-9h	KC2: M.G. Peter Protein-Ligand Interactions of Chitooligosaccharides	KP1: S. Tokura Molecular Aspects of Hydrated Chitin	KL1: H.-W. Sung Novel Nanoparticles Shelled with Chitosan for Oral Delivery of Protein Drugs
9h-9h20	OC8: H. Saimoto	OP1: F. Quignard	OL1: X. Shi
9h20-9h40	OC9: S. Chirachanchai	OP2: K. Sakurai	OL2: S. Senel
9h40-10h	OC10: F.M. Goycoolea	OP3: R. Terreux	OL3: A. Tourrette
10h-10h20	OC11: W.A. Neugebauer	OP4: T. Delair	OL4: E. Fernandez-Megia
10h20-10h45	Coffee Break + Poster Session (Rooms Joffre 2 & 3)		
10h45	^{10h45} OC12: A. Synytsya	^{10h45} OP5: J. Desbrières	KL2: S. Strand Chitosans as Gene Delivery Vehicles
	^{11h05} OC13: M.-C. Heuzey	^{11h05} OP6: R.H. Chen	
11h25-12h	Euchis General Assembly (Room Joffre 1)		
12h-13h30	Lunch (Central room)		
13h30-13h45	Official Photograph		
13h45	Departure for the Tour and Banquet Visits of: “La Grande Motte”, “Port Camargue” and “Aigues-Mortes” (Boat trip between La Grande Motte and Port Camargue) Banquet Dinner at “le Domaine du Grand Malherbes”		

	Session: Applications in Life Sciences II <i>(Auditorium Pasteur)</i> Chair persons: <i>H.-W. Sung & A.R. Podile</i>	Session: Applications in Other Fields <i>(Room Joffre 1)</i> Chair persons: <i>G.F. Payne & R.-H. Chen</i>
8h45-9h15	KL 3: S. Minami Biomedical Effects of Chitin and its derivatives with special reference to Skin, Cartilage, & Tendon Repair	KA1: R. Ghodssi Chitosan: an Interface between Biology and Microsystems
9h15-9h35	OL5: S. Ladet	OA1: K. Inoue
9h35-9h55	OL6: Y. Okamoto	OA2: I. Dez
9h55-10h15	OL7: T. Ganno	OA3: G.F. Payne
10h15-10h35	OL8: C. Tan	OA4: F. Peirano-Blondet
10h35-11h	Coffee Break + Poster Session (Rooms Joffre 2 & 3)	
11h-11h20	OL9: Y. Hayashi	OA5: R.S. Vieira
11h20-11h40	OL10: E. DesRosiers	OA6: T. Hakonsen
11h40-12h00	OL11: G.J. Tsai	OA7: S. Vilchez
12h00-12h20	OL17: M. Buschmann	OA8: G. Karthikeyan
12h30-14h	Lunch (Central room)	
	Session: Applications in Life Sciences III <i>(Auditorium Pasteur)</i> Chair persons: <i>S. Strand & S. Minami</i>	Session: Physical & Physico-Chem. Aspects II <i>(Room Joffre 1)</i> Chair persons: <i>S. Tokura & W. Argüelles Monal</i>
14h00-14h30	KL4: I. Nagaoka Anti-Inflammatory and Anti-Platelet Actions of Glucosamine	KP2: L. David The Concept of Chemical and Physical Decoy of Biological Media: Applications for Tissue Engineering
14h30-14h50	OL12: A.R. Podile	OP7: G.A.F. Roberts
14h50-15h10	OL13: A. Bornet	OP8: W. Argüelles-Monal
15h15-15h45	Coffee Break + Poster Session (Rooms Joffre 2 & 3)	
15h45-16h05	OL14: T.T. Franco	OP9: E. Belamie
16h05-16h25	OL15: T. Helgason	OP10: S. Popa-Nitta
16h25-16h45	OL16: S. Méthot	OP11: H.K. Holme
17h	Concluding Remarks – Closure (Auditorium Pasteur)	

1st Prefix: K – Keynote Lecture O – Oral Presentation P – Poster Presentation
2nd Prefix: Session:

B: Biological & Ecological Aspects
S: Sources & Production
E: Enzymatic Aspects
C: Chemical Aspects
P: Physical & Physico-chemical Aspects
L: Applications in Life Sciences
A: Applications in Other Fields

PLENARY LECTURES (*Auditorium Pasteur*)

