

SHORT COMMUNICATION

LEVEL OF SERUM AND RENAL HISTAMINE AND DIAMINE OXIDASE
ACTIVITY IN LEAD ACETATE TREATED RATS

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Summary : The levels of histamine and Diamine oxidase activity in renal tissue and serum were determined in lead acetate treated rats. The results show a significant lowering in the level of renal histamine with a rise in diamine oxidase activity in serum as well as in renal tissue.

Key words : diamine oxidase histamine lead acetate renal tissue

INTRODUCTION

Treatment with lead phosphate has been reported to induce renal tumours (2). Subsequently renal tumours were produced by feeding animals with lead acetate (8). Histamine is present in a number of body tissue (5). Serum diamine oxidase activity has also been reported to be high in tumours of uterus, ovaries (1) in and in bronchial carcinoma (7, 4). We now report the changes in the level of serum and renal diamine oxidase activity and renal histamine concentration following lead acetate treatment.

MATERIAL AND METHODS

Adult albino rats of either sex, 140-180 g, were divided into two groups and housed in separate cages. Food and water was given *ad libitum*. The animals of group one served as controls and received water only. The animals of group two received lead acetate, 1 g per litre of drinking water, on alternate days. This treatment continued for 28 weeks; at the end of treatment, the animals were sacrificed by stunning. Blood was collected from the Jugulars. Diamine oxidase activity was estimated in serum and kidney. The level of histamine was also determined in kidney.

The microvolumetric method involving peroxidative oxidation of indigo disulphonate (6) was used for estimating diamine oxidase activity in serum and renal tissue. The details have been reported elsewhere (6).

Histamine was extracted according to the method of Feldberg and Talensik (3) and assayed on guinea pig ileum using the standard 3-point biological design. The specificity of the assay was confirmed by using mepyramine maleate, 0.2 ml 2.5 X 10⁻⁶ M. Histamine concentration was expressed as μg per g of tissue.

RESULTS AND DISCUSSION

The results are given in Table I. Treatment with lead acetate significantly raised the diamine oxidase activity in serum as well as the renal tissue. The level of renal histamine was significantly reduced in these animals (Table I).

TABLE I: Effect of Lead acetate on serum and renal histamine and diamine oxidase activity in albino rats.

Experimental situations	Diamine oxidase activity (in permanaganate unit)		Renal tissue histamine concentration (μ g/g of tissue)
	Serum	Kidney	
1. Control	1.83 \pm 0.91 (13)	0.79 \pm 0.62 (11)	1.58 \pm 0.79
2. Lead acetate feeding	7.97 \pm 2.01 (11)	2.34 \pm 1.20 (13)	0.12 \pm 0.16 (10)
P value	P < 0.001	P < 0.001	P < 0.001

Values are expressed as mean \pm S.D. (Figures in parenthesis indicate number of animals used in experiment).

It has previously been reported that a high level of serum diamine oxidase activity was associated with malignant tumours of uterus, ovaries (1) and bronchial carcinoma (7). A high level of serum diamine oxidase activity with a fall of tissue histamine has also been reported in certain carcinomas in human (4).

Lead acetate feeding for long periods is known to induce renal tumours (8). A rise in renal diamine oxidase activity and fall in histamine concentration in the above experiments is in line with our observations reported elsewhere (4).

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