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Title: Effect of Feeding Duration of Sodium Chloride-Containing Diets on Growth Performance and Some Osmoregulatory Parameters of Nile Tilapia, *Oreochromis niloticus*, After Transfer to Water of Different Salinities

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Abstract: Two feeding experiments were conducted to evaluate the effect of feeding duration of dietary salt (NaCl or S) on hematocrit, blood glucose, serum osmolality, and cortisol of Nile tilapia, *Oreochromis niloticus*, acclimated for various time periods to salt water (SW) of different salinities (three-factor experiment). Quadruplicate groups of fish averaging 5.52 + or - 0.13 g (Experiment II) were fed to apparent satiation twice daily with the following four feeding regimens: feeding the control diet (C) for 6 weeks (6-wk C); feeding the 6% NaCl (S) diet for 4 weeks (2-wk C + 4-wk S); and feeding the 2 weeks; and the S diet for 2 weeks (4-wk C + 2-wk S). At the end of week 6, fish in each aquarium were weighed for growth measurement. Fish from each replicate aquarium in Experiment I were transferred to SW at 0, 15 and 30 ppt whereas those from Experiment II were transferred to SW at 0, 10 and 20 ppt. Hematocrit (Experiment II only), blood glucose, serum osmolality, and cortisol were determined at 48 and 96 hours, and 0, 6, 12, 24, and 48 hours for Experiment I and II, respectively, after transfer to SW. In both experiments, weight gain after 6 weeks of feeding did not differ ($P > 0.05$) among treatments, although all fish in the treatment receiving the NaCl-containing diet had consistently higher weight gain than those fed the C diet. Dry matter diet intake and survival were similar in both studies. Feed efficiency, however, was significantly different only in Experiment I, and was consistently better for the groups that were fed the NaCl-containing diet. All fish transferred to 30 ppt salinity diet died within 8 hours. No mortality occurred in fish transferred to 0, 10, 15, or 20 ppt salinity. Feeding dietary salt had no effect on blood glucose and hematocrit levels in either study. Serum osmolality of fish in Experiment I decreased in fish fed dietary salt, but the differences were not always significant. This value was similar among fish fed dietary salt in Experiment II. In both experiments, blood glucose and serum osmolality significantly ($P < 0.05$) increased, whereas hematocrit decreased with increasing water salinity. Duration of exposure to SW also significantly ($P < 0.05$) increased with blood glucose levels but decreased hematocrit levels. Duration of SW exposure had no effect on serum osmolality.

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The interaction between dietary salt and water salinity; water salinity and exposure time; and dietary salt and exposure time had no effect on hematological and serological values in both experiments, except blood glucose and plasma osmolality and cortisol in Experiment II were significantly ($P < 0.05$) affected by water salinity and exposure time. The interaction between the three main factors had no effect on measured hematological parameters.

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