Plenary Lecture 1: **Highlights from 30 Years of Pure and Applied Research on Chitosans**
O. Smidsrød, K.M. Vårum

Plenary Lecture 2: **Tissue Engineering and Cartilage Repair: Limits and Perspectives**
M.-T. Corvol

ORAL & KEYNOTE PRESENTATIONS

Session: "Biological & Ecological Aspects" (*Auditorium Pasteur*)

KB1: Bioactivity Matrices for Partially Acetylated Chitosan Oligomers

B. M. Moerschbacher, N.E. El Gueddari, E.N. de Oliveira jr, A.L. Wendt dos Santos, S. Trombotto, A. Domard

OB1: Means Some Fungal Pathogens have to Overcome Aberrations to their Chitin-Containing Wall Layers in Host Plants, as Indicated by Cytochemical Ultrastructural Studies

G.B. Ouellette, H. Chamberland, L. Bernier, P.M. Charest

OB2: Preparation and Characterization of Chitosan-Based Coatings for Prevention of Bacterial Adhesion

S. Bratskaya, H.J. Busscher, D. Marinin, S. Schwarz, F. Simon, H.C. van der Mei, S. Zschoche

OB3: Effect of N-Acetylglucosamine on Hyaluronan Production in the Skin Cells

T. Sayo, S. Sakai, Y. Sugiyama, Y. Matahira, K. Sakai, S. Inoue

OB4: Molecular Characterization of a Novel Chitinase from *Bacillus thuringiensis* subsp. *kurstaki*

S. Jaoua, F. Driss, A. Baanannou, A. M. Kallassy-Awad, N. Zouari

KB2: Biological Roles and Application of Chitinase

D. Koga

Session: "Sources & Production" (*Room Joffre 1*)

KS1: Chitin and Chitosan Product Modification Controlled by Chemical and Enzymatic Treatment

W. F. Stevens

OS1: Production of Chitosan with Filamentous Fungi *Rhizopus oryzae*

A. Zamani, K. Karimi, *M. J. Taherzadeh*

OS2: Effect of NaOH Treatment Conditions on the Nature of Fungal Chitosan-glucan Complex and Chitosan Production

N. Nwe, W. F. Stevens, D. Montet, S. Tokura, H. Tamura

OS3: Molecular Characterization of Chitin and Chitosan by SEC-MALS

M. Yanagisawa, Y. Kato, Y. Yoshida, A. Isogai

OS4: Qualification of Different Chitosan Preparations for Medical Applications

C. Scholz, J. Brandner, I. Moll

OS5: New Routes for the Deacetylation of Chitin

S. P. Campana-Filho, R. Thouvignon, A. Domard

OS6: Effect of Dry Heat on Some Physical and Chemical Properties of Chitosan

B. Miralles, G. Galed, M. Mengibar, A. Heras

KE1: In Vitro Synthesis of Chitin and Chitin Derivatives via Enzymatic Polymerization

S. Kobayashi, A. Makino

OE1: Structure and Mechanism of Chitin Deacetylase

D. Blair, A. Schuettelkopf, *D.M.F. van Aalten*

OE2: Exo- β -D-glucosaminidase from *Amycolatopsis orientalis*: Catalytic Residues, Sugar Recognition Specificity, Kinetics, and Synergism

T. Fukamizo, A. Fleury, N. Cote, M. Mitsutomi, R. Brzezinski

OE3: Structure-function Studies of CBP21, a Non-catalytic Chitin-binding Protein Promoting Chitin Degradation

G. Vaaje-Kolstad, S.J. Horn, D.R. Houston, B. Synstad, D.M.F. Van Aalten

OE4: Stabilization of GlcNAc 2-epimerase (Renin-Binding Protein) by Nucleotides

S. Takahashi, K. Hori, K. Hiwatashi, H. Ogasawara, T. Sugiyama

OE5: Reactor with a Product Separation for Enzymatic Deacetylation of Chitosan

M. M. Jaworska, E. Konieczna

OE6: Functional Analysis of a Novel C-Terminal Domain Found in a Chitinase from the Koji Mold *Aspergillus oryzae*

M. Shimosaka, A. Sugii, A. Sugita, X.-Y. Zhang, K. Sato

OE7: Processivity and Endo- Versus Exo-mechanism in Family 18 Chitinases Produced by *Serratia marcescens*

S.J. Horn, A. Sørbotten, B. Synstad, P. Sikorski, M. Sørli, K.M. Vårum, *V.G.H. Eijsink*

