

Suwinai Pankao 2010: Acute Toxicity, Immune Stimulation and Antiviral Activity of Lignin in Pacific White Shrimp (*Litopenaeus vannamei* Boone, 1931). Master of Science (Aquaculture), Major Field: Aquaculture, Department of Aquaculture. Thesis Advisor: Mr. Prapansak Srisapoome, Ph.D. 117 pages.

The study on 50% lethal dosage acute toxicity at 96 hours (96 – hrs LD₅₀) of lignin in Pacific white shrimp (*Litopenaeus vannamei*, 13.13±1.69 g) showed the 96 – hrs LD₅₀ of 220 mg/l. Effect of lignin on immune stimulation was carried out by feeding shrimp with diets contained lignin at 0, 1, 3, 5 and 10 g/kg for 14 days. There were significant differences of percent phagocytosis (PP) and phagocytic index (PI) among shrimp groups ($P<0.05$), because shrimp fed with 1-10 g lignin/kg diet were found to express significantly higher of PP and PI at day 14 after feeding than that of control. However, there was no significant difference of total haemocyte count among shrimp groups ($P>0.05$). Effect of lignin as feed supplement on yellow-head virus (YHV) resistance of shrimp was conducted. No significant difference of cumulative mortality after intramuscular injection with YHV was observed at the end of the experiment. However, antiviral activity of lignin against YHV in *L. vannamei* was found by *in vitro* study. Shrimp injected with lethal dose of YHV preincubated with 5 to 20 mg/l of lignin exhibited cumulative mortality significantly lower than control ($P<0.05$), during day 5 to 20 after viral injection. At the end of the trial, cumulative mortality was 100±0.0% in control group, while lower mortality; 26.7±15.3, 13.3±15.3 and 23.3±11.5% was recorded in shrimp injected with YHV mixing 5, 10 and 20 mg/l of lignin, respectively.

Student's signature

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