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Extraction, characterization of chitosan from *Portunus pelagicus*, and comparison with commercial chitosan

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Chitosan is a polyaminosaccharide obtained by the deacetylation of chitin which is the second most abundant natural polysaccharide found in crustacean shells. Since the biodegradation of chitin is very low, accumulation of shellfish discards has become a major concern in the seafood processing industry in Sri Lanka. Also chitosan has been of interest in the past few decades, due to its potential broad range of food industrial applications as edible films, antimicrobial agents, preservative agents, acidification and clarification agents, etc. However only limited attention has been paid to bakery industry applications of these versatile biopolymers. So utilization of chitosan as an additive for crackers is important due to its health benefits. A study is carried out to investigate the extraction and characterization of chitosan from crab species *Portunus pelagicus* using the conventional methods deproteinization, demineralization, decolorization and deacetylation. The extracted chitosan is evaluated for its physiochemical and functional properties, compared to commercial chitosan.

Moisture ($0.91 \pm 0.02\%$), protein ($9.88 \pm 0.07\%$), and ash ($1.72 \pm 0.29\%$) content is higher in extracted chitosan, while there is no significant difference in fat ($0.08 \pm 0.001\%$). The degree of deacetylation (65%) is lower than the commercial chitosan (85%). The bulk density (untapped) is higher in extracted chitosan (0.17gmL^{-1}) while water binding capacity ($617.3 \pm 46.5\%$) and fat binding capacity ($367 \pm 29\%$) are low. Viscosity (148 ± 4 Cp), average molecular weight (180 kDa), and solubility ($76.93 \pm 8.79\%$) are lower in extracted chitosan than commercial chitosan. Results revealed that chitosan can be extracted from crab shells with about 15% yield, using the chemical method, and the extracted chitosan has properties in the range values in literature although it has some deviations from the commercial chitosan.

Key words: Chitosan, Crab shells, Properties.

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