Session: "Chemical Aspects I" (Room Joffre 1)

KC1: Linear Polysaccharides as Precursors For Glucan-Chitin Hybrid Materials

K. Kurita, H. Takahara, M. Kouma, J. Yang, M. Shimojoh

OC1: Hydrolysis of Chitin Oligomers in Concentrated Hydrochloric Acid

A. Einbu, K.M. Vårum

OC2: Overview on Kinetics of Degradation Processes for Chitin and Chitosan

M.R. Kasaai

OC3: Chemical Synthesis of Chitin and Chitosan Oligomers with Controlled Sizes and Architectures

S. Trombotto, A. Pernet-Poil-Chevrier, N. Barroca, A. Domard

OC 4: Study of Chitosan/Poly (Vinyl Alcohol)/Gelatin Ternary Blend Films

C.-H. Chen, F.-C. Wu

OC5: Thin Films of Photocrosslinkable Polymer Electrolytes Based on Chitosan Grafted with PEO Oligomers and a Furan Chromophore

A. Gandini, J.F. Le Nest, S. Hariri

OC6: Novel Thermogelling Hybrid Copolymers Based on Chitosan. Synthesis and Properties in Aqueous Solution

C. Creuzet, M. Rinaudo, *R. Auzély-Velty*

OC7: Synthesis, Characterization and Thermal properties of Chitin-g-Poly(Caprolactone) Copolymers by Using Chitin Gel

R. Jayakumar, H. Tamura

Session: "Chemical Aspects II" (Room Joffre 5)

KC2: Protein-Ligand Interactions of Chitoooligosaccharides as Revealed by X-ray, NMR, and MS Analysis

M.G. Peter

OC8: Synthesis of Novel UV-curable Chitosan Derivatives and Their Palladium Adsorption Property

E. Renbutsu, Y. Omura, F. Nakatsubo, S. Minami, *H. Saimoto*, Y. Shigemasa

OC9: One Pot Preparation of Chitosan Nanoscaffold and its Effective Functionalization with Sugar for Soft and Cotton-like Material

S. Phongying, S. Aiba, *S. Chirachanchai*

OC10: Molecularly Imprinted Chitosan-Genipin Hydrogels with Recognition Capacity towards PCB Analogues

B.M. Espinosa-García, W.M. Argüelles-Monal, J. Hernández-Martínez, L. Félix-Valenzuela, *F.M. Goycoolea*

OC11: Glycation of Peptides with Oligochitosan on the Solid Support

W.A. Neugebauer, R. Brzezinski, S. Bélanger, D. Barbaz, F. Gobeil Jr.

OC12: Chitosan as a Polymeric Scaffold for the Aggregation of Meso-tetrakis(4-sulphonatophenyl)Porphine

An. Synytsya, Al. Synytsya, P. Blafková, M. Maryška, J. Ederová, J. Spěvaček, J. Čopíkova, K. Volka, V. Král

OC13: Viscoelastic Properties of Phosphoric and Oxalic Acid-based Chitosan Hydrogels

M. Hamdine, *M.-C. Heuzey*, A. Bégin

Session: "Physical & Physico-Chemical Aspects I" (Room Joffre 1)

KP1: Molecular Aspects of Hydrated Chitin

S. Tokura, H. Tamura

OP1: Accessibility of the Functional Groups of Chitosan Probed by FT-IR Spectroscopy of Deuterated Aerogels and Xerogels

R. Valentin, B. Bonelli, E. Garrone, F. Di Renzo, *F. Quignard*

OP2: Crystal or Ordered Structure of Chitosan Derivatives

Y. Wu, *K. Sakurai*

OP3: Dynamic Study of the Interaction between Ions and a 30 Monomers Chitosan Chain.

R. Terreux, M. Domard, A. Domard

OP4: Versatile and Efficient Formation of Nano-particles of Polysaccharide-based Polyelectrolyte Complexes

T. Delair, C. Schatz, A. Drogoz, A. Bionaz, C. Viton, L. David, A. Domard

OP5: Dynamic Surface Tension and Viscoelastic Properties of Adsorption Layers of Amphiphilic Chitosan Derivatives Systems

J. Desbrières, V.G. Babak, C. Bousquet

OP6: Preparation Conditions Affect the Pore Size, Water Vapor Permeability and Other Physical Characteristics of Resulting Chitosan-gamma-polyglutamic Acid Complex Scaffolds

H.P. Win, J.G. Lee, *R.H. Chen*

Session: "Physical & Physico-Chemical Aspects II" (Room Joffre 1)

KP2: The concept of Chemical and Physical Decoy of Biological Media: Applications for Tissue Engineering

L. David, A. Montembault, N. Boucard, S. Ladet, S. Popa-Nita, S. Trombotto, A. Domard, K. Tahiri, C. Korwin-Zmijowska, M.-T. Corvol.

