

## Effect of ImmunoWall® on immunity, survival rate and resistance against *Vibrios* of White Shrimp (*Litopenaeus vannamei*)

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The yeast cell wall contains  $\beta$ -glucans and mannanoligosaccharides with are functional fibers that stimulate immune system (innate immunity) and prevent pathogen colonization, respectively. Enhancing the innate immune system in shrimp is important, since it does not have a specific immune system to its defense, then prebiotics with high levels of beta-glucans become essential.

The objective of this study was evaluate effects of prebiotic ImmunoWall® (ICC, Brazil) on immunity, survival rate and ability of *Litopenaeus vannamei* to resist against *Vibrio harveyi* and *Vibrio parahaemolyticus* (agent of EMS - Early Mortality Syndrome).

It was included ImmunoWall® in the basal diet at rates: 0%, 0.25%, 0.5% and 1.0%. Each replicate consisted of 1,000 L fiber tank with stocking density of 60 pieces/m<sup>2</sup> in, in brackish water of 12-15 ppt. The research was assigned in completely randomized design (CRD) with 4 treatments and 4 replicates.

For each bacteria challenge, after shrimp was fed with experimental feed for one month, 30 shrimps from each treatment was sampling to challenge with pathogenic bacteria by intramuscular injection. There were not significantly difference ( $P>0.05$ ) on total haemocyte count, hemolymph protein level and phenol oxidase activity. The mortality of shrimp after challenge by *Vibrio harveyi*,  $1.0 \times 10^6$  CFU/mL, shrimp in group of ImmunoWall® supplementation exhibited the significantly lower mortality ( $P<0.05$ ) than control on the second and third day after challenge, specially in group of ImmunoWall® 1.0%. The total haemocyte count and hemolymph protein level after shrimp infected were significantly high ( $P<0.05$ ) in group of shrimp fed ImmunoWall® 1.0%. The mortality of shrimp after challenge by *Vibrio parahaemolyticus*,  $2.6 \times 10^6$  CFU/mL, shrimp showed no significantly different on mortality ( $P>0.05$ ) and shrimp can tolerate the virulent of *Vibrio parahaemolyticus* better than *Vibrio harveyi*. The total haemocyte count after shrimp infected were significantly high ( $P<0.05$ ) in group of shrimp fed ImmunoWall® 1.0%.

Supplemental ImmunoWall® 1.0% in shrimp diet enhance significantly the immunity of shrimp under disease challenge condition by *Vibrio harveyi*.

Key words: ImmunoWall®, *Litopenaeus vannamei*, *Vibrio*, immunity, survival rate.

