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Effects of culture conditions on growth and survival of *Poecilia sphenops*

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Poecilia sphenops (Molly) belonging to the family Poeciliidae is considered as one of the popular freshwater ornamental fish species with a high demand in Sri Lanka. The effects of feeding frequency, feed protein level, photoperiod and salinity on growth and survival of *P. sphenops* and the effect of sex ratio on fecundity and the type and colour of hiding substrates on survival of fry were studied under laboratory conditions from January to December 2016. Three replicates were maintained for each experiment and laboratory bred 10 fingerlings of 2-3 days old were introduced into each replicate tank and growth in terms of length and weight were measured at weekly intervals. Results showed that feeding frequency (1, 2 and 3 times per day) has a significant impact on the growth of *P. sphenops* and fingerlings fed once a day reported significantly lower mean weight than the other two treatments ($p < 0.05$; ANOVA). There was a significant impact of feed protein level on growth of *P. sphenops* and fingerlings fed with 20% feed protein level reported significantly lower growth than 40% and 60% feed protein levels ($p < 0.05$; ANOVA). Three larval feed types (newly hatched *Artemia*, *Chlorella* sp. and powdered commercial feed) were used to evaluate their effect on growth of *P. sphenops*. Although fingerlings fed with *Artemia* showed a higher growth rate than other two feeds, there was no any significant impact of these feeds on their growth ($p > 0.05$; ANOVA). *P. sphenops* can tolerate salinity up to 10 ppt. The effect on photoperiod on growth of *P. sphenops* was evaluated and it was reported that *P. sphenops* exposed to 8 hours photoperiod have significantly lower growth than the individuals exposed to 12 and 24 hrs. photoperiods ($p < 0.05$; ANOVA). Feeding frequency, feed type and photoperiod did not show any significant impact on survival of *P. sphenops*. The effect of sex ratio on fecundity was studied by considering female: male sex ratios of 2:1, 3:1 and 3:2 and significantly higher fecundity was observed when 3:2 sex ratio was maintained ($p < 0.05$; ANOVA). There was no significant impact of substrate type (natural or artificial) or substrate colour of artificial substrates (red, yellow and green) on survival of fry stages ($p < 0.05$; ANOVA). The results of this study conclude *P. sphenops* can be reared successfully under aquarium conditions by giving 40% - 60% protein rich diet twice a day maintaining them under daylight.

Keywords: Culture conditions, Growth, *Poecilia sphenops*, Survival