OP7: Studies on the Mechanism of Chitosan-Induced Metachromasy

G.A.F. Roberts

OP8: Physico-chemical Behavior of Chitosan Grafted N-Isopropylacrylamide Copolymers

M. Recillas-Mota, L. Silva, F.M. Goycoolea, C. Peniche, M. Rinaudo, *W. Argüelles-Monal*

OP9: Chitin Colloidal Liquid-Crystals, Biomimetic Self-Assembly and Materials.

E. Belamie, P. Davidson, M.M. Giraud-Guille

OP10: Analysis of the Structure of Solutions, Gels and Nanoparticles of Tailor-Made Chitosans with Controlled DA and DP

S. Popa-Nita, L. David, C. Rochas, A. Domard

OP11: Stability of Chitosan in Solution and in Solid State

H.K. Holme, A. Kristiansen, O. Smidsrød

Session: “Applications in Life Sciences I” (Auditorium Pasteur)

KL1: Novel Nanoparticles Shelled with Chitosan for Oral Delivery of Protein Drugs

Y.-H. Lin, C.-T. Chen, H.-F. Liang, P.-W. Lee, F.-L. Mi, *H.-W. Sung*

OL1: Quaternized Chitosan/Alginate Nanoparticles for Protein Delivery

X. Shi, Y. Du

OL2: Chitosan for Mucosal Delivery in Veterinary Medicine

S. Senel, S. McClure

OL3: Design of New Chitosan/Silica Composites for Drug-Delivery Systems

A. Tourrette, C. Tourne-Peteilh, S. Bégu, J.M. Devoisselles, F. Quignard

OL4: Aggregation and Synthetic Studies on Chitosan and PEG-Grafted Chitosan

E. Fernandez-Megia, R. Novoa-Carballal, E. Quiñoa, R. Riguera

KL2: Chitosans as Gene Delivery Vehicles

S.P. Strand, K.M. Vårum

Session: “Applications in Life Sciences II” (Auditorium Pasteur)

KL3: Biomedical Effects of Chitin and its Derivatives with Special Reference to Skin, Cartilage, and Tendon Repair

S. Minami, Y. Okamura, Y. Okamoto

OL5: A New Design Architecture for Tissue Engineering

S. Ladet, L. David, A. Domard

OL6: Tendon Regeneration by GlcNAc and Fish Collagen Peptide

Y. Okamoto, N. Eto, Y. Okamura, Y. Matahira, S. Minami

OL7: Early Gene Expression Analyzed by cDNA Microarray and Real-time PCR in Osteoblasts Cultured with Chitosan Monomer.

T. Ganno, S. Yamada, N. Ohara, T. Matsunaga, T. Ikeda, Y. Hayashi

OL8: Pro-apoptotic Effect of Chitosan Oligosaccharides on Neutrophils Separated from Glycogen-induced Peritonitis in Mice

J. Dou, *C.-Y. Tan*, Y. Du, X. Bai, K. Wang, X. Ma

OL9: Chewing-gum Containing Chitosan Effectively Inhibits the Growth of Cariogenic Bacteria

Y. Hayashi, N. Ohara, T. Ganno, K. Yamaguchi, T. Nakamura, M. Sato

OL10: Design and Development of Chitosan-Based Thermogels for Tissue Repair and Therapeutic Applications

E. DesRosiers, C. Jarry, D. Wang, A. Serreqi, M. Shive, A. Chenite

OL 11: Immunomodulatory Activity of Oral Administration of Chitosan Hydrolytic Products in BALB/C Mice

G.-J. Tsai, G.-J. Wu

OL17: Hybrid Biomaterials Composed of Chitosan and Blood Improve Cartilage Repair in Animal Models

M.D. Buschmann, C.D. Hoemann, M.S. Shive, E. Rossomacha, A. Chevrier, M.B. Hurtig

