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Are early developmental stages of frogs in danger due to environmental pollutants? An investigation with low concentrations of Chlorpyrifos

Modern pollutants in the environment have been blamed for adverse effects on various organisms at cellular and sub-cellular level. Pesticides have been given special attention because of their extensive usage in agriculture throughout the world and their effects on non-target species. Amphibian fauna represents an important non-target species. In this respect it is thought that early developmental stages of frogs are at a risk due to environmental pollutants. The present study was aimed to investigate how chlorpyrifos, a widely used pesticide in Sri Lanka, affects early developmental stage of *Rana spp.* All experiments were done with 5 replicates each. Completely different eight experiments were carried out using collected egg masses (total combinations 5x8x4=200). Stocking destiny of tadpoles in the experimental chambers were maintained 20 tadpoles/liter. They were exposed to 0.01,0.03 and 0.05 ppm chlorpyrifos. Observations were made every 6 hour till 24 hours and then in every 24 hour. Number paralised, dead and hatching percentages were investigated. LD 50 values (24 and 48 hours) of Chlorpyrifos to early stages of tadpoles were 2.4,2.6ppm (24 hours)and 2.0-2.3 ppm (48 hours) Our findings showed exposure to very low levels of Chlorpyrifos delayed hatching rate (8.5% in 0.05 ppm and 90% in control).increased mortality of tadpoles significantly ($P<0.05$). Tadpole metamorphosis also delayed. Present investigaiton confirms earlier work on *Rana sylvatica, R.pipiens* and Rana clamitaans. Histological evaluations confirmed extensive damage to gill structures during the intenal gill stage fo tadpoles. Nevertheless, this study shows that early tadpole stages are in danger from modern pollutants. The present study also explores investigation of pollutants on non-target species and questions whether tadpoles can be considered as an indicator species in toxicology.