

REFERENCES

1. Angel Uriel Valdez-Pena, Judith Dolores Espinoza-Perez, Georgina Coral Sandoval Fabian, Nagamani Balagurusamy, Adriana Hernandez-Rivera, Iliana Garza, Juan Carlos & Contreras-Esquivel (2010) Screening of industrial enzymes for deproteinization of shrimp head for chitin recovery. *Food Sci. Biotechnol.* 19(2). 553-557
2. Anna Wojtasz-Pajak & Joanna Szumilewicz (2009) Heterogeneous Deacetylation of Chitin Degraded with Hydrogen Peroxide in a Microwave Field. *Progress on chemistry and application of chitin and its derivatives*, Volume 14. 15-24
3. Baskar D. & Sampath Kumar T.S. (2009) Effect of deacetylation time on the preparation, properties and swelling behaviour of chitosan films. *Carbohydrate Polymers.* 767-772
4. Chiaki Koizumi (2001) *Prawns of Japan and the world.* CRC Press.
5. Clermont Beaulieu (2005) Chitin and Chitosan. Retrieved 8/22/2011, <<http://www.plasticstrends.net/index.php/last-months-mainmenu-28/12-versatile-and-multiplatform-biomolecules>>
6. Del Nobile M.A., Di Benedetto N., Suriano N., Conte A., Corbo M.R. & Sinigaglia M. (2009) Combined effects of chitosan and MAP to improve the microbial quality of amaranth homemade fresh pasta. *Food Microbiology* 26. 587-591
7. Dutta P. K., Shipra Tripathi & Joydeep Dutta (2004) Chitin and chitosan: Chemistry, properties and applications. *Scientific and Industrial Research* 63. 20-31
8. Dutta P.K., Shipra Tripathi, Mehrotra G.K. & Joydeep Dutta (2009) Perspectives for chitosan based antimicrobial films in food applications. *Food Chemistry* 114. 1173-1182
9. Elsabee M.Z., Morsi R.E. & Al-Sabagh A.M. (2009) Surface Active Properties of Chitosan and its Derivatives. *Colloids and Surfaces B: Biointerfaces* Vol. 74. 1-16

10. Fernanda Sousa, Georg M. Guebitz & Vanja Kokol (2009) Antimicrobial and antioxidant properties of chitosan enzymatically functionalized with flavonoids. *Process Biochemistry* 44. 749–756
11. Ghobad G. Maghami & George A. F. Roberts (2003) Evaluation of the viscometric constants for chitosan. *Macromolecular chemistry and physics*, Volume 189, Issue 1. 195-200
12. Gryczka U., Dondi D., Chmielewski A.G., Migdal W., Buttafava A. & Faucitano A. (2009) The mechanism of chitosan degradation by gamma and e-beam irradiation. *Radiation Physics and Chemistry* 78. 543–548
13. Gyung Hyun Jo, Ro Dong Park & Woo Jin Jung. (2010) Chitin, chitosan, oligosaccharides and their derivatives biological activities and applications. CRC Press.
14. Hargono & Djaeni M. (2003) Utilization of chitosan prepared from shrimp shell as fat diluent. *Journal of Coastal Development*, Volume 7. 31- 37
15. Healy M. & Green A. (2003) Bioprocessing of marine crustacean shell waste. *Acta Biotechnologica* Volume 23, Issue 2-3. 151–160
16. Helander I. M., Nurmiaho, Lassila E. L., Ahvenainen R., Rhoades J. & Roller S. (2001) Chitosan disrupts the barrier properties of the outer membrane of gram negative bacteria. *Int J Food Microbiol.* 235-244
17. Hossein Tajik, Mehran Moradi, Seyed Mehdi Razavi Rohani, Amir Mehdi Erfani & Farnood Shokouhi Sabet Jalali (2008) Preparation of chitosan from brine shrimp (*Artemia urmiana*) cyst shells and effects of different chemical processing sequences on the physicochemical and functional properties of the product. *Molecules* 13. 1263-1274
18. Inmaculada Aranaz, Marian Mengibar, Ruth Harris, Ines Panos, Beatriz Miralles, Niuris Acosta, Gemma Galed & Angeles Heras. (2009) Functional Characterization of Chitin and Chitosan. *Current Chemical Biology* 3. 203-230
19. Jae-Young Je, Se-Kwon Kim (2006) Antimicrobial action of novel chitin derivative. *Biochimica et Biophysica Acta* 1760. 104 – 109
20. Jens Waldeck, Gabriele Daum, Bernward Bisping, & Friedhelm Meinhardt (2006) Isolation and molecular characterization of chitinase-deficient *Bacillus*