KL4: Anti-Inflammatory and Anti-Platelet Actions of Glucosamine

I. Nagaoka, J. Hua, S. Yomogida, Y. Tsutsumi-Ishii, K. Sakamoto

OL12: Use of Chitin and Chitinolytic Bacteria for the Control of Late Leaf Spot Disease of Groundnut

A.R. Podile, K.K. Gali, A. Kondreddy, P. Pallinti

OL13: Chitosan, Chitin Glucan and Chitin Effects on Minerals (Iron, Lead, Cadmium) and Organic (Ochratoxin A) Contaminants in Wines

A. Bornet, P. L. Teissedre

OL14: Bioactivity of Chitosans Against Fruit Phytopathogens

E.N. Oliveira Junior, N.E. El Gueddari, M.G. Peter, B.M. Moerschbacher, *T.T. Franco*

OL15: Influence of Chitosan on Lipase Activity and Bioavailability of Fatty Acids during Lipid Digestion

T. Helgason, J. Gislason, D. J. McClements, K. Kristbergsson, J. Weiss

OL16: High Efficiency Genet Transfer Using Chitosan/DNA Nanoparticles with Specific Combinations of Molecular Weight and Degree of Acetylation

S. Méthot, M. Lavertu, P. L. Ma, F. Winnik, M.D. Buschmann

KA1: Chitosan: an Interface between Biology and Microsystems

R. Ghodssi, S. T. Koev, M. A. Powers, V. Badilita, H. Yi, L-Q. Wu, W. E. Bentley, G. W. Rubloff, G. F. Payne

OA1: Removal of Long-Lived Minor Actinides by Means of Solvent Extraction with Lipophilic Chemically Modified Chitosan

K. Inoue, K. Ohto, K. Yoshizuka, H. Naganawa, S. Tachimori

OA2: Chitosan-supported Ionic Liquid Phase: Application to Organometallic Catalysis

J. Baudoux, *I. Dez*, A.-C. Gaumont, P.-J. Madec

OA3: Biofabrication with Chitosan – Connecting the Nano and Macro Worlds

G. F. Payne, C. Zhu, L.-Q. Wu, S. R. Raghavan, W. E. Bentley, R Ghodssi

OA4: Hydrogenation of Nitrotoluene Using Palladium Supported on Chitosan Hollow Fiber. Influence of Experimental Parameters

F. Peirano Blondet, T. Vincent, E. Guibal.

OA5: Equilibrium and Kinetic of Copper Ion Adsorption onto Natural and Crosslinked Chitosan Membranes

R.S. Vieira, E. Meneghetti, M.M. Beppu, E. Guibal

OA6: The Use of Chitosan in Water Treatment - An Assessment of Practical Application

T. Hakonsen

OA7: Influence of Chitosan on Wool Treatment with Enzymes

S. Vilchez, A.M. Manich, P. Jovancic, P. Erra

OA8: A Comparative Study of the Metal Ion Adsorption Capacities of Chitin and Chitosan

G. Karthikeyan, K. Anbalagan, N. Muthulakshmiandal

POSTERS (Room Joffre 2 & 3)

"Ecological & Biological Aspects"

PB1: Study on Antimicrobial Activities of Quaternary Ammonium Modified Chitin-PAA Gels

S. Tanodekaew, S. Channasanon, P. Uppanan

PB2: Application of Chitosans and Yeast as Growth Inhibitors of *Penicillium digitatum*

N. Pacheco, P. Larralde, M. Plascencia, A. Domard, K. Shirai

PB3: Impact of Chitosan on Growth Inhibition of Micro-organisms Isolated from Fishery Products

Z. Cruz, H.L. Lauzon, *I. Olabarrieta*, J.C. Arboleya, M. Nuin, F. Amarita, I. Martínez de Marañón

PB4: Myosin-dependent Chitin Synthesis: new Perspectives for Mollusk Shell Biomineralization

I. M. Weiss, V. Schönitzer, F. Lüke, N. Eichner

PB5: In Vivo Studies on the Biodegradation Processes of Chitin and Chitosan

T. Ikeda, K. Yanagiguchi, T. Matsunaga, S. Yamada, N. Ohara

PB6: Chitinase Inhibitor Allosamidin is a Signal Molecule for Chitinase Production in its Producing *Streptomyces*

