Uji Sitotoksisitas Kitosan dan Nanokitosan *Black Soldier Fly* terhadap Kultur Sel Vero secara *In Vitro*

(*Cytotoxicity Test of Black Soldier Fly Chitosan and Nanokitosan against Vero Cell Culture in Vitro*)

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ABSTRACT

Maggot or Hermetia Illucens is a BSF fly larva that can be utilized as a source of chitin. Chitin produced from maggot casings has different physicochemical characteristics from other chitin sources. The difference lies in the low crystallinity indexes. The low Crl index results in a higher sortive capacity thus making the resulting chitosan can be used for biosorption. This study aims to determine the cytotoxicity effect of BSF chitosan and nanochitosan on vero cells and the IC_{50} value. Chitosan was characterized using FTIR and nanochitosan was characterized using SEM, TEM, PSA and zeta potential. Cytotoxicity testing of BSF chitosan and nanochitosan using the MTT Assay method. The chitosan characterization results produced light brown color, neutral pH, 5.48% moisture content, 0.36% ash content, 75% deacetylation degree and 30% yield. The characteristics of nanokitosan based on SEM and TEM tests are small particles with a zeta potential value of -30.2 mV and an average PSA test value of 326.7 nm with a polydispersity index of 0.456. Based on MTT assay cytotoxicity testing, it shows that BSF nanochitosan is more cytotoxic than BSF chitosan with IC_{50} value of BSF nanochitosan of 350 µg/ml and BSF chitosan of 372 µg/ml. So it can be concluded that chitosan and nanokitosan have a low level of cytotoxicity against vero cells.

***Key words**: Hermetia illucens, chitosan, nanochitosan, vero cells, cytotoxicity*