
Effects of Ferrous Fumarate on Growth Performance, Blood Biochemical**Parameters and Trace Element Contents of Juvenile Rainbow Trout****(*Oncorhynchus mykiss*)**

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Abstract: This experiment was conducted to study the effects of ferrous fumarate on growth performance, blood biochemical parameters and trace element contents of juvenile rainbow trout (*Oncorhynchus mykiss*). A total of 360 fish with body weight of (89.2 ± 0.2) g were randomly allotted to 6 groups with 3 replicates each and each replicate contained 360 fish. The fish were fed experimental diets supplemented with 0, 20, 40, 80, 160 and 480 mg/kg iron of ferrous fumarate (D0, D20, D40, D80, D160 and D480. D0 as a control group) respectively. The measured values of iron content in the six groups were 62.6, 79.5, 99.6, 139.3, 215.2, 538.4 mg/kg, respectively. The experiment lasted for 60 days. The results showed as follows: 1) dietary iron level had no significant difference in growth performance among all groups ($P > 0.05$). 2) with increasing dietary iron level, haemoglobin and amount of red blood cells were increased firstly, and then leveled off, and no significant difference was found in haematocrit among all groups ($P > 0.05$). 3) Iron contents in whole body, vertebrae and muscle were increased with increasing dietary iron level, and liver iron content was increased firstly, and then leveled off from group D40 to D480. No significant difference was found in zinc content of whole body among all groups ($P > 0.05$). Zinc contents of vertebrae and muscle in group D0 were significantly higher than those in other groups ($P < 0.05$), and liver zinc content in groups D0 and D20 was significantly higher than that in other groups ($P < 0.05$). Copper content in whole body was increased with increasing dietary iron level. Muscle copper content in group D0 was significantly lower than that in other groups ($P < 0.05$) and no significant difference was observed in vertebrae copper content ($P > 0.05$). 4) Serum lysozyme activity in group D0 was significantly lower than that in groups D20, D40, D80 and D160 ($p < 0.05$), but had no significant difference in group D480 ($P > 0.05$); serum catalase activity appeared up-trend first and down-trend late, and group D40 was the highest. In conclusion. The dietary iron as ferrous fumarate requirements for juvenile rainbow trout estimated using the broken line model based on haemoglobin and iron content in liver are 99.8 and 100.4 mg/kg in the experiment.

Key words: rainbow trout; ferrous fumarate; blood biochemical parameters; trace elements