EVALUATION OF ANALGESIC AND ANTIPYRETIC ACTIVITY OF *CORCHORUS TRILOCULARIS* LINN. SEED OIL

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Summary

The seeds of *Corchorus trilocularis* Linn. plant belonging to the family Tiliaceae has been subjected to petroleum ether extract extraction to obtained seed oil. Seed oil was subjected to analgesic screening using Tail immersion method, where aspirin is used as a standard drug and antipyretic screening using Yeast induced pyrexia, where paracetamol is used as a standard drug in albino rats. The result indicates that petroleum ether extract of seeds oil of *Corchorus trilocularis* Linn. was significantly analgesic ($p<0.01$) and antipyretic activity ($p<0.01$) as compared to standard drug aspirin and paracetamol ($p<0.01$) respectively and untreated control group.

Keywords- *Corchorus trilocularis*, Tail immersion and Yeast induced pyrexia

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Introduction

Plant species and traditional knowledge are important to the herbal medicine trade and the pharmaceutical industry, whereby plants provide raw materials and the traditional knowledge provides prerequisite information. According to an estimate of World Health Organization, nearly 80% of the populations of developing countries rely on traditional medicine, mostly plant drugs for their primary health care needs [1].

The seeds of *Corchorus trilocularis* Linn. is belonging to family Tiliaceae. This plant is distributed in Bihar, Bombay presidencies, Khandesh, Gujarat, Baluchistan, Afghanistan, Arabia and South Africa [2]. The leaves of *Corchorus trilocularis* are eaten as pot-herb. The plant, macerated for a few hours in water, yields mucilage, prescribed as a demulcent [3]. The leaves are tasty and savory, laxative, stimulant and tonic. The seeds are bitter and administered in doses of about 80 grains in fever and obstruction of the abdominal viscera, rheumatism [4, 5]. The two new tetracyclic triterpenoids trilocularis A and triloculârol A 3-glucoside and one pentacyclic triterpenoids trilocularoside A isolated from *Corchorus trilocularis* Linn. plant [6]. This plant was scientifically evaluated for anti-inflammatory activity [7].

However no systematic study on analgesic and antipyretic activity has been reported in the literature, therefore in the present investigation, we screened petroleum ether extract of seeds of *Corchorus trilocularis* Linn. for analgesic and antipyretic activity in albino rats.

Material and Methods

Procurement of Plant material

The seeds of *Corchorus trilocularis* Linn were collected from Dapoli, Ratnagiri district, Maharashtra State, India. The plant was authenticated at Kokan Krishi Vidyapith, College of forestry, Dapoli by Dr**.** D. N. Mokat. A voucher specimen was kept in Natural product laboratory of K. L. E. S's College of Pharmacy, Belgaum for future reference.

Preparation of extract

The collected seeds were air-dried under the shade in laboratory for 7-12 days. After complete drying, seeds were powdered and extracted thoroughly with light petroleum ether (40-60°C) in a soxhelet extractor for 24-48 hrs. Once more the remaining powdered seed was extracted to collect all oil in the seeds. Combined petroleum ether (40-60°C) extract was dried over anhydrous sodium sulphate and solvent was removed in vacuum at 40°C by using rotary evaporator (Rotavapour Buchii, Switzerland) to recover oil [8]. The seed oils were filtered through Whatman filter paper No.1 to remove foreign particles and pure oil preserved in cold storage properly.

Animals

Albino rats of Wistar strain of the either sex (150 –200 g), maintained under standard environmental conditions (270±20oC, relative humidity 60±5% light-dark cycle of 12h) and fed with standard pellet diet and water ad libitum, were used for the present study. All he experimental protocols were approved by Institutional Animal Ethics Committee.

Acute Toxicity Studies [9]

The acute oral toxicity study was carried out as per OECD guidelines. The LD_{50} cut-off dose was found to be 2000 mg/kg body weight for petroleum ether extract; hence, $1/10^{th}$ of LD_{50} cut-off dose was taken as therapeutic doses (i.e. 200 mg / kg body weight).

Analgesic activity [10]

Tail Immersion Method

In the experiments, the analgesic response of the given samples of oils was evaluated using the Tail flick method. Albino rats of either sex weighing 150 to 200 g were selected and divided into three groups, each group having six animals. The first group was served as control and received normal saline only (1ml/kg, orally.), second group of animals was served as standard and were administered standard drug Aspirin (100 mg/kg per oral). The animals of remaining group are treated with test oil at a dose of 200 mg/kg by oral route. A dose of 200 mg/kg was selected on basis of the acute toxicity studies.

