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A Study on Antipyretic Activity of *Adhatoda vasica* Nees Leaves' Methanolic Extract

	
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Keywords: *Adhatoda vasica nees.*, *acanthaceae*, *methanolic extract*, *antipyretic activity*, *brewer's yeast*.

ABSTRACT

Objective – The only objective of this study was to find out whether *Adhatoda vasica Nees*. which belong to the family *acanthaceae*, shows antipyretic activity or not. **Materials & Methods** - The Methanolic extract of *adhatoda vasica* was used for the study and evaluated to find antipyretic activity by using Brewer's yeast induced pyrexia in Wistar strain albino rats. The methanolic extract was evaluated for antipyretic activity at a dose of 100 mg/kg & 200 mg/kg. **Result** - The extract of *Adhatoda vasica* plant showed a significant ($P < 0.01$) dose dependent antipyretic effect in yeast induced elevation of body temperature in experimental rats. **Conclusion** - The Methanolic extract of *Adhatoda vasica nees*. Plant has shown effective antipyretic activity when compared to the standard drug.

INTRODUCTION

Adhatoda vasica is commonly known basok. It is usually found around Indian subcontinent in a huge number. It grows on moist and flat places. The plant is almost 1-2 meter long. Spear shaped leaves have notable size. The flowers are whitish with purple marks. The round shaped fruits are filled with seeds. The root, bark, leaves, flower can come handy in different treatments. The leaves contain vasisini, a basic compound. Basok is famous in alternative medicines as it keeps the respiratory system clear. It is very effective in flux, cough and inflammation of respiratory system. But nausea and vomiting can occur if it is intaken in a large amount. It is widely used in alternative medicines in and against asthma, fever, jaundice, itching and UTI.

MATERIALS AND METHODS

The *Adhatoda vasica nees* was collected from the rural area Beanibazar of the district Sylhet in Bangladesh. It was authenticated at the Department of Biology, University of Dhaka, Bangladesh. The leaves were dried properly under shade and by using mechanical process these leaves were converted into powders. The powder is stored in an airtight container for further studies. **Preparation of Extract and Dose:** To prepare 500 mg extract of the powdered leaves, it was charged into Soxhlet's apparatus (hot extraction) and respectively with petroleum ether (60-80°C), chloroform, ethyl acetate and methanol in order to increase the polarity. To get a solid mass the methanolic extract was filtered and dried less pressure. The yield was 6.9% with respect to dry starting materials with characteristic odor & greasy consistency.

In this study, Propylene glycol was used as vehicle, propylene glycol suspended paracetamol was used as standard drug and Propylene glycol suspended methanolic extract was used as test drug. **Preparation of fever inducing agent:** 0.5 % methyl cellulose solution was prepared in normal saline and 15% of yeast was suspended in this prepared 0.5 % w/v methyl cellulose solution.

Animals: Healthy albino rats (Wistar strain) weighing 150–180 gm of either sex were used in this study. The animals were kept in clean aluminum cages with nutritional and environmental condition for an acclimatization periods of 7 days before the experiment. The animals were allowed free access to rat feeds and clean tap water.

The study was carried out according to the guidelines of European Convention for the protection of Vertebrate animals and other scientific purposes-ETS-123(2005)

Antipyretic studies (Brewer’s yeast induced hyperpyrexia method): Four groups of six animals of either sex were taken for this study. The normal temperature of body of every rat was measured rectally after every one hour and these were recorded. Brewer’s yeast induced pyrexia method was used to evaluate the antipyretic activities of extract in Wister rats. Before yeast injection, the basal rectal temperature of rats was recorded and after recording, animals were given subcutaneous injection of 10ml/ kg of 15% w/v yeast suspended in 0.5% w/v methyl cellulose solution to elevate the body temperature of rats. Then again the rats were kept in their cages. After 18 hours of yeast injection, the vehicle, standard drug and test drugs were administered into different groups. 5ml/kg Propylene glycol was administered orally to the control groups of animals and 150mg/kg Paracetamol was administered orally to standard group of animals. 100mg/kg and 200mg/kg of the methanolic extract of *Adhatoda vasica* leaves was administered orally to two groups of animals respectively. Finally, rectal temperatures of the rats were recorded by clinical thermometer at 0,1,2,3 hours after drug administration and tabulated in table no.1.

Table no.1: Antipyretic effect of *Adhatoda vasica* leaves’ Methanolic extract on Adult albino rats

Group	Treatment	Dose	Initial Rectal Temp. in °C before Yeast Injection	Rectal Temperature in °C after 18hrs of Yeast Injection (Mean ± SEM)			
				0hr	1hr	2hrs	3hrs
I	Control Propylene Glycol	5ml/kg	37.65±0.1	40.92±0.11	40.47±0.17	39.22±0.14	39.12±0.16
II	Standard Paracetamol	150 mg/kg	37.22±0.2	40.42±0.19	38.67±0.17	38.47±0.09*	37.87±0.18*
III	Methanolic Extract	100 mg/kg	37.73±0.4	40.60±0.14	39.62±0.19	39.14±0.24	38.67±0.12
IV	Methanolic Extract	200 mg/kg	37.32±0.3	40.57±0.11	39.22±0.12	38.00±0.14*	37.92±0.16*

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

RESULTS

The effect of methanolic extract of *Adhatoda vasica* leaves on yeast induced pyrexia has been shown in table no.1. Treatment with doses of 100 mg/kg and 200 mg/kg of extracts and dose of 150mg/kg Paracetamol reduced body temperature of yeast induced rats. The obtained results of both standards and extracts treated groups were compared with the control group. The results show a significant reduction in the yeast elevated rectal temperature in the test drug.

DISCUSSION

The results that are achieved have shown that the methanolic extract of *Adhatoda vasica* leaves bears a significant antipyretic effect in yeast induced elevation of body temperature in experimental rats. The results have 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. Flavonoids are known for targeting prostaglandins which are involved in the pyrexia. Hence the presence of flavonoids in the methanolic extract of *Adhatoda vasica* leaves may have a contribution to its antipyretic activity.

CONCLUSION

Hence from the present study, the inference may be drawn as the methanolic extract of *Adhatoda vasica* leaves have antipyretic activity.

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