



ARTICLE

Evaluation Of Antidiarrheal Activity Of Aqueous Extract Of Leaves Of *Melia Azedarach* (Linn.)

Balekar N.¹ and Patidar H.^{1*}

¹College of Pharmacy, IPS
Academy, Rajendra Nagar, A.B.
Road, Indore-452012, India

Abstract

The aim of this work was to investigate the antidiarrheal activity of the aqueous extract of leaves of *Melia azedarach* (Meliaceae) in rats. Albino wistar rats weighing 120-200 gm of either sex were used. The aqueous extract yield was 8.7%, which produce no mortalities in rats up to 5 g/kg, therefore it is well tolerated and relatively safe by oral route. The effects of the aqueous extract of *Melia azedarach* leaves on castor oil induced diarrhea and gastrointestinal motility test using charcoal meal methods were examined. The effect of extract at different doses (50, 100, 200 and 500 mg/kg, p.o.) was assayed on the latent periods, fecal frequencies in castor oil induced diarrhea, and then confirmed at two doses (200 and 500 mg/kg) on gastrointestinal transit using charcoal meal.

The results revealed a significant ($p < 0.05$) reduction of the fecal output in castor oil induced diarrhea. The percent reduction in diarrheal episode were 42.70%, 46.03%, 64.32% and 73.52% at doses of 50 mg/kg, 100 mg/kg, 200 mg/kg and 500 mg/kg body weight of the extract respectively after castor oil challenge. The extract was also found to reduce the gastrointestinal motility by 47.46 %, and 39.41 % at doses of 100 mg/kg and 200 mg/kg, peristaltic movements in charcoal meal test, indicating its antidiarrheal activity. The results provide evidence that the aqueous extract of *Melia azedarach* leaves possess antidiarrheal activity. The results indicated that the aqueous extract possesses antidiarrheal activity.

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1 | INTRODUCTION

Melia azedarach Linn. commonly known as Bakayan is frequently used as a folk remedy

as antibacterial, antimicrobial, antifeedant, and antiviral. Hence this study was aimed to investigate antidiarrheal activity of leaves of *Melia azedarach* on castor oil induce diarrhea and gastrointestinal motility test using is charcoal meal in rats.

2 | OBJECTIVE

The objective of the present investigation is to evaluate the antidiarrheal activity of leaves of *Melia azedarach* (Linn.) in rats.

3 | EXPERIMENTAL METHOD

Castor oil-induced diarrhea: Rats were fasted for 18 h and divided into six groups of four animals each. Castor oil at a dose of 2 ml/animal orally, was given to all groups of animals for the induction of diarrhea. One hour before castor oil administration, the first group (control group) received vehicle (0.5% tween 80), while the second, third, fourth and fifth groups were given aqueous extract at doses of 50, 100, 200 & 500 mg/kg body weight respectively by oral route. The fifth group received the reference drug, loperamide (3 mg/kg body weight) Animals of all groups were placed separately in individual metallic cages. Total no of faeces, total no of diarrheal faeces and total weight of faeces were recorded every hour and the severity of diarrhea was assessed hourly for six hours.

Gastrointestinal motility test: This experiment was done by using charcoal meal as a diet marker. The rats were divided into four groups of five animals each and fasted for eighteen hours before the experiment. The first group (the control group) was orally administered the vehicle (0.5% tween 80),

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Corresponding Author: Patidar H.

College of Pharmacy, IPS Academy, Rajendra Nagar,
A.B. Road, Indore-452012, India
Email:

the second and third groups orally received aqueous extract at doses of 100 & 200 mg/kg body weight respectively. The fourth group received the standard drug, atropine sulphate (5 mg/kg i.p.). Thirty minutes later each animal was given 1 ml of charcoal meal (10% activated charcoal in 5% gum acacia) orally. Each animal was sacrificed thirty minutes after administration of charcoal meal. The distance covered by the charcoal meal in the intestine was expressed as a percentage of the total distance traveled from the pylorus to the caecum.

4 | RESULT AND DISCUSSION

The percentage yield of aqueous extract was found to be 8.7 %. The aqueous extract showed the presence of alkaloids, saponins, carbohydrates, steroids, flavonoids, glycoside, tannins and phenolic compounds, amino acid, protein and fats, and terpenoids.

Castor oil induce diarrhea: Pretreatment of rats with aqueous extract of *Melia azedarach* (50,100,200,500 mg/kg) dose dependently and significantly ($p < 0.05$) delay the onset of diarrhea, reduces the frequency of defecation and the total no. of diarrheal faeces.

Gastrointestinal Motility Test: Aqueous extract of *Melia azedarach* also reduce intestinal transit as observed by the decrease s in the transit as motility of charcoal meal. This may be due to fact that the extract may increase the reabsorption of water by decreasing intestinal motility as observed in the decrease of intestinal transit by charcoal meal.

Above observation suggests that the extract in graded doses reduces diarrhea by inhibiting peristalsis and gastrointestinal motility. It is equally effective in prevention and curing of diarrhea.

5 | CONCLUSION

In conclusion, the results of this investigation revealed that aqueous extract of *Melia azedarach* contains pharmacologically active substance (s) with antidiarrheal property. This provides the rationale for the use of the aqueous extract of *Melia azedarach* as

EVALUATION OF ANTIDIARRHEAL ACTIVITY OF AQUEOUS EXTRACT OF LEAVES OF *MELIA AZEDARACH* (LINN.)

TABLE 1: Effect of different aqueous extract of melia azedarach on castor oil induced diarrhoea

Group	Total No. of faeces	Total no. of diarrheal faeces	Total weight of faeces (g)	Inhibition (%)
Castor oil (2ml)+ Vehicle (0.5 % Tween 80)	10.33±0.623	7.708±0.843	6.408±0.166	-
Loperamide (3 mg/kg)+castor oil (2 ml)	5.283±0.369	2.510±0.359	2.766±0.333	67.43
Aqueous extract(50 mg/kg)+ castor oil (2 ml)	5.83±2.156	4.375±1.48	3.214±0.223	42.70
Aqueous extract(100 mg/kg)+ castor oil (2 ml)	6.547±0.343	4.208±0.416	3.354±0.28	46.03
Aqueous extract(200 mg/kg)+ castor oil (2 ml)	5.333±2.104	2.75±1.093	3.171±1.026	64.32
Aqueous extract(500 mg/kg)+ castor oil (2 ml)	4.875±1.322	2.041±0.685	3.37±0.537	73.52

TABLE 2: Effect of different aqueous extract of melia azedarach on gastrointestinal motility

Group	Total length of Intestine (cm)	Movement of charchol meal (cm)	% travel by charcoal meal
Vehicle (0.5% tween 80)	93.24±0.25	18.06±1.5	80.63
Atropine sulphate (5 mg/kg i.p.)	90.38±0.65	74.64±1.29	17.41
Aqueous extract (100 mg/kg)	92.16±2.56	48.42±1.2	47.46
Aqueous extract (200 mg/kg)	92.20±0.78	55.04±0.59	39.41

an antidiarrheal drug by traditional healers.

6 | BIBLIOGRAPHY

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