Growth Performance of *Poecilia reticulata* and *Betta splendens* in Varying Water Hardness Treatments

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Abstract

Vavuniya district in Sri Lanka experiences heavy water hardness levels in the underground aquifers, severely affecting the human health. However, there is a scarcity of research work on the effect of water hardness on aquatic animals in the area. Thus, the effect of water hardness on growth of aquarium fishes like *Poecilia reticulata* (Ovo-viviparous) and *Betta splendens* (Oviparous) were examined at 150 (control), 320, 540 and 900 mg/L $CaCO_3$ in semi natural aquaria with 3 replicates. Higher level of hardness (900 mg/L) favoured the growth performance of *P. reticulata* than the *B. splendens*. Weight increment of *P. reticulata* showed significant difference ($p = 0.005$) between control and treatments. Length increment of *P. reticulata* also showed significantly higher value ($p = 0.009$) at 900 mg/L than other setups. The maximum weight was 0.89 ± 0.107 g and maximum length was 3.49 ± 0.024cm at the highest water hardness treatment. Maximum larval growth performance of *P. reticulata* by means of length was 21.83 ± 0.016 mm at 900 mg/L $CaCO_3$. Final length of *B. splendens* larvae did not show significant difference ($p = 0.228$) among the water hardness setups, even though better growth (9.67 ± 0.577 mm) was obtained from 320 mg/L $CaCO_3$. Thus, hard water environment (900 mg/L) appears to support the growth performance of *P. reticulata* larvae and adults than *B. splendens.* As higher water hardness is found in Vavuniya, it may provide better conditions for growing of *P. reticulata* to get optimal benefits from aquarium trade.

Keywords - Hardness, Growth performance, Aquarium fish