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Effect of different levels of cellulase in the diet of juvenile crayfish (*Pontastacus leptodactylus*) on growth performance and immune responses

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ABSTRACT

Recently, one of the ways to reduce the cost of aquafeeds is to use plant protein resources (Safari et al., 2014; Morteza Yaghoubi et al., 2017). The presence of large amounts of fiber creates many limitations in the use of these resources (Nazari et al., 2018; M. Yaghoubi et al., 2019). The direct use of carbohydrase in the breakdown of these carbohydrate sources helps to increase the use of these sources (Gatlin III, 2003). In the present study, cellulase was used at 5 concentrations of 100, 200, 300, 400 and 500 units per kg in the diets containing 80% of plant protein sources along with a control diet. The extruded diets were cooled after production and the cellulase was sprayed on the surface of the pellets and finally coated with fish oil. Six diets were prepared at three replicates and stored in the refrigerator after packaging. In the present study, 360 pieces of 20 g king prawns (20 pieces per replication) were fed at 3% of body weight per day for two months. The results showed that the use of 400 units per kg led to a significant increase in specific growth rate, survival rate and the lysozyme activity ($p < 0.05$). The results of broken line regression analysis showed that the use of 415 units of cellulase per kg diet resulted in the highest specific growth rate. Finally, the results of the present study recommend the use of cellulase in the crayfish diet.

Keywords: Cellulase, Crayfish, Weight gain, Feed additive, Immunity, Growth performance

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