The basal reaction times to radiant heat by placing the tip of the tail in the path of radiant heat source. The tail withdrawal from the path of heat source i.e. flicking response is taken as the end point. Normally the animal withdraws its tail within 3-5 seconds. A cut off period of 10-12 seconds is observed to prevent damages to the tail. Any animal failing to withdraw its tail within 3-5 seconds is rejected from the study. At least 3 basal reaction times of each rat at gap of 5 minutes to confirm normal behavior of the animal is taken. The standard, test and control doses are injected to the animals and the reaction times are noted at 0, 30, 60, 90, 120 and 180 minutes. The result has shown in Table No.1.

Antipyretic activity [11]

Yeast Induced Pyrexia

The antipyretic response of *Corchorus trilocularis* seed oil was evaluated using the Yeast induced pyrexia. Albino rats of either sex weighing 150 to 200 g were selected and divided into three groups, each group having six animals. In the beginning of experiment normal rectal temperature was noted by digital thermometer. Pyrexia was induced by intraperitonial injection of 2 ml/kg of 15 % brewer's yeast suspension in normal saline. The animals were then fasted for the duration of experiment (approximately 24 hrs). After 18 hrs. of yeast injection, the oil is given orally to test group. For control group normal saline was given 1ml/kg body weight (per oral). A standard group of animals were received Paracetamol 200 mg/kg body weight (per oral).

The rectal temperatures of all the animals were noted at 60 min interval till 3 hrs. After inducing the test drug orally, the rectal temperature was measured by inserting 2 cm of digital thermometer, lubricated with glycerin into the rectum for 2 minute. All the temperatures noted were tabulated and difference in the rise of temperature from that of normal rat temperature was computed. The mean value in each group was calculated. The results were shown in Table No.2.

Statistical Analysis [12]

The data presented as Mean ± SEM. The activities of both the leaves extracts were compared with the control. All the extracts showed significantly higher duration of paralysis and death. Values of $P< 0.05$ were considered statistically significant.

Results and Discussion

Tail immersion method

From Table 1, the test oil sample of *Corchorus trilocularis* Linn. (4.453 ± 0.222) was more significant analgesic effect as compared to control group (2.422 ± 0.0808). Where as standard group (4.475 ± 0.0981) also have more significant analgesic effect as compared to control and test group, at 180 min.

Yeast Induced Pyrexia

From Table 2, the test oil sample of *Corchorus trilocularis* Linn. (38.27±0.120) and standard group (38.05 ± 0.0763) was more significant antipyretic effect as compared to control group (40.27 ± 0.3748), at 21 hr.

From the results, it can be conclude that *Corchorus trilocularis* seed oil was more significant analgesic and antipyretic activity as compared to control group. Preliminary phytochemical investigation reveals the presence sterols, flavonoids, saponins and triterpenoids in seed oil of *Corchorus trilocularis* Linn. Flavonoids are known to target prostaglandins which are involved in late phase of fever and pain perception [13].

Further studies are needed to explore mechanism by which seeds of *Corchorus trilocularis* Linn. produce analgesic and antipyretic activity.

Table No-1 Effect of Seed oil on rats for Analgesic activity

Sr. no	Groups (n)	Time in Minutes					
		0 min	30 min	60 min	90 min	120 min	180 min
		Mean ± S.E.M. (Seconds)					
1	Control	1.158 ± 0.077	1.303 ± 0.105	1.350 ± 0.108	1.407 ± 0.109	1.700 ± 0.100	2.422 ± 0.080
2	Standard	1.242 ± 0.103	1.542 ± 0.107†	1.642 ± 0.099*	1.780 ± 0.110**	2.255 ± 0.092**	4.475 ± 0.098**
3	Test	1.202 ± 0.107	1.373± 0.108†	1.560 ± 0.105†	1.778 ± 0.094*	2.178 ± 0.087**	4.453 ± 0.222**

Values are expressed as Mean ± SEM.
† Non significant (P>0.05), * Significant (P<0.05), ** More significant (P<0.01)
n = 6, number of animals used in each group.

