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The effect of total hardness of water on the growth of Sailfin Molly.

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Ornamental fish industry in Sri Lanka plays an important role as a national income generating source. Sailfin Molly is an indigenously bred exotic ornamental fish species which is produced in Sri Lanka. It is documented that hardness of water affects the growth rate of Sailfin Molly. Therefore, present study aimed to determine whether the total harness value of natural waters of Sri Lanka affects the growth rate of Sailfin Molly, and to determine the hardness level that shows the optimum growth rate of the fish. A three series of water samples which contained different total hardness values were prepared using three different natural water sources (K = Kanchikulama, G = Galgamuwa, M = Muruthawela). Series of water samples were made by diluting the natural water source by dechlorinized tap water. The series of water samples with different total hardness values were G1, G2, G3, G4, K1, K2, K3 and M1 (G1 = 368.6 ppm, G2 & K1 = 292 ppm, G3 & K2 = 150 ppm, G4, K3, & M1 = 36 ppm). Four replicates were used for each hardness level. Five fingerlings were kept in each replicate. Amount of food was adjusted weekly as 5% of the body weight. Total length, and weight were measured weekly, and growth rate was calculated. Experimental was divided into two major phases. First phase was a period of 0 – 21 days which was the fingerling stage. Second phase was a period of 74 – 130 days which was a more mature stage.

It was observed that the growth rate of fishes in G1, G2, G3, and G4 water samples are significantly different in both phases (01 & 02). Also growth rate of fishes in K1, K2 and K3 water samples have no any significant difference in both phases (01 & 02). Considering growth rate of fishes in all the water samples which were prepared from three natural water bodies were not significantly different in phase 01, but has significance in phase 02 for growth rate by weight. It was also found that there is a significant difference between the growth of fish reared in G3, and K2 (same harness level) in phase 02 for growth rate by weight. Fishes in G1 sample has obtained the maximum total length increase, and M1 has obtained the maximum weight gain during the 18 weeks of study period. This study also shows the growth rate of fishes are significantly different in phase 02 for the growth rate by weight, among all the water samples studied. Weight is a better measurement for calculate the growth rate of Sailfin Molly.

According to the present study, significant difference found in G1, G2, G3 and G4 sample series indicate that different concentration of an intrinsic factor (probably bivalent cations) may have affected on growth rate.