RESEARCH ARTICLE

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Biochemical Changes in the Testis of Albino Rat after Treatment of Diuretic Drug Compound

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ABSTRACT

The present study deals with the adverse side effects of the diuretic drug compound thaizide on the total protein, cholesterol, Alkaline and Acid phosphatase in the testes of albino rats. Although this findigscontradicted conventional wisdom regarding with incresment of total protien cholestrol and acid phasphate and decaline value of alkaline phasphtase.We conclude that an elevation and decaline in biochemical parameter determine for diuretic drug compound and side effect of metabolic situalions.

Key words: *Thaizide, Testes, Albino rat, Protien, Cholestrol, Acid and Alkaline Phosphatase*

INTRODUCTION:

Diuretics an indispensable group of therapeutic agents that are used to maintain the volume and composition of body fluids in the varity of clinical situation. The diuretics are transported from blood through the tubular cells into tubular fluids and generally safe, but likely other therapeutic agents, they cause side effects (Arthur 2000). Thaizide type of diuretics are carbonic inhibiter, corbonic anhydrase is important for intracelular fluid formations and inhibiter of these enzyme are affective in decreasing intracelular pressure and therefore used to treat glucoma.The biochemical alterations of thaizides are to increase total cholestrol low density lipoprotein (LDL), Triglycerides and enzymatic activity.

In conclusion, data indicated that the drug compound when given in the large dose for short and long periods of the time can have profound and specific effect on the certain biochenmical parameters of testes. Some of the action describes the probality of significance in relation to the effect of drug seen clinically. However, studies now needed which smaller doses of drug are given for longer period of time in an attempt of approximately more closely to the clinical use of thiazide. Present study was initiated to investigate the adverse side effect of simultaneous administration of drug on some biochemical parameters in testes of rats.

MATERIALS AND METHODS:

Drug: Thaizide drug compound was disolve in saline, and administrated orally using stomach tube at a dose of 100mg/kg body weight (according to Indian drug review) daily.

Animal: Thirty male albino rats, each weighing appproximately (180±10gm.) were used. Animals were maintained on a commercial balanced rat diet and were allowed free access of food and water.

Experimental Design: Thirty male albino rats, devided into six groups of five animals in each, were treated as follows groups 1, 3 and 5 treated with thaizide and 2, 4 and 6 given vehicle and left as control. Animals were fasted overnight separatly on 10^{th}, 20^{th} and 30^{th} day. On the next days each experimental protocol, after recording the body weight, the animal were sacrificed by decapitation and the testes were dissected out, blotted of blood,

rinsed in phosphate buffered saline (pH 7.4) and immediatly proceeded for biochemical estimations.

Biochemical estimations: The messurment of tissue total protien was determined by Loweryś *et al.* (1951) while; cholestrol by Zlatkis *et al.* (1955), alkaline and acid phosphatase determined by Kind and King's (1954).

Statistical Analysis:
All the data were analysed for statistical significance between the control and experimentel groups of rats by Fischer and Yates (1963).

Table 1: Impact of Thaizide on Testicular Biochemical Parameters

S.No.	Parameter	Treatment time (in days)	No. Of animals	Control group		Treated group	
				Mean	±S.Em.	Mean	±S.Em.
1.	Total Protein (in mg/ml)	10 20 30	5 5 5	432.99 432.22 498.88	4.84 13.98 8.67	777.77 922.22 977.77	39.28*** 28.32*** 56.65***
2.	Total cholesterol (in mg/gm)	10 20 30	5 5 5	0.011 0.016 0.020	0.002 0.002 0.003	0.028 0.047 0.073	0.002*** 0.003*** 0.002***
3.	Alkaline phosphatase (in K.A Units)	10 20 30	5 5 5	34.93 37.48 39.67	0.94 1.04 1.44	32.43 28.51 20.47	1.07* 0.09** 1.26***
4.	Acid phosphatase (in K.A Units)	10 20 30	5 5 5	36.38 38.51 42.05	1.21 0.98 0.74	59.35 64.53 76.28	1.27*** 1.20*** 0.99***

S.Em. = Standrad Error of Mean
*** = Very Highly Singnificant ($p<0.001$)
** = Highly Singnificant ($p<0.01$)
*= Singnificant ($p<0.05$)

RESULTS AND DISCUSSIONS:
The totel protien, cholestrol and acid phosphatase values increases very highly significantly ($p<0.001$) and alkline phosphatase decreases significantly ($p<0.05$) after 10 days while, highly significant 20 days and 30 days ($p<0.001$) of thaizide treatment with increases time period as compared with control (Table 1). Colorometric techniques were employed in these studies to measure biochemical parameter of the testes of rats during control conditions and after orally adminitration of 100mg/kg body waight. The thaizide widly used diuretic drug compound having so many clinical uses. However, is lmited by sevrel endocrine and biochemical effects?
In present study, the increse in total protien in the testes may be due to the adverse side effect of drug compound. Present finding suported by Ames (1986) and due to metabolic situations with produced by thaizides compound mainly caracterized by increase protien in rats and guiniepigs. Similar observation has been made by Taft and Sweeny (1995) in rat after routin dose of thaizide.
An increase in total cholestrol in the rat's testes may be due to adverse side effect of drug compound. Alternation in lipids play an important role in devlopment and progression in renal distress and induced specific change in the metabolism of cholestrol like that Arthur (2000), in the liver of rat due to the catacholamine release which is stimulated heptic cholestrol synthesis and caused hypokalemia. Similar finding have been supported by Moynian and Ennis (1990) and Miner *et al.* (1983) in human and rats due to the adverse side effect of diuretic drug compound in the tissue.
The alkaline phosphatase in the testes decrease due to the side effect of thaizide drug compound. Setchll and Wallare (1972) also noted decrease in the alkaline phosphatase activity and lysosomal enzymes in the liver of rats after spironolactone treatment, Menard

et al. (1975) have showed the decrease.the microsomal enzyme activity in the testes of rats after spiranolactone.

In the semen acid phosphatase has greatest share and increase in the percentage of phosphatase may cause prostatic carcinoma. In the present study the acid phosphatase in the testes of albino rat increases due to the side effects of thaizide drug compound. Alan *et al.* (1980) have also reported the marked increases in the acid phospate in testes and distal cauda epydidymis in rat due to servel diuretic eliments. Fujita *et al.* (1982) and Ochs *et al.* (1978) have shown changes certain enzyms in liver of the rats after spiranolactone treatment. Such studies should contribute particulary with respect to role of metabolite in the therepeutic action and side effect of drug.

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