

Enhancement of immunity in cultured shrimp, *Penaeus monodon* induced by *Achyranthes aspera* (Sin. Karal heba, Family: Amaranthaceae) compared to a commercial immune enhancer

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Use of immune enhancers is becoming popular in global shrimp culture industry in order to protect the health of shrimp; shrimp immune enhancers are commercially available in Sri Lanka. Karal heba, *Achyranthes aspera* is an indigenous medicinal plant and present study investigated the immune enhancing ability of ethanol extract of soft aerial parts (leaves, soft branches and flowers) of the plant in shrimp, *Penaeus monodon* using immune response indicators compared to a commercial immune enhancer termed for this study as "Immune x". From three groups of cultured shrimp (10 ± 2 g body weight; 4 replicates and 18 shrimp in each), one was fed with shrimp feed containing extract of the plant (experimental group), one fed with feed containing "Immune x" (reference group) and the other group was fed with normal shrimp feed (control) over four weeks and clotting time with other innate immunological parameters (measured by spectrophotometric readings) of haemolymph of shrimp in each group were recorded. Clotting time and superoxide dismutase activity (SOD) in haemolymph of experimental shrimp (5.67 sec and 0.238 respectively) were significantly lower than those of reference shrimp (63.86 sec and 0.384) and control shrimp (260.8 sec and 0.478 ; $P < 0.05$). Prophenol oxidase activity (PO) and intra cellular super oxide anion activity (ISA) of experimental shrimp were significantly higher (respective values were 0.264 and 0.228) than those values of reference shrimp (0.136 and 0.131) and control shrimp (0.056 and 0.031; $P < 0.05$). Tested innate immunological parameters of cultured *Penaeus monodon* were significantly enhanced by the ethanol extract of *Achyranthes aspera* compared to the commercial immune enhancer.