



TOXIC EFFECT OF INSECTICIDE (MONOCROTOPHOS) ON PROTEIN CONTENT OF *EUDRILUS EUGENIAE* UNDER EXPERIMENTAL CONDITIONS

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ABSTRACT

Studies were carried out to determine the impact on the protein content of earthworm (*Eudrilus eugeniae*) of experimental condition. *Eudrilus eugeniae* were maintained under mother culture tank, in the absence of toxic substances, using standard procedure for experimental time. *E. eugeniae* were exposed to 100 ppm, 300 ppm and 500 ppm concentrations of monocrotophos. The total protein content was determined in *E. eugeniae*. The effects of monocrotophos on *E. eugeniae* have been studied for 14 days. As monocrotophos exposure, significant decrease in the levels of protein in the *E. eugeniae*.

Key Words:- Monocrotophos, *Eudrilus eugeniae*, Protein.

INTRODUCTION

Insecticides are giving quick result in modern agriculture field, but their dangerous side effects to soil and air ecosystems were quickly highlighted. They are toxic to non-target organisms and can reach human beings also through food web. Monocrotophos is a widely used insecticide against cotton pests, citrus, olives, rice, maize, sorghum, sugar cane, peanuts, potatoes, soya beans, bananas, melons, green beans, bell peppers, vegetables, ornamentals, tobacco, coffee and strawberries (Arnaud C *et al.*, 2000). Improper usage and mishandling of insecticides can harm. Earthworms are very common soil invertebrates in most vicinity's and play an big role in improving structure and fertility of soil ecosystems (Bartlett *et al.*, 2010). Earthworms act as bioindicators of contaminated soil so I evaluate the effect of monocrotophos in lab conditions. The objective was to determine the impact of the monocrotophos on protein

content changes in *E. eugeniae*.

MATERIALS AND METHODS

Eudrilus eugeniae were purchased from S.S Vermicomposting farm, Madurai and maintained in the mother tank. The *E. eugeniae* used in this research were adults with well-developed clitellae. The chemical product used in our experiment is the monocrotophos (36% 3L), it is an insecticide. In exposure for 14 days, three concentrations (100 ppm, 300 ppm & 500 ppm) of monocrotophos with controls (Fig 1). Experiment was carried out in the room temperature. In earthworms determination of total proteins determined according to the method of Lowry et al (1951).

RESULTS AND DISCUSSION

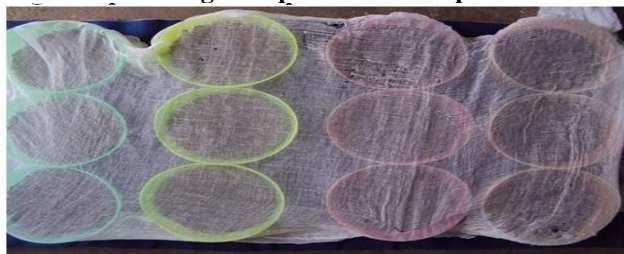
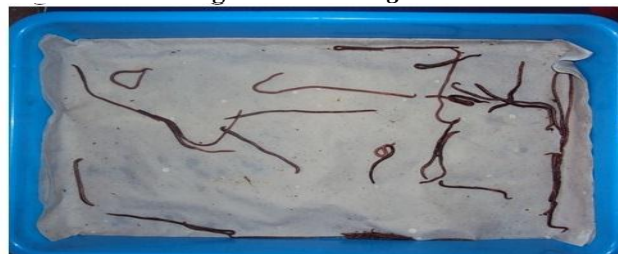
In my research I tried to evaluate the toxicity of monocrotophos on protein content was determined by using three different concentrations against experimental model the earthworm (Logaswamy S and Remia KM, 2010; Muhammad Faheem and Farhanullahkhan M, 2010).

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Fig 1. Experimental setup

Fig 2. *Eudrilus eugeniae*Table 1. Alteration in the protein content of *Eudrilus eugeniae* exposed to monocrotophos for 7 days

Biochemical parameters	Exposure days	Control	Monocrotophos concentration		
			100 ppm	300 ppm	500 ppm
Total protein	7	1.94	1.66	1.00	0.71
Total protein	14	1.90	0.90	0.63	0.54

During the 14 days research period, the alterations produced in the protein content of *E. eugeniae* clearly indicate high concentration of monocrotophos to the earthworms. Vineeta Shukla and Krishan Kumar (2006) found that the protein decreased in both acute and chronic exposures to Cadmium and Copper.

Saint-Denis et al (1999) indicated that biochemical parameters of *E. fetida* which affected by exposed to benzo(a)pyrene. In the present research total protein contents *E. eugeniae* was estimated after 7 and 14 days of treatment. The results of OD value for total protein content of earthworm on 7th and 14th day given in Table 1. The toxicity of 500 ppm monocrotophos was higher than 100 ppm. These lines of evidence collectively indicate that the earthworm affected by monocrotophos (Yahia Y.Masleh et al., 2003; Zeriri Ibtissem et al., 2012).

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In the terms of this work, monocrotophos a toxic effect on earthworms and earthworms are excellent bioindicator model of contamination. In *E. eugeniae* protein abnormalities were reported. It can be concluded after this study that protein content decreases due to toxic effects of monocrotophos. So this research recommended vermiwash and vermicompost instead of chemical insecticides and fertilizers.

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