

Anti pyretic effect of *Rosa alba* in the attenuation of pyrexia induced by brewer's yeast

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ABSTRACT

Aim of the present study is to evaluate the anti Pyretic effect of hydro alcoholic extract of *Rosa alba* in rats. *Rosa alba* (Rosaceae) is one of the plants used by traditional healers as a remedy for fever but scientifically there is no evidence that plant *Rosa alba* used in pyrexia. Rats weighing between 200-250gms were divided into six groups of six animals each, with 50% sex ratio. The initial rectal temperature of each animal was recorded by digital thermometer and its hourly variation was noted for 3 hours. The pyrexia was induced by injecting a suspension of 15% of brewer's yeast, of paracetamol (150mg/ kg body weight, P.O.), and test dose of *Rosa alba* (100mg/kg & 200mg/kg was given in oral route to check the pyretic action. Traditionally it is used as a Palpitation of heart, cooling medicine, Laxative, Treatment of cold and cough. In the present study the hydro alcoholic extract of the *Rosa alba* were studied for their antipyretic activity by Brewer's yeast-induced pyrexia in rats. It was observed that the hydro alcoholic extract produced significant antipyretic activity ($p < 0.05$). The extract showed marked antipyretic activity in a dose dependent manner.

Key words: *Rosa alba*, brewer's yeast-induced, pyrexia.

1. INTRODUCTION

A fever is a raising of the body temperature above the normal level and can be caused by many different things. While there are no strict rules, a fever is generally considered to be a temperature above 37.2°C in the morning or 37.8°C at other times of the day. When someone is suffering from a fever they are sometimes said to be 'febrile'. When the body temperature rises above the normal level of 37 C if measured in the mouth, or 37.7 C if measured in the rectum. Fever (also known as pyrexia^[1]) is a common medical sign characterized by an elevation of temperature above the normal range of 36.5–37.5 °C (98–100 °F) due to an increase in the body temperature regulatory set-point^[2]. This increase in set-point triggers increased muscle tone and shivering. As a person's temperature increases, there is, in general, a feeling of cold despite an increasing body temperature. Once the new temperature is reached, there is a feeling of warmth. A fever can be caused by many different conditions ranging from benign to potentially serious. There are arguments for and against the usefulness of fever, and the issue is controversial. With the exception of very high temperatures, treatment to reduce fever is often not necessary;

however, antipyretic medications can be effective at lowering the temperature, which may improve the affected person's comfort. A wide range for normal temperatures has been found^[3]. Fever is generally agreed to be present if the elevated temperature is caused by a raised set point and

- Temperature in the anus (rectum/rectal) is at or over 37.5–38.3 °C (99.5–100.9 °F)^{[1][5]}
- Temperature in the mouth (oral) is at or over 37.7 °C (99.9 °F)^[4]
- Temperature under the arm (axillary) or in the ear (otic) is at or over 37.2 °C (99.0 °F).

Aim of the present study is to evaluate the anti diabetic effect of ethanolic extract of *Rosa alba* in rats. *Rosa alba* is one of the plants used by traditional healers as a remedy for cooling medicine in fever. But scientifically there is no evidence that plant *Rosa alba* used in fever^[5].

2. MATERIALS AND METHODS

2.1. Plant material

Table no.1: Antipyretic effect of *Rosa alba* plant hydro alcoholic extract on Adult albino rats

| Treatment | Dose | Initial Temp. | Rectal Temperature In Oc After 19hrs Of Yeast Injection | | | |
|------------------------|-----------|---------------|---|--------------|---------------|---------------|
| | | | 0hrs | 1hrs | 2hrs | 3hrs |
| Control | — | 37.64 ± 0.1 | 41.97 ± 0.11 | 41.48 ± 0.17 | 40.21 ± 0.14 | 39.13 ± 0.17 |
| Standard | 150 mg/kg | 37.21 ± 0.2 | 40.39 ± 0.18 | 39.65 ± 0.17 | 38.46 ± 0.09* | 37.87 ± 0.18* |
| Hydroalcoholic extract | 100 mg/kg | 37.91 ± 0.4 | 40.61 ± 0.14 | 39.68 ± 0.19 | 39.11 ± 0.24 | 38.67 ± 0.12 |
| Hydroalcoholic extract | 200 mg/kg | 37.30 ± 0.4 | 40.57 ± 0.11 | 39.03 ± 0.12 | 38.01 ± 0.14* | 37.93 ± 0.17* |

n = 6 in each group, "*" indicate P < 0.01 compared to control

Data was expressed as mean ± standard error of mean. . The results were analyzed statistically by ANOVA is followed by Dunnet's test [5]. The results of experiments by proper statistical analysis as stated above are tabulated in table. no.1

The flowers of *Rosa alba* used in the present study was collected from the natural habitat in and around Guntur.

