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Research Article

Analgesic Activity of *Holarrhena antidysenterica* (Apoynaceae) Bark

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Abstract
The study was carried out using either sex of Swiss albino mice (20-25 g) & wistar rats (200-250g). The methanolic extract of *Holarrhena antidysenterica* was investigated for analgesic activity using hot plate method & Tail Flick method. The ME of *Holarrhena antidysenterica* bark was used in pain model. The analgesic activity of *Holarrhena antidysenterica* at the dose of (200, 400, 600 mg/kg p.o) showed significantly ($p<0.05$) increase in mean basal reaction time in Hot plate method & increase in latency to flick tail ($p<0.05$) compared with control group of animals. The ME of the *Holarrhena antidysenterica* has significant analgesic activity in mice & rats.
Keywords: *Holarrhena antidysenterica*, Analgesic, Methanolic extracts

INTRODUCTION

Holarrhena antidysenterica commoly known as kurchi, is a rasayana herb used in Indian system of medicine[1]. Bark of *Holarrhena antidysenterica* is used in Ayurveda as an anti- microbial, anti inflammatory & analgesics[1-3]. The study was undertaken to evaluate the analgesic properties of methanolic extract of *Holarrhena antidysenterica* ineither sex swiss albino mice & either sex wistar rats at three different doses.

MATERIALS AND METHODS

Preparation of Methanolic Extract: The powder of Bark of *Holarrhena antidysenterica* was obtained from the Ayurvedic college, Nadiad 397001. About 100 gm of the powder was subjected to cold maceration for 12 hours using 200 ml of methanol as a solvent. The extract was made free from solvent by keeping it at room temperature. The yield was obtained about 4.7%.

Animals: Either sex of Wistar rats (100-150 gm) &were Either sex of swiss albino mice (20-25 gm) obtained from the zydus health care center moraiya, ahmedabad. Animals were housed at an ambient temperature of 25 ± 1^0C with the free access to food and water at our institute animal house (Reg No. 1338/c/10/CPCSEA). They were acclimated to animal house conditions, fed with commercial pelleted rats chow and had free access to water. The experimental protocol was approved by the IAEC (Institutional Animal Ethical Committee) of CPSEA.

Drugs:ME of *Holarrhena antidysenterica* at three different doses (200, 400, 600 mg/kg p.o.) was used. The animals were received standard pentazocine 17.5 mg/kg for tail emersion method & Standard Aspirin 20 mg/kg, p.o for Hot plate method in present study.

Hot plate Method: [4]

Procedure: The animals were pretreated with drugs 60 minutes before experimentation. They were placed on a hot plate maintained at a temperature of 55 ± 0.5 ^{0}c. The latency to flick the hind paw or lick or jump from the hot plate was the reaction time. The reaction time was noted at 0, 15, 30, 45, 60, 90, 120 min. The cut off time was considered as 15 seconds.

Experimental protocol: The either sex wistar rats were dividing into five groups each composed of six animals.
Group I: Control animals received standard chow & Water
Group II: Standard Aspirin 20 mg/kg, p.o.
Group III: Animals received Methanol extract at the dose of 200 mg/kg p.o.
Group IV: Animals received Methanol extract at the dose of 400 mg/kg p.o.
Group V: Animals received Methanol extract at the dose of 600 mg/kg p.o.

Tail emersion method[4]:

Procedure: The animals were pretreated with drugs 60 minutes before emersion of tail. The distal 2-3 cm portion of mice tail was immersed in hot water maintained at temperature 55 ± 0.5 ^{0}c [4] the time taken by the mouse to withdraw the tail was noted as reaction time. The cut off time was considered as 10-12 sec.

Experimental protocol: The either sex wistar rats were dividing into five groups each composed of six animals.
Group I: Control animals received standard chow & Water.
Group II: Standard Pentazocine 17.5 mg/kg.
Group III: Animals received Methanol extract at the dose of 200 mg/kg p.o.
Group IV: Animals received Methanol extract at the dose of 400 mg/kg p.o.
Group V: Animals received Methanol extract at the dose of 600 mg/kg p.o.

RESULTS

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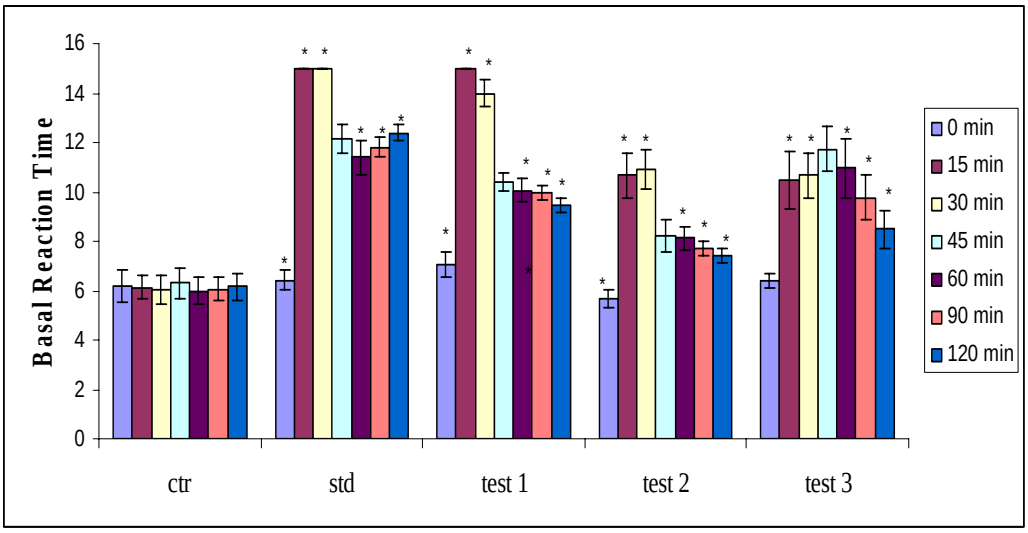

