EVALUATION OF ANTI-PYRETIC ACTIVITY OF *TECOMARIA CAPENSIS* LEAVES

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Summary

The aim of the present study was to evaluate the potential antipyretic activity of *Tecomaria capensis* leaves extract (TCLE) using cow milk induced pyrexia models in rats. TCLE (100, 200 and 500 mg/kg p.o.) significantly reduce the pyrexia temperature which is induced by cow milk. TCLE at the dose of 500 mg/kg showed significant antipyretic activity compared to standard aspirin. These results show that TCLE presents significant antipyretic activity**.**

Keyword: Antipyretic, Tecomaria capensis, Fever

Introduction

Fever is defined as the elevation of core body temperature above normal; in normal adults, the average oral temperature is 37°C (98.6°F). In oncology practice, a single temperature of more than 38.3°C (101°F) or three readings (at least 1 hour apart) of more than 38°C (100.4° F) are considered significant. Lower temperature elevations in the very young or old and in patients receiving steroids or other immunosuppressants are considered abnormal. Fever of an unknown origin (FUO) is defined as a febrile illness lasting more than 3 weeks, with temperatures exceeding 38.3°C on several occasions, and lacking a definitive diagnosis after 1 week of evaluation in the hospital.[1] It is a well known fact that herbal medicines may be sources of substances with better therapeutic potentials than some currently used orthodox medicines.[2]

*Tecomaria capensis (*family: Bignoniaceae) also known as Cape-honeysuckle[3] is a fast growing, scrambling shrub which may grow up to 2-3m high and spread more than 2.5m. *Tecomaria capensis* is an evergreen plant in warm climate areas but loses its leaves in colder areas. It has pinnately compound leaves that have oval leaflets with blunt teeth. Flowering time for this shrub is very erratic and often it flowers all year round. Flowers are orange in color. Flowers are tubular and bird pollinated, attracting nectar-feeding birds, especially sunbirds. Plant is used as a traditional medicine to relieve pain and sleeplessness[4]. Dried powdered bark infusions are taken for sleeplessness[5], reported to induce sleep[6]. It included in the list of African plants evaluated for *in vitro* antiplasmodial activity against *Plasmodium falciparum*[7]. Powdered bark used for treatment of fever[8]. Thus, a study was made on the antipyretic effects of the plant *T*ecomaria capensis.

Materials and methods

Plant material

The leaves of *Tecomaria capensis* were collected from Jaipur, Rajasthan, India and a voucher specimen (RUBL 20847) for this plant material was preserved in the herbarium of Department of Botany, Rajasthan University, Jaipur. The leaves, dried in shade were powdered and subjected to soxhlet with methanol for 72 hr. The extract collected was evaporated (yield 26.66%. w/w), and stored in a vacuum desiccator. The preliminary phytochemical investigations (table 1) with the methanolic extract revealed the presence of flavonoids, flavones, phenolic compound, tannins, volatile oil, fixed oil, steroids, saponins, glycosides.

Drugs and chemical

The following drugs namely, Aspirin (Disprin) and chemicals, methanol (Merck) and acetic acid (Fisher Scientific) were used during the experimental study.

Animals

Albino rats of either sex (150–200 g) were used for the experimental study. The animals were maintained under standard husbandry conditions in polypropylene cages and provided with food and water ad libitum. The animals were kept on fasting overnight prior to the experimentation and all the procedures used in these studies were approved by the Institutional Animal Ethics Committee.

Acute toxicity studies

The acute toxicity was performed according to OECD 423, 2001[9].The selected female albino rats were used to determine the dose. The animals were divided into four groups of three in each. The animals were fasted overnight prior to the acute experimental procedure. Distilled water was used as vehicle to suspend the extracts and administered orally as following doses – 100, 300, 1000 and 2000 mg/kg body weight. Immediately after dosing, the animals were observed continuously for first four hours for behavioral changes and for mortality at the end of 24hrs and daily for 14 days respectively.

The toxicity study showed that the methanolic extract of drug at a minimum dose of 100mg/kg onwards shows the reaction in experimental animals. However, no mortality was reported even after 14 days. This indicates that the methanolic extract is safe up to a single dose of 2000 mg/kg body weight.

