

RESEARCH PAPER

Effect of malathion on the haematological parameters of *Channa punctatus*

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ABSTRACT

The present investigation deals with effect of organophosphorus pesticide malathion on hematological parameters of *Channa punctatus*. Malathion induced significant changes at sub-lethal concentration during short term and long term exposure in haematology. The results revealed decreased in parameters like RBC, WBC and HB at short term exposure, while WBC increases during long term exposure.

Key words : Malathion, Haematology, *Channa punctatus*

Fishes are in direct contact with water environment and are susceptible to any change that may occur. It is expected that such changes would reflect in physiology of fish and particularly in values of haematological parameter. The present investigation deals with short term and long term exposure of malathion on *Channa punctatus* for bioassay experiment using this fish as a test organism under controlled conditions and by taking precautions and procedure as given by APHA (1975). Malathion is an organophosphorus insecticide (00-di mydimethyl phosphioate 5-(1,2-di carbethoyethyl) and chiefly used for mosquito control in open waters as well as fish ponds for eradication of fish diseases. It has been reported lethal to fishes (Sastry and Gupta, 1978). Malathion when administered in water induces morphological and haematological abnormalities (Mukhopadhaya and Dehadrai, 1981).

MATERIALS AND METHODS

The fishes were collected from Godavari river district Nanded, Maharashtra in January 2010 and were acclimatized to laboratory conditions for 15 days prior to experimentation. Healthy fishes of about 30-35 cm in length and 80-90 g weight were used for experiment. De chlorinated tap water was supplied throughout the period and it was continuously aerated to maintain the oxygen saturation. The physicochemical properties of water was maintained with pH 7.1; DO 7.2 -7.9 ppm ; total hardness 460-465 and temperature between 29-30°C.

The LC50 values of malathion was estimated by Finney (1964) . The sub lethal concentration of toxicant selected was 1/5th dose of LC50 96hrs for short term (96 hrs) and long term (30 days) exposure. Sub lethal concentration of 96 hrs of malathion was 0.6 ppm. The fishes were divided into two groups, one control and other

treated groups.

Blood sample was collected from the heart of fish and haematological parameters were determined. RBC and WBC count were made by using improved Neubaur counting chamber. Hb was measured by Sahli's haemometer.

The values were expressed as millions per cubic millimeter (RBC and WBC) and grams percentage (Hb) each value Mean \pm SD of six individual observations.

RESULTS AND DISCUSSION

The results of haematological parameters like RBC, WBC, Hb are given in (Table 1). There was significant decrease in the RBC's count and Hb after treating malathion during short term exposure. The decrease may be due to damage haemocytes due to insecticides as reported by Hussain, 1979 and Patton, 1963. Similar results have also been reported by Jabeen, 1984, Srinivas *et al.*, 2001. The decrease in WBC count during short term exposure may be due to enhanced secretion of adenocorticotrophic hormone (ACTH) which resulted in higher blood-titers of corticosteroids and brought about lysis of lymphocytes and thrombocytes reported by (Donaldson and Dye, 1975). In long term exposure decrease in the RBC's count and Hb% may be due to occurrence of erythropenia and haemolysis in *Channa punctatus*. In earlier studies Varadaraj *et al.* (1993) observed similar results in different fishes exposed to different pesticides, which is considered to be an adaptive value for tissue under chemical stress. This also helps in removal of cellular debris of necrosed tissue at faster rate (Mcleay and Brown, 1974).