

Toxicity tests, antioxidant activity, and antimicrobial activity of chitosan

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Abstract	<p>Chitosan is a naturally occurring cationic biopolymer, obtained by alkaline deacetylation of chitin. This research aims to investigate the toxicity, antioxidant activity and antibacterial activity of chitosan from shrimp chitin. In this study, chitin extracted from shrimp waste material. Chitin is then deacetylation with 60% NaOH so that chitosan produced. Degrees of deacetylation, molecular weight, toxicity test, antioxidant activity and antimicrobial activity of chitosan then evaluated. Toxicity test using Brine Shrimp Lethality Test. The antioxidant analysis was performed using DPPH method (2,2-diphenyl-1-picrylhydrazyl) and FTC method (ferric thiocyanate) in which the radical formed will reduce Ferro to Ferri resulting in a complex with thiocyanate. To determine the antibacterial activity of <i>Staphylococcus aureus</i>, antifungal in <i>Candida albicans</i> and <i>Aspergillus niger</i> by measuring antimicrobial effects and minimum inhibitory concentrations (MIC). Based on the result of research, the value of degrees of deacetylation, molecular weight, and LC50 values of chitosan synthesis was 94,32, 1052.93 g/mol and 1364.41 ppm, respectively. In general, the antioxidative activities increased as the concentration of chitosan increased. MIC value of chitosan against <i>S. aureus</i>, <i>C. albicans</i>, and <i>A. niger</i> was 10 ppm, 15.6 ppm, and 5 ppm, respectively.</p>
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