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Excessive nitrates elicit toxic effects in *Oreochromis mossambicus* fry

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The present study investigates the effects of nitrate enrichment on fry of the Mozambique Tilapia (*Oreochromis mossambicus*) using standard toxicity tests. Nitrate levels were measured in streamlets in the Horana area, which directly receive runoff from paddy-fields, within the week immediately after fertilizer application. Nitrate levels in these waterways varied between 20 and 90 mg l^{-1} with a mean of 49.03 mg l^{-1} (n = 25). Therefore, for the empirical trials, two week old tilapia fry were exposed to six concentrations (5, 15, 25, 35, 50 and 75 mg l^{-1}) of nitrates to monitor survival, growth and swimming activity for 15 days. These trials reveal that mortality at all tested concentrations of nitrate induced high levels of mortality during the trial period with mortality at 25 mg l^{-1} and above being significantly greater than that observed in the controls. It is noteworthy that mortality at 50 and 75 mg l^{-1} reached 100 % during the exposure period. The observed mortality was positively correlated with exposure levels indicating dose dependency. The 1 – 15 day LC_{50} values ranged from 5637 – 28.44 mg l^{-1}. In sharp contrast to mortality, no growth retardation or external morphological defects were noted even at the highest concentration. However, the swimming intensity of the exposed fry was abnormal and was either greater or lesser than that observed in the control fry. These findings suggest that aquatic fauna in streams receiving runoff from paddy-fields may be exposed to toxic effects due to nitrate enrichment.

Acknowledgement: Financial assistance by the University of Colombo is acknowledged.

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