Graph no-1 Effect of Seed oil on rats for Analgesic activity

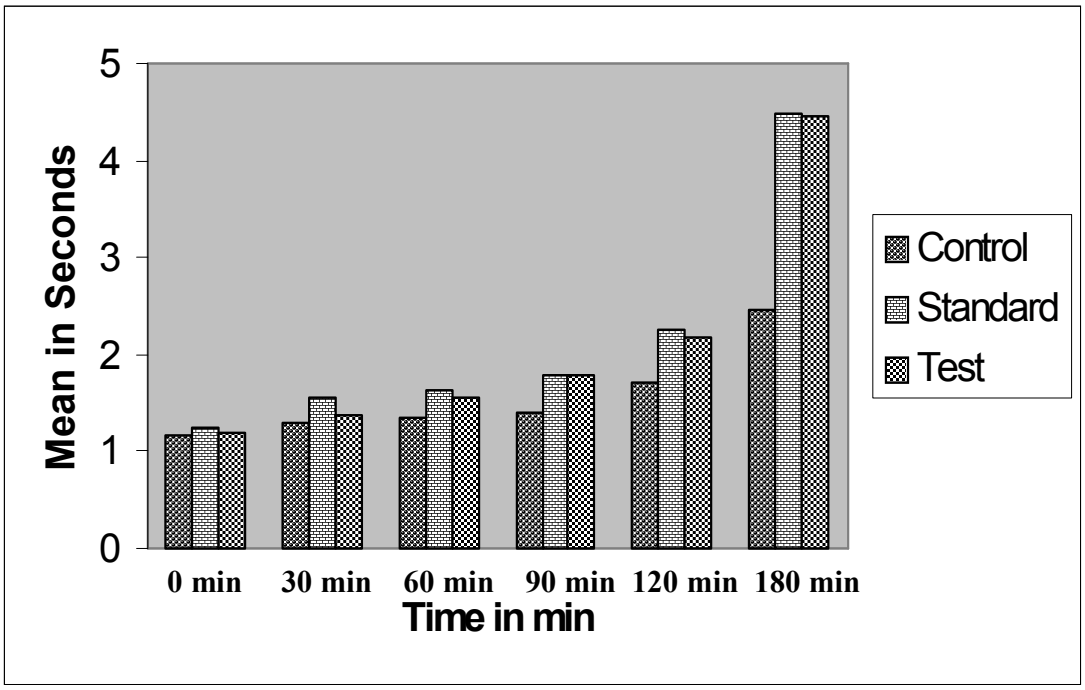
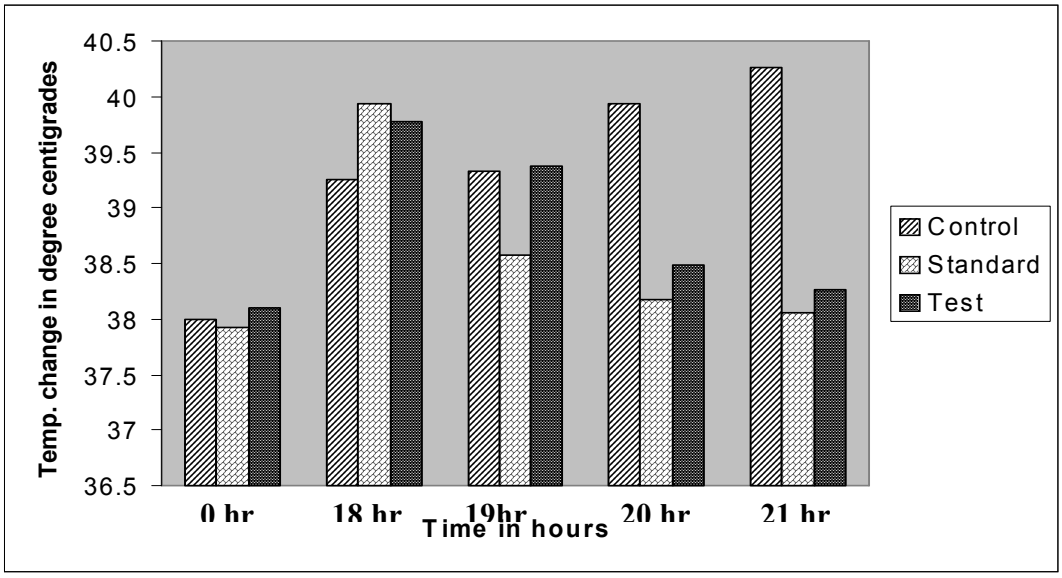


Table No-2 Effect of Seed oil and Paracetamol against brewer's yeast induced pyrexia in rats

Sr. No & Group	Initial Body Temp ± S.E.M	Temp after yeast administration after 18 hr ± S.E.M	Rectal Temperature changes ± S.E.M		
			19 hrs	20 hrs	21 hrs
1. Control	38.00 ± 0.139	39.25 ± 0.201	39.33 ± 0.355	39.93 ± 0.419	40.27 ± 0.374
2. Standard	37.92 ± 0.079	39.93 ± 0.307	38.58 ± 0.087*	38.17 ± 0.088**	38.05 ± 0.076**
3. Test	38.10 ± 0.085	39.77 ± 0.120	39.37 ± 0.061†	38.48 ± 0.157*	38.27 ± 0.120**

Values are expressed as Mean ± SEM.
† Non significant (P>0.05), * Significant (P<0.05), ** More significant (P<0.01)
n = 6, number of animals used in each group.

Graph no-2 Effect of Seed oil and Paracetamol against brewer's yeast induced pyrexia in rats



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