Boiled cow milk induced pyrexia

Before experimentation rectal temperature of rabbits were recorded by inserting a well lubricated bulb of a thermometer in the rectum. Care was taken to insert it to the same depth each time (about 6 cm). Milk was collected from local cow had been boiled. When temperature of the boiled milk equilibrates to room temperature then rabbits were injected boiled milk at the dose of 0.5 ml/kg body weight, to induce pyrexia. Induction of fever was taken about one to two h. Then solvent (2 ml) was given on negative control group. Reference Aspirin 100 mg/kg, TCLE 100 mg/kg, TCLE 200 mg/kg and TCLE 500 mg/kg given orally. Intraperitoneal route was used to administer boiled milk. Finally, rectal temperatures were recorded 1 h intervals up to 3 h[10,11].

Statistical analysis

Results are expressed as mean±SD. Statistical significance was determined by using the one way analysis of variance (ANOVA) followed by Boneferroni's multiple comparison test. $P < 0.05$ was considered statistically significant.

Result & Discussion

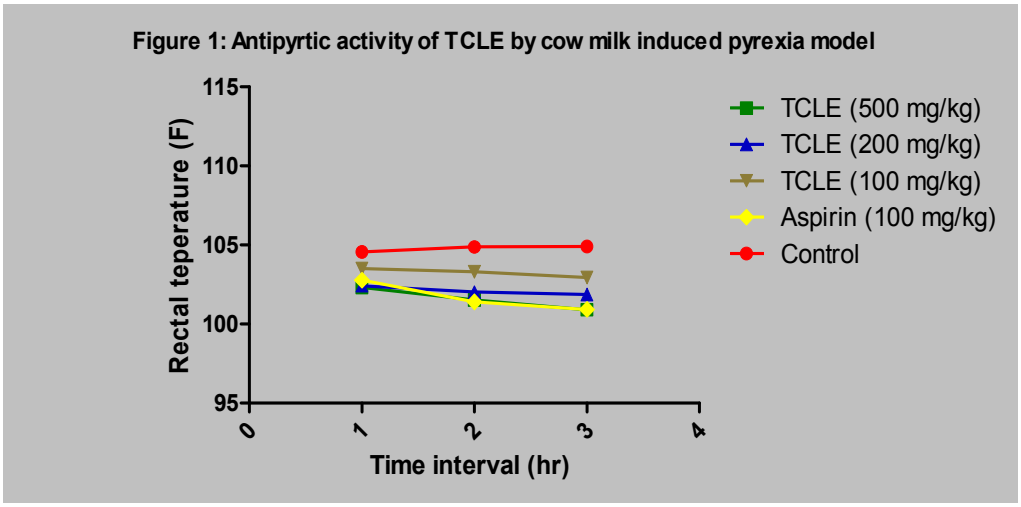
Boiled cow milk induced pyrexia

TCLE given very good antipyretic activity and Results are given in (Table 1). Aspirin 100 mg/kg, TCLE 100 mg/kg, TCLE 200 mg/kg, TCLE 500 mg/kg reduced the rabbit body temperature significantly. TCLE 500 mg/kg given equivalent or slightly more significant compare to aspirin. It was also observed that solvent have no effect on the reduction of pyrexia of rabbit.

Table 1: Antipyretic activity of TCLE by using aspirin as a standard drug

s. no.	Group/ Dose	Rectal temperature (^{0}F)		Rectal temperature after drug administration (^{0}F)		
		Normal	After 3 hr of milk admin.	1 hr	2 hr	3 hr
1.	Control	100.48±0.08	104.18±0.15	104.55±0.18	104.88±0.18	104.9±0.22
2.	STD (Aspirin 100 mg/kg)	100.45±0.05	104.2±0.25	102.78±0.08**	101.4±0.45**	100.93±0.45**
3.	TCLE (100 mg/kg)	101.5±0.16	104.4±0.16	103.5±0.16*	103.3±0.12*	102.95±0.11**
4.	TCLE (200 mg/kg)	100.5±0.08	103.78±0.08	102.43±0.15**	102.03±0.13**	101.88±0.13**
5.	TCLE (500 mg/kg)	100.8±0.31	104.25±0.18	102.3±0.29**	101.53±0.28**	100.9±0.32**

All values are expressed as mean±SD (n = 4), * $P < 0.05$ significant compared to control.



Antipyretic, such as paracetamol, aspirin, nimusulide etc. have toxic effect to the various organs of the body[12]. There is need of some herbal plants which can be used as antipyretic. Therefore present study were done by us and we found that TCLE have potent antipyretic activity.

Conclusion

Herbal drugs are the option of treatment of disease which carries less side-effect and toxicity. TCLE were given very significant results for antipyretic activity in this study. Further research on antipyretic activity of *Tecomaria capensis* may be helpful in treatment of fever with less side effect and toxicity.

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