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THE EFFECTS OF ANILINE ON THE GROWTH OF *BUFO MELANOSTICTUS* TADPOLES

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ABSTRACT

The present investigation was aimed to determine the effect of aniline on the growth of *Bufo melanostictus* tadpoles .Pre- metamorphic tadpoles maintained in 0.001Nµg/ml solution of aniline for a period of 10 days in the experiment indicated growth retardation of 2mm.

Key words: Aniline, Tadpole Growth .

INTRODUCTION

Acetanilide was introduced as an antipyretic medicine under the name of antibebrin. However, its excessive toxicity prompted to search for less toxic derivatives. Thus the major active metabolites of acetanilide and phenacetin are more satisfactorily and still extensively employed.
Acetaminophen and phenacetin produce methemoglobinemia and form acetanilide, and other toxic metabolites similar to those produced by aniline, in the body. The antipyretic activity of compounds resides in the amino benzene structure and leave aniline as too toxic for clinical use (Randall, 1963). Also a contaminant in some commercial preparations of phenacetin, 4_chloroactanilid also contributes to these toxic effects (Smith, 1958).

The present investigation is, therefore, undertaken to study the adverse effects of aniline on the growth of pre-metamorphic tadpoles.

MATERIALS AND METHODS

Bufo melanostictus tadpoles were collected from a rain water pond of University Campus. After collection; the eggs were introduced along with pond water in to a wide mouth glass jar. They were then transported to the laboratory and were divided into several batches in small plastic tanks containing tap water. They were fed with a refined suspension of paraboiled spinach. They were maintained till they reached the desired size and were then selected to form experimental batches. (Ahmad and Siddiqui, 1976a, b; Ahmad *et al*., 1978a, b)

Method of Measurement

The process adopted for measurement was similar to that of Ahmad and Mukarram (1977) and Ahmad *et al*., (1978a, b; 1979a, b). In order to measure, each tadpole was introduced with the help of small net into a 6cm diameter Petri dish in the absence of water. No sooner the tadpole stopped wriggling movement; the Petri dish was slightly tilled towards the head side; by adding the tadpole, body was shaped into straight line. The Petri dish was then arranged in a glass, bearing millimeter grid and the length from head to tail was noted.

Following their measurements they were divided into two groups of 25 individual each in separate tanks. One group was kept as control and the other was kept as test.

Drug Administration and Care

It is known that exudates from tadpoles as well as algae growing on the internal surfaces of the tanks inhibit growth. Therefore cleaning of tanks and change of water was done every day. 500ml of a day old water was used for refilling of control tanks. 500ml of 1µg/ml aniline (Prolabo, France) solution was introduced into test tanks, respectively.

Thus all animal were maintain in identical conditions of volume of water or solution per individual and were kept under constant temperature during the course of the experimental study (Ahmad and Siddiqui, 1977, 1978; Ahmad *et al*., 1978a, b).

Method of Feeding

For feeding 160 gram of paraboiled spinach was liquidized with a small quantity of aged water and the volume was made up to 1000ml by further addition of water. On every day 1ml of this refined suspension/ per tadpole was added to each tank (Ahmad and Siddiqui 1976a, b; 1977, 1979).

RESULTS AND DISSCUSION

Table 1 indicates that 0.001 N aqueous aniline solution retarded the growth of tadpoles under test from the start of the experiment. At the end of day 10, there was a shortening difference of 2.0 mm as compared with control in the experiment I and II. In the Table 2, growth inhibiting effect of 1µg/ml aqueous aniline solution showed a similar effects and test animal showed a relative decrease in body size by 20 percent on the 10th day. The anti pyretic effect of the aniline compound resides in the aminobenzene structure but aniline is too toxic for clinical use the effect of aniline are similar to salicylates . It diffuses rapidly in the tissues. Aniline is a precursor of an unidentified substance responsible for the production of methemoglobinemia. In tadpole pigmentation with a dusky skin colour and anemia follows the chronic use of aniline. Fuctional anemia is the characteristics of aniline poisoning. Therefore pre-metamorphic tadpoles maintain continuously in a solution of 0.001N for 10 to 12 days showed a retarded growth of 10 to 20 per cm due to methemoglobinemia.

Table 1. Effect of aniline on the growth of *Bufo melanostictus* tadpoles.Value are body lengths (mm).

DAYS	CONTROLS	TEST 0.001N
0	10.8±0.09	10.8±0.10
1	11.2±0.06	10.9±0.09
2	12.0±0.09	12.0±0.09
3	13.0±0.11	12.2±0.12
4	15.2±0.13	12.5±0.09
5	19.0±0.17	13.7±0.04
6	19.5±0.17	14.2±0.14
7	20.4±0.16	15.5±0.04
8	20.4±0.14	17.8±0.12
9	20.6±0.15	18.5±0.04
10	20.8±0.12	18.8±0.14

Each figure is the mean of 25 measurements with ± SD

Table 2. Effect of aniline on the growth of *Bufo melanostictus* tadpoles.Value are body lengths (mm).

DAYS	CONTROLS	TEST 0.001N
0	10.6±0.10	10.6±0.06
1	10.7±0.09	11.4±0.07
2	12.0±0.09	11.9±0.06
3	13.0±0.11	12.0±0.09
4	15.2±0.13	12.4±0.10
5	19.0±0.17	14.1±0.18
6	19.5±0.17	14.6±0.19
7	20.4±0.14	16.6±0.22
8	20.6±0.15	18.60±0.12
9	20.6±0.15	18.6±0.12
10	20.8±0.12	18.8±0.12

Each figure is the mean of 25 measurements with ± SD

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