

Dietary inclusion of roselle improves body colouration and survival of the white leg shrimp (*Litopenaeus vannamei*) juveniles challenged against *Vibrio harveyi*

ABSTRACT

This study was conducted to investigate the use of fresh and heat-treated roselle meals on growth, body colouration, and survival against *Vibrio harveyi* infection of white leg shrimp, *Litopenaeus vannamei*. Fresh (FR) or heat-treated roselle (HR) meals were added at 10% in isoproteic (38%) and isolipidic (7%) diets. A control diet was prepared without any addition of roselle meal. These diets were fed to shrimp (initial body weight $1.26\text{g}\pm 0.02\text{g}$) in triplicate groups for 8 weeks then challenged with *V. harveyi*. The growth, feed efficiency, total carotenoid content, and survival of shrimp and total *Vibrio* spp. counts in the hepatopancreas post-challenge test were estimated. No significant differences were recorded in the growth, survival, and feed utilization of the shrimp fed the roselle-added diets (FR or HR) compared to the control group. A significantly higher total carotenoid concentration was detected in shrimp fed with the FR and HR diets compared to the control ($P<0.05$). The challenge test with *V. harveyi* showed that the shrimp specimens fed with FR and HR diets gained higher survival and a lower total number of *Vibrio* spp. count in the hepatopancreas compared to the control group. The present finding suggests that fresh or heat-treated roselle meals provide a good source of carotenoid and increase the resistance of shrimp against vibriosis without affecting the growth and feed utilization.