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ANTIFERTILITY EFFICACY OF CURCUMA LONGA (50% E to H EXTRACT) WITH SPECIAL REFERENCE TO SERUM BIOCHEMISTRY AND FERTILITY TEST

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Abstract: *Oral feeding of 50% EtOH extract of Curcuma longa to male rats at the dose of 1gm/kg body weight caused significant reduction of serum cholesterol, triglycerides and phospholipids (P≤0.01 to 0.001). Whereas the SGOT levels aware not reduced significantly. Fertility test showed 80% negative result. The negative fertility results reflects the arrest of spermatogenesis and depletion of androgen level. Further Curcuma longa reflects antispermatogenic nature.*

INTRODUCTION:

Curcuma longa Linn. Commonly known as "Haldi" belongs to family Zingiberaceae. It is a perennial herb cultivated throughout India (1). The active principle of *Curcuma longa* is curcumin. It is diferuloyl methane.

The contracepaitive efficacy of this extract was reported in rat (2) but it was based on testicular population dynamics. The present study is aimed to assess the role of *Curcuma longa* on serum biochemistry and fertility.

MATERIAL AND METHODS:

20 mature male swiss albino rats weighing 200-220 gms maintained on standard diet (Hindustan Lever Ltd., Bombay) and water ad libitum were distributed into 2 groups. First group (Gr-1) served as control, second group (Gr.2) revived curcuma longa (50% EtOH) extract at the dose of 1 gm/kg body weight orally for 60 days.

The animals were kept for fertility test on 55th day to 60th day of treatment. On the last day of treatment, animals were sacrificed by using light ether anaesthesia. Blood was directly collected from the heart. Serum was separated and lipid profile i.e. cholestrol (3), HDL –cholestrol (4), phospholipids (5) and triglycerides (6) were done. Similarly serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT) were also done (7).

RESULTS:

Oral feeding of curcum longa (50% EtOH) extract at the dose of 1 gm /kg body weight orally for 60 days to male rats caused significant reduction in serum lipid profile (P≤0.01 to ≤ 0.001). It also showed 80% negative fertility, whereas the SGOT and SGPT were in normal range (Table –I)

DISCUSSION

Cholesterol is an important precursor in the synthesis of steroid hormones (8). Decreased levels of cholesterol in treatment group may be attributed to the diminished biosynthesis of total cholesterol and

increased secretion of bile acid (9) which leads into androgen depletion and caused impairment of spermatogenesis (10). Increase or decrease in serum HDL cholesterol (lipoprotein) are closely related with the plasma testosterone (11) in the present study decreased in HDL cholesterol confirms the above findings.

Triglyceride is said to be energy source for spermatozoa and its increase or decrease is suggestive of imbalanced synthesis (12). In present stud reduced phospholipid may be due to impairment of it synthesis by plant product phospholipid contents have been implicated in sperm motility and maturation (13). The decrease in serum phospholipid in present study may be due to the change in the anabolism and catabolism of very low density lipoprotein (VLDL) by *Curcuma longa*. SGOT and SGPT activities are mainly related with Liver and heart function. The present investigation results showed normal functions of liver and heart.

In conclusion oral feed of curcuma longa (50% EtOH) extract to male rats caused arrest of spermatogenesis by depicting androgen level.

Table-I: Serum Biochemical and fertility test of *Curcuma longa* (50% EtOH) extract treated intact rats

(Mean of 10 animals =/- S.E)

Treatment	Fertility test	Cholesterol mg/100ml	HDL-Cholesterol mg/100ml	Phospholipids mg/100ml	Triglycerides mg/100ml	SGOT Raitman Unit	SGPT Franket Unit
Intact (Control) (Gr.1)	90% (+)	104.21 ± 0.25	47.01 ± 1.01	47.01 ± 3.01	75.71 ± 1.23	58.74 ± 4.12	33.57 ± 3.71
Intact +Curcuma Longa for 60 days (Gr.2)	80% (-)	74.05^{c} ± 0.31	28.50^{c} ± 1.44	136.42^{a} ± 2.55	38.56^{c} ± 2.06	52.06^{d} ± 6.12	29.18^{d} ± 3.12

Gr. 2 was compared with Gr.1

$P \leq 0.05 = a$
$P \leq 0.001 = b$
$P \leq 0.0001 = c$
$P \leq ns = d$

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