

Effect of Diet Inulin Prebiotic on Growth, Reproductive Performance, Carcass Composition and Resistance to Environmental Stresses in Zebra Danio (Danio rerio)

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Abstract : In this research, the effects of different levels (control group (T0), (T1)1, (T2)2 and (T3)3 gr Inulin per Kg diet) of prebiotic Inulin as nutritional supplement on Danio rerio were investigated for 4 month. Since the beginning of feeding larvae until adult (average weight: 67.1 g, length: 4.5 cm) were fed with experimental diets. The survival rate of fish had no significant effect on rate survival ($P > 0.05$). The highest food conversion ratio (FCR) was in control group and the lowest was observed in T3. Treatment of T3 significantly caused the best feed conversion ratio in Zebra fish ($P < 0.05$). By increasing the inulin diet during the experiment, specific growth rate increased. The highest and the lowest body weight gain and condition factor were observed in T3 and control, respectively ($P < 0.05$). Adding 3 gr inulin in Zebra fish diet can improve the performance of the growth indices and final biomass, also this prebiotic can be considered as a suitable supplement for Cyprinidae diet. In the first sampling stage for feeding fish, fat and muscle protein was significantly higher than the second sampling stage ($P < 0.05$). Given that the second stage fish were full sexual maturity, the amount of fat in muscle decreased ($P < 0.05$). Moisture and ash levels were significantly ($P < 0.05$) higher in the second stage sampling than the first stage. Overall, different stage of living affected on muscle chemical composition muscle. Reproductive performance in treatment T2 and T3 were significantly higher than other treatments ($P < 0.05$). According to the results, the prebiotic inulin does not have a significant impact on the sex ratio in zebrafish ($P > 0.05$). Based on histology of the gonads, the use of dietary inulin accelerates the process of gonad development in zebrafish.

Keywords : inulin, zebrafish, reproduction, histology

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