2.2. Extraction

The collected flowers will be cleaned, dried in the shade and ground into a fine powder from which 500g will be used for extraction with ethanol by adopting simple maceration procedure at room temperature for 7 days in a conical flask with occasional shaking and stirring. The extracts will be filtered using whatman filter paper (no.1) and concentrated in vaccum at 40°C using a rotary evaporator and the residues obtained will be stored in a freezer at -80°C until further tests. The plant material is defatted by using petroleum ether or hydrochloric acid [7].

2.3. Experimental animals

All animals will be housed at ambient temperature (22±1°C), relative humidity (55±5%) and 12/12 h light/dark cycle. Animals had access to standard pellet diet and water given *ad libitum*. The experimental will be approved by our institutional ethical committee following the guide lines of CPCSEA.

2.4. Induction of pyrexia

Pyrexia was induced in male Wistar rats by 15% w/v suspension of brewer's yeast was prepared with normal saline.

2.5. Antipyretic studies (Brewer's yeast induced hyperpyrexia method):

Animals of either sex were divided in to four groups containing six in each group for this experiment. The normal body temperature of each rat was measure rectally at one hour interval on a thermometer and recorded. The antipyretic activities of extract were evaluated using Brewer's yeast induced pyrexia in Wister rats [7]. Before

yeast injection the basal rectal temperatures of rats was recorded and after recording animals were given subcutaneous injection of 10 ml/ kg of 15 % w/v yeast for elevation of body temperature of rats. Rats were then returned to their housing cages. At the 19hrs after yeast injection, the vehicle, standard drug and test drugs were administered in to different groups. Vehicle was administered orally to the control groups of animals and Paracetamol at dose of 150mg/kg was administered orally to standard group of animals. The hydro alcoholic extract of *Rosa alba* plant was administered orally at a dose of 100 mg/kg and 200 mg / kg of body weight to two groups of animals respectively. Rectal temperature was recorded by clinical thermometer at 0,1,2 3hrs after drug administration and tabulated in table no.1

3. RESULTS AND DISCUSSION

The present results showed that the hydro alcoholic extract of *Rosa alba* plant possesses a significant antipyretic effect in yeast induced elevation of body temperature in experimental rats. It was revealed that the extract showed dose dependent antipyretic activity. At a dose of 200mg/kg it showed significant antipyretic activity. From this, normalization of body temperature was maintained sufficient periods of time. Hydro Alcoholic extract produced significant antipyretic activity (P < 0.01). In general, non-steroidal anti-inflammatory drugs produce their antipyretic action through the inhibition of prostaglandin synthetase within the hypothalamus. Therefore, the antipyretic activity of hydro alcoholic extract of *Rosa alba* is probably by inhibition of prostaglandin synthesis in hypothalamus. Further hydro alcoholic extract was found to contain carbohydrates, alkaloids, glycosides, flavonoids and tannins, through preliminary photochemical screening. Flavonoids are known to target prostaglandins which are involved in the pyrexia. Hence the presence of

flavonoids in the hydro alcoholic extract of *Rosa alba* plant may be contributory to its antipyretic activity.

5. CONCLUSION

In the present study *Rosa alba* in low to moderate doses possess anti pyretic effect. Pre and concurrent treatment of mild and moderate doses of RAFE (100 mg/kg) and RAFE (200 mg/kg) respectively offers protects from pyrexia in dose dependant manner. However, high dose of RAFE 500 mg/kg was failed to prevent Pyrexia in Brewer's yeast induced rats. Therefore, *Rosa alba* flowers had provide beneficial effects at moderate doses. In conclusion, *Rosa alba* was found to be effective in normalizing the prostaglandins and hence having anti pyretic action.

6. REFERENCES

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