

GILL LEISIONS IN *Rasbora caverii* (CLASS: PISCES, FAMILY: CYPRINIDAE) INHABITING PADDY FIELD ASSOCIATED WATER BODIES IN KADUWELA AREA, SRI LANKA

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In Sri Lanka, Pesticides are widely used in agriculture for controlling weeds and animal pests. In aquatic environments pesticides could cause problems to non – target organisms, especially fish. *Rasbora caverii*, which is commonly found in paddy field associated water bodies in Sri Lanka can be considered as a non-target organism for pesticide contamination in the aquatic environment. The present study was carried out to examine the histological structure of the gills of *R. caverii* following exposure to three commonly used pesticides: paraquat, fenthion and phenthoate in the field and under laboratory conditions to evaluate the pesticide impact.

The fish were collected from five sampling sites located within 10 km in the Kaduwela District Secretary's division in the Colombo district after application of pesticides to the paddy fields in the area. The five sampling sites were, Akuragoda Wewa (reference site); the main canal running from the Akuragoda Wewa to Kelani river in the area of abandoned paddy fields; feeder canal running through the cultivated paddy fields; site in the main canal running through cultivated paddy fields an vegetable fields and the location where the main canal joins the Kelani river. The gill tissues of the sampled fish were processed for histopathology. In addition *R. caverii* collected from the reference site were exposed to $2 \mu\text{g l}^{-1}$ paraquat, $3 \mu\text{g l}^{-1}$ fenthion and $5 \mu\text{g l}^{-1}$ phenthoate for 2 days with and without pre- exposure to paraquat ($2 \mu\text{g l}^{-1}$, 7 days) to examine the response of the gill tissue of the fish to pesticide exposure under laboratory conditions.

The results revealed that the percentage occurrence of gill leisions in the fish collected from sampling sites closer to pesticide applied areas were significantly higher than that of the fish collected from the other sites: gill hyperplasia (50.9% - 68.8%), gill hypertrophy (45.6% - 72.6%), epithelial separation (52.6% - 73.2%) and club shaped deformities (35.6% - 60.5%). These abnormalities also occurred in the gills of the fish that were exposed to low concentrations of the pesticides in the laboratory for a short time period, but the severity was lower than that in the fish collected from the field. In addition, prominent abnormal divisions at the apical region of the secondary lamellae were observed in the fish collected only from the sites closer to the paddy fields. The gill lesions induced in *R. caverii* following pesticide exposure could adversely affect the proper functioning of gill tissue especially respiration.