- licheniformis strains capable of deproteinization of shrimp shell waste to obtain highly viscous chitin. *Applied and Environmental Microbiology*. 7879–7885
21. Joazef Synowiecki & Nadia Ali Abdul Quawi Al-Khateeb (2000) The recovery of protein hydrolysate during enzymatic isolation of chitin from shrimp crangon processing discards. *Food Chemistry* 68. 147-152
 22. Joon-Pyo Jeun, Young-Kyou Jeon, Young-Chang Nho & Phil-Hyun Kang (2009) Effects of gamma irradiation on the thermal and mechanical properties of chitosan/PVA nanofibrous mats. *Journal of Industrial and Engineering Chemistry* 15. 430–433
 23. Mahlous M., Tahtat D., Benamer S. & Nacer Khodja A. (2007) Gamma irradiation aided chitin/chitosan extraction from prawn shells. *Nuclear Instruments and Methods in Physics Research B* 265. 414–417
 24. Marguerite Rinaudo (2006) Chitin and Chitosan: Properties and applications. *Progress in polymer science* 31. 603-632
 25. Maria B. Vasconez, Silvia K. Flores, Carmen A. Campos, Juan Alvarado & Lia N. Gerschenson (2009) Antimicrobial activity and physical properties of chitosan-tapioca starch based edible films and coatings. *Food Research International* 42. 762-769
 26. Maryam Mizani and Mahmood Aminlari (2007) A New Process for Deproteinization of Chitin from Shrimp Head Waste. *Proceedings of European Congress of Chemical Engineering (ECCE-6), Copenhagen.*
 27. Mattheus F. A. Goosen (Editor) (1996) *Applications of Chitosan and Chitosan*. CRC Press.
 28. Mohamed Naceur Belgacem & Alessandro Gandini (2008) *Monomers, polymers and composites from renewable resources*. Elsevier, First Edition.
 29. Morris G. A., Castile J., Smith A., Adams G. G. & Harding S. E. (2009) The kinetics of chitosan depolymerisation at different temperatures. *Polymer Degradation and Stability* 94. 1344-1348
 30. Morteza Shahabi Viarsagh, Mohsen Janmaleki, Hamid Reza Falahatpisheh & Jafar Masoumi (2009) Chitosan Preparation from Persian Gulf shrimp shells and investigating the effect of time on the degree of deacetylation. *Journal of Paramedical Sciences (JPS) Summer Vol.1*

31. Mourya V.K., Nazma N. Inamdar (2008) Chitosan- modifications and applications: Opportunities galore. *Reactive & Functional Polymers* 68. 1013–1051
32. Mudasir, Ginanjar Raharjo, Iqmal Tahir & Endang Tri Wahyuni (2008) Immobilization of Dithizone onto chitin isolated from prawn seawater shells (*P. merguensis*) and its preliminary study for the adsorption of Cd(II) ion. *Journal of Physical Science*, Vol. 19 (1). 63–78
33. Mukku Shrinivas Rao & Willem F. Stevens (2006) Fermentation of shrimp biowaste under different salt concentrations with Amylolytic and Non-Amylolytic *Lactobacillus* strains for chitin production. *Food Technol. Biotechnol.*, 44 (1). 83–87
34. Nessaa F., Shah Md. Masumb, Asaduzzamana M., Roya S. K., Hossaina M. M. & M. S. Jahanc (2010) A Process for the Preparation of Chitin and Chitosan from Prawn Shell Waste. *Bangladesh J. Sci. Ind. Res.*, 45(4). 323-330
35. Percot A., Viton C. & Domard A. (2003) Optimization of chitin extraction from shrimp shells. *Biomacromolecules* 4(1). 8-12
36. Pillai C.K.S., Willi Paul & Chandra P. Sharma (2009) Chitin and chitosan polymers: Chemistry, solubility and fiber formation. *Progress in polymer science* 34. 641-678
37. Pranee Lertsutthiwong, Ng Chuen How, Suwalee Chandkrachang & Willem F. Stevens (2002) Effect of chemical treatment on the characteristics of shrimp chitosan. *Journal of Metals, Materials and Minerals*, Vol. 12 No.1. 11-18
38. Rao M.S., Munoz J. & Stevens W.F. (2000) Critical Factors in Chitin Production by Fermentation of Shrimp Biowaste. *Appl Microbiol Biotechnol* 54 (6).
39. Ravi Kumar N.V. Majeti (2000) A review of chitin and chitosan applications. *Reactive & Functional Polymers* 46. 1–27
40. Riccardo A. A. Muzzarelli. (1973) Natural chelating polymers alginic acid, chitin, and chitosan. *International series of monographs in analytical chemistry*, V 55. Pergamon Press, First Edition.
41. Robert George Fowles. (1999) *Chitin: Isolation and characterisation*. University of the West Indies, Mona, Jamaica.