S. Suzuki, E. Nakanishi, T. Ohira, R. Kawachi, Y. Ohnishi, S. Horinouchi, H. Nagasawa, *S. Sakuda*

PB7: Chitinolytic Bacteria from the Soil of a Chitosan-Producing Company

C. Neeraja, A.R. Podile, D. Gillet, B.M. Moerschbacher

PB8: Chito-Oligosaccharides Induces PAL Activation, Cell Death and Water Peroxide Production in *Arabidopsis* Cell Suspensions

J.C. Cabrera, J. Messiaen, P. Cambier, P. Van Cutsem

PB9: Photothermal and Structural Comparative Analysis of Chitinous Exoskeletons of Marine Invertebrates

B.A. Juárez-de la Rosa, P.-L. Ardisson, P. Quintana, J.J. Alvarado-Gil

PB10: Excretion of Material from or Across Walls of Fungal Cells

G.B. Ouellette

PB11: Synthesis and Properties Improve of Azole Chitosan Derivatives Having a Phosphate Glucose Unit Functional Groups as an Antifungal Effect

S.-R. Ryu, G.-Y. Ryu, T. Watanabe, T. Mikami, T. Matsumoto

PB12: Synthesis and Preliminary Biological Studies of Novel Retinamide Derivatives Having a Phosphate Glucosamine Unit Functional Groups

S.-R. Ryu, G.-Y. Ryu, T. Watanabe, T. Mikami, T. Matsumoto

PB13: Toxic Effect of an Insect Chitin Inhibitor, Flufenoxuron on Freshwater Microinvertebrate (*Tetrahymena pyriformis*)

R. Rouabhi, H. Debar-Berrebah, M.R. Djebbar

PB14: Chitin Distribution in Molluscan Cuticle and Shell

T. Furuhashi, H. Meschke, H. Schrempf, G. Steiner

"Sources & Production"

PS1: Fungal Biomass as an Alternative Source of Chitin and Chitosan

F. Di Mario, E. Galli, P. Rapanà, U. Tomati

PS2: Chitin Reactivity During Thermoalkaline Heterogeneous Deacetylation: Comparative Kinetic Study

E.I. Diaz-Rojas, W.M. Argüelles-Monal, J. Hernández-Martínez, G. Galed, J. Lizardi, *F.M. Goycoolea*

PS3: Isolation of Useful Bioproducts Remaining from the Large scale Fermentation of *Penicillium chrysogenum*

H.R. Watson, D.R.W. Hodgson, R. Edwards, J. Davies, R. Johnson

PS4: Characterization of Chitosan Heterooligosaccharides Fractions Obtained with Enzymatic Depolymerization

G. Galed, *B. Miralles*, M. Mengibar, A. Heras

PS5: Physico-chemical Characterization of Chitosan from Fungi and Crabs

T.L.M. Stamford, T.C.M. Stamford, T.M. Stamford, P. Santa Cruz, A. Rosenblatt, G. Campos-Takaki

PS6: Chitin and Chitosan Production by *Cunninghamella elegans* UCP 542 in a new economic medium

N.P. Stamford, T.C.M. Stamford, T.L.M. Stamford, L.O. Franco, A. Rosenblatt, G.M. Campos-Takaki

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PS8: Production and Application of Chitosan from Fungus, Yeast in Agricultural Sector

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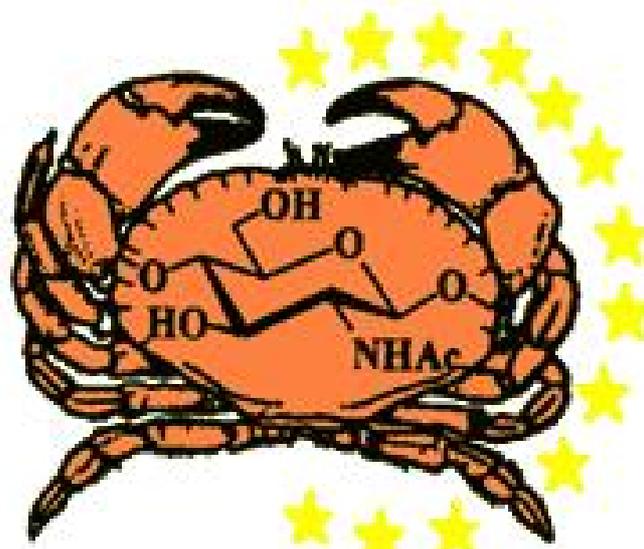
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PA21: Application of Chitosan-EDTA Derivatives for Removal of Toxic Metal Ions from Aqueous Solutions

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