



ISSN : 0973-7057

Int. Database Index: 663 www.mjl.clarivate.com

Effect of water pollutants on the digestive enzyme (Amylase) of alimentary canal of aquatic insects

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Received : 24th December, 2019; Revised : 22nd February, 2020

Abstract: The Water Pollutants DDT were taken, this pollutant affects and decline the Enzyme “Amylase” of alimentary canal of aquatic insects. The concentrations of Amylase were changed with the treatment of pollutant compared with controlled condition.

Keywords:- DDT, Amylase, Alimentary canal

INTRODUCTION

Life is an intricate meshwork involving a perfect coordination of a vast majority of chemical reaction. Some of these reactions result in synthesizing large molecules, other cleaving large molecules and all of them either utilize energy or liberate energy. All these reactions occur very slowly at low temperature and the atmospheric pressure the condition under which living cells carry on their life process.

The name enzyme literally means 'in yeast' this was referred to denote one of the most noteworthy reactions wherein the production of ethyl alcohol and carbon dioxide through the agency of an enzyme, the Zymase present in yeast takes place.

As the present work is based on enzyme (amylase), attempt to investigate the quantitative variation in the activity of Amylase, in the gut of a strictly carnivorous aquatic insect *Cybister confusus* during control and after sub lethal dose with pollutant DDT.

Multiple forms of amylase may occur in insects and hence been shown to be under genetic control in *Drosophila* where six forms are observed. The multiple forms of Beta-amylase reported for cereal seeds.

MATERIALS AND METHODS

The control insects and the treated insects with sub lethal dose of DDT after 24 hours, 48 hours, 72 hours, and 168 hours, the specimen were dissected on ice bath at $4\pm 1^{\circ}\text{C}$ and the gut of *Cybister confusus* were taken out by removing adhering fat and other unnecessary materials. The cleared gut was then homogenized in Chilled phosphate buffer at pH 8.0 and then centrifuged at 3000 rpm for 16 minutes by the colorimetry the supernatant was used for enzyme.

RESULT AND DISCUSSION

DDT resulted into a slight decline in amylase activity in the fore gut. Mid gut amylase activity of the control insect was 7 ± 0.6 S.D Enzyme unit/gut reg/minute. DDT resulted in gradual significant decline of the enzyme activity at every stage of the treatment in both mid and hind guts. That pollutant were more potent in adversely affecting amylase activity of the mid gut.

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Amylase-(Enzyme Unit/Gut region/Minute) \pm SD activity to control, and DDT treated gut of *Cybister confusus* sharp

Condition	Alimentary Canal (<i>Cybister confusus</i>)		
	Fore Gut	Mid Gut	Hind Gut
Control	5 \pm 0.6	7 \pm 0.5	6.5 \pm 0.6
DDT treatment After 24 Hrs.	4.5 \pm 0.6	5.0 \pm 0.3	5.5 \pm 0.6
After 48 Hrs	4.8 \pm 0.5	4.5 \pm 0.4	4.8 \pm 0.5
After 72 Hrs	3.5 \pm 0.3	3.0 \pm 0.3	3.5 \pm 0.3
After 168 Hrs.	2.5 \pm 0.3	2.5 \pm 0.3	4.6 \pm 0.5

ACKNOWLEDGMENT

We acknowledge the help provided by the Entomology research laboratory, Zoology Department BRA Bihar University, Muzaffarpur and my supervisor Dr. O.P.Singh principal R.D.S College

REFERENCES

1. Day, M.F. 1949. Distribution of alkaline phosphatase. *Australian Jour.Sci. Ros.* **B2**:31-34
2. Khan, S.N.Choudhary, Chanda kumari and S.Ehteshamuddin. 1996. Effect of DDT and EDTA on the Alaline Phosphatase concentration in the haemolymph, of immature and mature female *Cybister confuses*. *Environ. Ecol.*, **14**:797-799
3. Kilby, B.A. 1965. Intermediately metabolism and the insect fat body. In Aspects of insect Biochemistry (T.W. Door Win, ed.) *Biochem. P.Sc pymr.* **28**:39-48 Academic Press.
4. Leena Kumar. 1993. Effect of chemicals on the growth of an aquatic living system, Ph.D Thesis, University of Bihar Muzaffarpur.
5. Singh, J.P. and D.K. Jindal. 1982. Glycogen content in the developing stages of coccinellids (Coleoptera: Coccinellidae) *Life Sci. Adv.* **1**:19-22.
6. Pilat, M. 1935. Action of insecticides on gut. *Bull. Entol. Res.* **26**:165-180.
