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In vivo antipyretic activity of *Scutia myrtina* acute oral toxicity study

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Abstract---Pyrexia or Fever is defined as an elevation of body temperature. It is a response due to tissue damage, inflammation, malignancy or graft rejection. Cytokines, interleukin, interferon and Tumor Necrosis Factor α (TNF- α) are formed in large amount under this condition, which increase PGE2 which in turn triggers hypothalamus to elevate body temperature. The present investigation it may be concluded that the hydroalcoholic extract of leaves of *Scutia myrtina* has antipyretic activity. It is tested by in vivo method by using rat. In this study the hydroalcoholic extract contain fever reducing activity.

Keywords---pyrexia, antipyretic, hydroalcoholic.

Introduction

Scutia myrtina is a variable plant that may grow as a shrub or tree of 2-10 m tall with trunk diameter to 30 cm or often a scandent liane, climbing by means of thorns. Older bark is dark, corky and longitudinally fissured [1,2]. Younger growth is hairy and branchlets green and angular. Pyrexia or Fever is defined as an elevation of body temperature. It is a response due to tissue damage, inflammation, malignancy or graft rejection. Cytokines, interleukin, interferon and Tumor Necrosis Factor α (TNF- α) are formed in large amount under this condition, which increase PGE2 which in turn triggers hypothalamus to elevate body temperature. [3,4].

Experimental Methods

Acute oral toxicity was conducted according to the method of Organisation for Economic Co-operation and Development. Hydroalcoholic extract of leaves of *Scutia myrtina* (5, 50, 300, and 2000 mg/kg) was administered orally for 4 days of six groups of rats (n=6) and the animals were kept under observation for mortality as well as any behavioral changes for evaluation of a possible anti-pyretic activity. On the basis of acute toxicity study, two tests were selected for the pharmacological screening on the basis of maximum tolerated dose limit (MTD), as there was no lethality observed up to 2000 mg/Kg. Finally, selected doses (2000 mg/kg) were chosen for further pharmacological studies. Body weights of the animals were recorded and they were randomly divided into 5 groups of 6 animals each as follows:

- Group I served as normal saline
- Group II served as control- animals were treated with yeast via subcutaneous injection (10ml/kg).
- Group III animals were administered with yeast (10ml/kg) and the standard drug paracetamol (150mg/kg b.w.), orally
- Group IV animals were administered with yeast (10ml/kg,) and with hydroalcoholic extract of leaves of *Scutia myrtina* (100mg/kg b.w.), orally
- Group V animals were administered with yeast (10ml/kg,) and with hydroalcoholic extract of leaves of *Scutia myrtina* (200mg/kg b.w.), orally.



Fig 1. Images during experimental work

Yeast induced pyrexia

Pyrexia was induced by subcutaneous injection of 20 % w/v of brewer's yeast (10ml/kg) in distilled water. Basal rectal temperature was measured before the injection of yeast, by inserting digital clinical thermometer to a depth of 2 cm into the rectum. The rise in rectal temperature was recorded 18 h after yeast injection. Paracetamol 150mg/kg body weight was used as the standard antipyretic drug. Rectal temperature of animals was noted at regular intervals following the respective treatments. The temperature was measured at 1st, 2nd, and 3rd hour after drug administration

Results and Discussion

Results of acute toxicity studies

The acute oral toxicity study was carried out according to OECD 423 guidelines. Four ranges of dose were used for toxicity studies, i.e 5mg/Kg, 50 mg/Kg, 300 mg/Kg, 2000 mg/Kg. animals were observed individually for next 4 hours after dosing for the presence of mortality during this period and 72 hours after sample administration.

Table 1
Results of acute toxicity studies

S. No.	Groups (Body weight)	Observations/Mortality
1.	Normal	0/3
2.	Control	0/3
3.	Standard	0/3
4.	Extract 100mg/kg b.w	0/3
5.	Extract 200mg/kg b.w	0/3

In case of acute oral toxicity study when animals were treated with 5, 50, 300, and 2000 mg/kg b.w. of dose for 72 hour. There was no mortality and any behavioral changes so dose decided will be chosen as, 100 and 200 mg/kg b.w on the basis of acute toxicity study.

