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CLINICAL CHEMISTRY PROFILE OF AN INSECT, *DINOTHROMBIUM TINCTORIUM*

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Abstract: *Dinothrombium tinctorium,* the mites of family Thrombididea, are administered routinely in the Unani system of medicine, with reference to human fertility regulation. These mites have been found rich in steroidal hormones and lipids, the probable cause of their therapeutic property. The present study looks at a yet unexplored aspect of these mites, clinical chemistry, through quantification of ions like calcium, phosphorus, potassium and sodium, in addition to parameters such as creatinine, uric acid, bilirubin, alkaline phosphatase, albumins, globulins, urea, high density lipoproteins, low density lipoproteins, lactate dehydrogenase, creatine phosphokinase, glutamate oxaloacetate transaminase and glutamate pyruvate transaminase.

Key words: *Dinothrombium tinctorium*, insect, aphrodisiac, clinical chemistry

INTRODUCTION

Dinothrombium tinctorium as a treatment of male infertility in the Unani system of medicine, is administered orally, both as total animal powder as well as metabolites collected on rice (Kabir, 1937; Board of Ayurvedic System of Medicine, 1971). Studies have been carried out to scientifically determine the efficacy of the drug on animal models (Subhan *et al.*, 1988, 1989a, 1989b, 1990a, 1990b; Subhan and Khan, 1991; Subhan, 1995).

Earlier studies (Subhan *et al.*, 1995; Subhan and Tahir, 1996) have revealed that these mites are rich in terms of the androgenic steroid as well as its precursors, the lipids, suggesting the possible causes of androgenic property of these mites.

In order to further the information on these insects, a study was carried out to determine the clinical chemistry of these mites, with the aim that findings of this preliminary study would contribute to the presently unexplored arena of entomological science.

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MATERIALS AND METHODS

Insect collection

Live Bir Bahuty (*Dinothrombium tinctorium*) was commercially obtained, during the period July/ August, 1996.

Analyte extraction

Bir Bahuty was killed and ground into powder form. The powder was dissolved with an organic solvent in the ratio of 1:3. The organic solvent consisted of ethyl alcohol and n-hexane in the ratio of 3:2. The extract was obtained by centrifugation at 700 g for 15 minutes.

Sample preparation

The clinical chemistry was studied by dividing the samples into two groups. In each group, the purified extract was resuspended in ethyl alcohol in the ratio of 1:10. The second group extract was centrifuged to remove the debris and collect the clear supernatant.

Clinical chemistry analysis

Clinical chemistry of the two groups was studied by analysing high density lipoproteins (HDL), low density lipoproteins (LDL), lactate dehydrogenase (LDH), creatine phosphokinase (CPK), serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), potassium, sodium, calcium, phosphorus, bilirubin, alkaline phosphatase, urea, creatinine, uric acid, total protein and albumin. The analysis was carried out using the standardized ELISA method on a Labsystem Chemistry Analyser. Each group was represented by a sample size of 150.

RESULTS AND DISCUSSION

Table I represents the results of the study. A comparison between the two groups indicates that removal of cell drbris improves the recovery of all the analytes from the extract.

Creatinine was not detected in the uncentrifuged samples, while HDL, LDL, LDH, CPK, SGOT, SGPT, potassium, sodium and urea were not detected in any of the groups, suggesting that their levels were far below detectable limits.

Higher values exhibited by the centrifuged group can either be attributed to the interference caused in the spectrometric analysis by the cell debris or improved extraction due to centrifugation.

The albumin : globulin ratio in the uncentrifuged sample was 13 times, as compared with the centrifuged group. This was due to the 13-fold difference in the globulin levels, among the two groups (the centrifuged group having the higher values).

Table I: Clinical chemistry profile of *Dinothrombium tinctorium*.

Analyte*		Uncentrifuged sample	Centrifuged sample
Calcium	(mg%)	0.2±0.01	1.9±0.02
Phosphorus	(mg%)	9.7±0.03	10.2±0.05
Creatinine	(mg%)	N.D.	1.1±0.01
Uric acid	(mg%)	0.3±0.01	1.7±0.08
Bilirubin	(mg%)	1.1±0.05	3.2±0.06
Alkaline phosphatase	(IU/L)	55.0±1.07	73.1±2.18
Total proteins	(gm%)	4.2±0.04	7.9±0.12
Albumin	(gm%)	3.9±0.01	4.0±0.03
Globulin	(gm%)	0.3±0.03	3.9±0.01
A:G ratio		13.00	1.03
Urea	(mg%)	N.D.	N.D.
HDL	(mg%)	N.D.	N.D.
LDL	(mg%)	N.D.	N.D.
LDH	(IU/L)	N.D.	N.D.
CPK	(IU/L)	N.D.	N.D.
SGOT	(IU/L)	N.D.	N.D.
SGPT	(IU/L)	N.D.	N.D.
Potassium	(meq/L)	N.D.	N.D.
Sodium	(meq/L)	N.D.	N.D.

*For abbreviations see Material and Method section.

In short, this study presents the first report upon the clinical chemistry profile of *D. tinctorium*, which will add to the basic information regarding this insect, which is widely used as an aphrodisiac medicine in the Unani system of medicine.

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