

Abstract : According to effects of the plant's immunostimulants in the improvement of immunity system and growth of aquatics, this study in order to evaluate the effect of *Cuminum cyminum* essential oil dietary supplement and it's loaded essential oil (with iron nanoparticles) on growth performance, survival and some immunity parameters of *Litopenaeus vannamei* in 5 treatments (Control, 0.5 and 1 % *Cuminum cyminum* essential oil and 0.5 and 1 % *Cuminum cyminum* essential oil loaded with iron nanoparticles) and each treatment with three replications was done. Each replicate with 60 shrimp with an average weight of 3.38 ± 0.014 g for eight weeks with prepared foods the amount of 4% of body weight were fed. The results showed that the use of different levels of *Cuminum cyminum* essential oil and it's loaded essential oil with iron nanoparticles in the diet had significantly improved the effects of the growth factors, so that the most appropriate of weight gain, specific growth rate and feed conversion ratio were observed in *Cuminum cyminum* essential oil loaded with iron nanoparticles treatments and then *Cuminum cyminum* essential oil treatments. The best immune function was observed in 1% of *Cuminum cyminum* essential oil treatment, So that the greatest number of haemocytes ($26.55 \pm 1.16 \times 10^5$ cell.ml⁻¹), the highest percentage of granular cells (28.67 ± 0.66 %) were recorded in this treatment that with other treatments and control treatment was significant different ($p < 0.05$), also most alkaline phosphatase activity (163.33 ± 44.52 U.L⁻¹) was recorded in this treatment but not significantly different with control treatment ($p > 0.05$). In examining the activity of antioxidant enzymes (GPX, and SOD), GPX with the amount of (326.89 ± 1.70 U.L⁻¹) was remarkably greater in 1% *Cuminum cyminum* essential oil loaded with iron nanoparticles treatment compared to other treatments and the control group ($p < 0.05$). According to the results, hemolymph biochemical parameters including total protein plasma and cholesterol Respectively in 0.5 % *Cuminum cyminum* essential oil and 0.5 % *Cuminum cyminum* essential oil loaded with iron nanoparticles treatments Compare with other treatments significantly decreased ($p < 0.05$). Also, The amount of glucose and albumin in treatments as compared to the control group decreased, but the decrease was not significant ($p > 0.05$). In conjunction with carcass composition analysis, the results showed a significant increase in protein and fat and a significant reduction in moisture in the *Cuminum cyminum* essential oil and *Cuminum cyminum* essential oil loaded with iron nanoparticles treatments compared to the control group ($p < 0.05$). The results showed that level of 0.5% *Cuminum cyminum* essential oil loaded with iron nanoparticles in the diet white shrimp can be used to improve the growth performance and health of white shrimp.

Keywords : *Cuminum cyminum*, Iron nanoparticles, Growth, Immunity parameters, *Litopenaeus vannamei*



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