Results of antipyretic activity of *Scutia myrtina* against yeast induced pyrexia in rats

Table 2
Results of antipyretic activity of *Scutia myrtina* against yeast induced pyrexia in rats

Rectal Temperature in °C after 18hrs of Yeast Injection				
Group	0 hr	1 hr	2 hr	3 hr
Group I (Normal Control)	37.50±0.80	37.40±0.70	37.60±0.6	37.10±0.70
Group II	41.60±0.10	40.50±0.10	39.70±0.11	39.50±0.11

(Control yeast via subcutaneous injection (10ml/kg))				
Group III Standard drug paracetamol (150mg/kg b.w.)	39.90±0.12	38.70±0.12	38.10±0.12*	37.30±0.11*
Group IV (Hydroalcoholic extract of leaves of <i>Scutia myrtina</i> (100mg/kg b.w.))	40.10±0.12	39.30±0.12	38.70±0.11	38.20±0.11*
Group V (Hydroalcoholic extract of leaves of <i>Scutia myrtina</i> (200mg/kg b.w.))	40.50±0.12	39.30±0.12	38.20±0.12*	37.60±0.11*

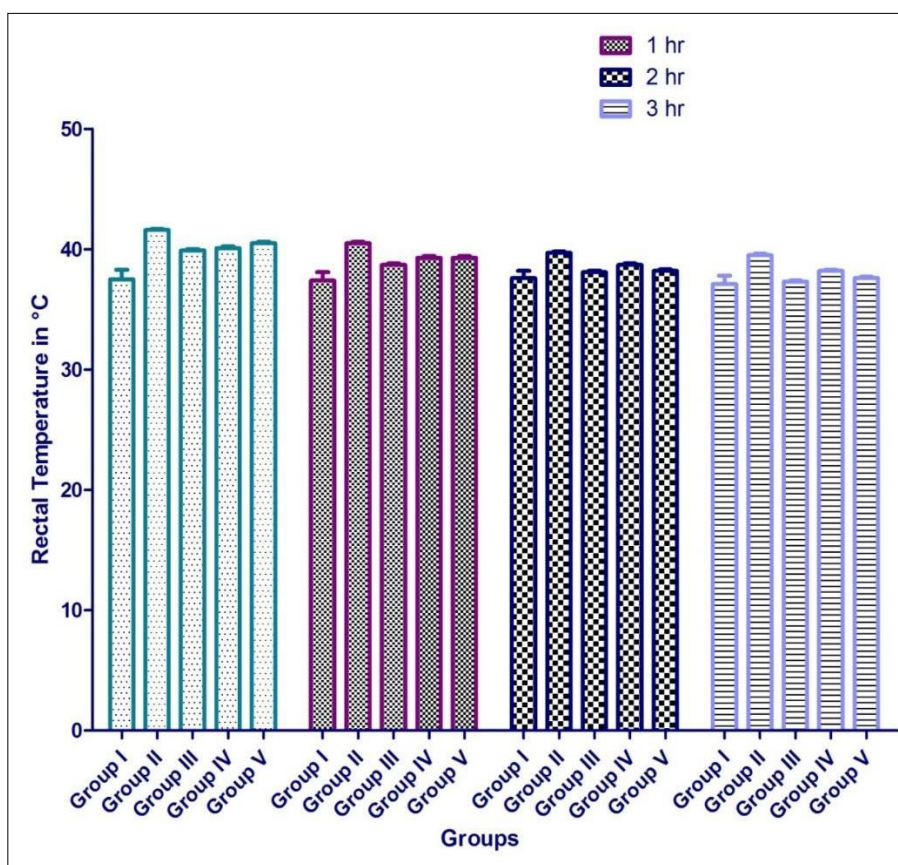


Fig 2. Antipyretic activity of hydroalcoholic extract of leaves of *Scutia myrtina* against yeast induced pyrexia in rats

Conclusion

The present investigation it may be concluded that the hydroalcoholic extract of leaves of *Scutia myrtina* has antipyretic activity. It is tested by in vivo method by using rat. In this study the hydroalcoholic extract contains fever-reducing activity.

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