Figure 1: Effect of ME *Holarrhena antidysenterica* (200, 400, 600 mg/kg) on mean basal reaction time by hot plate method in mice.

The observations are mean±SEM *p < 0.05 as compared to control (ANOVA followed by Dunnett's test).

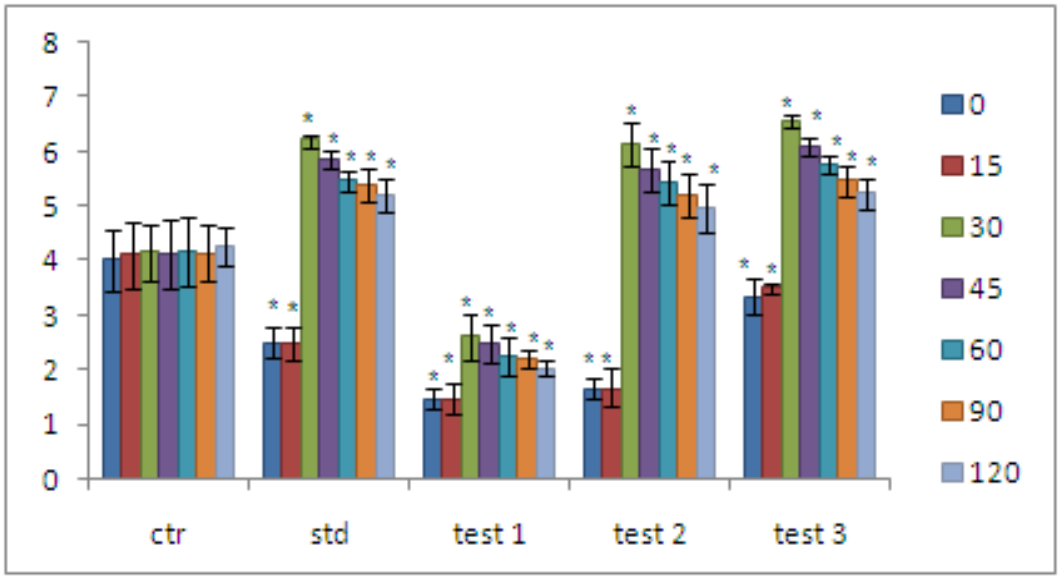

Figure 2: Effect of ME *Holarrhena antidysenterica* (200, 400, 600 mg/kg) on latency to flick tail by tail immersion method.

The observations are mean±SEM *p < 0.05 as compared to control (ANOVA followed by Dunnett's test).

Hot plate Method: The methanolic extract of *Holarrhena antidysenterica (200, 400, 600 mg/kg)*showed significant increase in mean basal reaction time compared with control group of animals. The highest nociception inhibition of stimulus by ME of *Holarrhena antidysentericaI* (600 mg/kg) was observed at 15 minutes (Figure 1).

Tail immersion method:

The methanolic extract of *Holarrhena antidysenterica (200, 400, 600 mg/kg)* showed significant increase in latency to flick tail (p < 0.05) compared with control group of animals. The highest nociception inhibition of stimulus by ME of *Holarrhena antidysentericaI* (600 mg/kg) was observed at 30 minutes (Figure 2).

DISCUSSION

According to the primary phytochemical screening of the ME of the *Holarrhena antidysenterica* show the presence of the Alkaloid, Tannins & Flavanoids thus, the activity of the *Holarrhena antidysenterica* could be due to the same components.

The ME of the *Holarrhena antidysenterica* did not show any toxicity and behavioral changes in rats up to 3000 mg/kg hence doses of 200, 400 & 600 mg/kg p.o. were selected for the present study[5] . The analgesic effect of ME of *Holarrhena antidysenterica* in various models for pain were found to be analogues. The stimulus may be thermal as by hot plate method & Tail flick method. The hot plate method has been found to be suitable for evaluation of the centrally acting analgesics[6]. The nociceptors seem to be sensitized by sensory nerves. The

involvement of endogenous substances such as PGs may be minimized in this models. In centrally acting analgesic methods, the drugs in all the three doses used in present study were found to be significantly effective & also supported with evaluation by Tail flick method .

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