42. Ruth Hagen Rodde, Aslak Einbu & Kjell M. Varum (2008) A seasonal study of the chemical composition and chitin quality of shrimp shells obtained from northern shrimp (*Pandalus borealis*). *Carbohydrate Polymers* 71. 388-393
43. Sagheer F.A., Al-Sughayer M.A., Muslim S. & Elsabee M.Z. (2009) Extraction and characterization of chitin and chitosan from marine sources in Arabian Gulf. *Carbohydrate Polymers* 77. 410–419
44. Satnam Sagoo, Ron Board & Sibel Roller (2002) Chitosan inhibits growth of spoilage micro-organisms in chilled pork products. *Food Microbiology* 19. 175-182
45. Se-Kwon Kim (2011) *Marine Cosmeceuticals: Trends and Prospects*. CRC Press, New York.
46. Sergio P. Campana Filho, Douglas de Britto, Elizabeth Curti, Fernanda R. Abreu, Marcia B. Cardoso, Mark V. Battisti, Priscilla C. Yes, Rejane C. Goy, Robert Signini & Rodrigo L. Lavall (2007) Extraction, structures and properties of α - and β -chitin. *Chemistry*, V 30 No. 3. 644-650
47. Sheng-Yang Wang, Pin-Fun Chen & Shang-Tzen Chang (2004) Antifungal activities of essential oils and their constituents from indigenous cinnamon (*Cinnamomum osmophloeum*) leaves against wood decay fungi. *Bioresource Technology* 96. 813–818
48. Shih-Bin Lin, Yi-Chun Lin & Hui-Huang Chen (2009) Low molecular weight chitosan prepared with the aid of cellulase, lysozyme and chitinase: Characterisation and antibacterial activity. *Food Chemistry* 116. 47–53
49. Sunita Das & Anand Ganesh E. (2010) Extraction of chitin from trash crabs (*Podophthalmus vigil*) by an eccentric method. *Current Research Journal of Biological Sciences* 2(1). 72-75
50. Sweetie R. Kanatt, Ramesh Chander & Arun Sharma (2008) Chitosan glucose complex – A novel food preservative. *Food Chemistry* 106. 521–528
51. Thermo Nicolet Corporation (2001) *Introduction to Fourier Transform Infrared Spectrometry*. Retrieved 24/11/2010.
<<http://mmrc.caltech.edu/FTIR/FTIRintro.pdf>>

52. Wassila Arbia, Leila Arbia, Lydia Adour & Abdeltif Amrane (2012) Chitin extraction from crustacean shells by biological methods. *Journal of the Faculty of Food Technology and Biotechnology* 2.
53. Weinhold M.X., Sauvageau J.C.M., Kumirska J. & Thoming J. (2009) Studies on acetylation patterns of different chitosan preparations. *Carbohydrate Polymers*. 678-684
54. Wenjiao Fan, Junxiu Sun, Yunchuan Chen, Jian Qiu, Yan Zhang & Yuanlong Chi (2009) Effects of chitosan coating on quality and shelf life of silver carp during frozen storage. *Food Chemistry* 115. 66–70
55. Wooten James & Singer Norman S. (2003) Method of extracting chitin from the shells of exoskeletal animals. Patent 6632941. Retrieved 8/22/2011, <<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=/netahtml/PTO/search-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN/6632941> >
56. Yi-Su Oha, Ing-Lung Shihb, Yew-Min Tzengc & San-Lang Wanga (2000) Protease produced by *Pseudomonas aeruginosa* K-187 and its application in the deproteinization of shrimp and crab shell wastes. *Enzyme and Microbial Technology* Volume 27, Issues 1–2. 3–10
57. Youssef Habibi & Lucian A. Lucia. (2012) Polysaccharide building blocks: A sustainable approach to the development of renewable biomaterials. Wiley, First Edition.
58. Zhimei Zhonga, Pengcheng Li, Rong Xingb, Xiaolin Chenc & Song Liub (2009) Preparation, characterization and antifungal properties of 2-(α -arylamino phosphonate)-chitosan. *International Journal of Biological Macromolecules* 45(3). 255-259
59. Zhang Z., Li C., Wang Q. & Zhao Z.K. (2009) Efficient hydrolysis of chitosan in ionic liquids. *Carbohydrate Polymers* 78. 685 - 689
60. Ziani K., Fernandez-Pan I., Royo M. & Mate J.I. (2009) Antifungal activity of films and solutions based on chitosan against typical seed fungi. *Food Hydrocolloids* Volume 23, issue 8. 2309-2314