

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Antidiarrhoeal activity of bark extracts of *Limonia acidissima* Linn

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ABSTRACT

The antidiarrhoeal activity and gastrointestinal motility reducing activity of alcoholic and aqueous extract of bark of *Limonia acidissima* Linn, was evaluated at two dose levels. Both the extracts showed significant antidiarrhoeal activity and reduced the mean weight of faeces and reduced the gastrointestinal motility significantly.

Keywords: antidiarrhoeal, *Limonia acidissima*, GI motility

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INTRODUCTION

Limonia acidissima Linn (Rutaceae) locally known as wood apple is native and common in dry plains of India and Ceylon. It is also frequently grown throughout Asia tropical, Asia temperate, Southern America, northern malasia and on Penang Island. The fruit is much used in India as a liver and cardiac tonic, and, when unripe, as an astringent means of halting diarrhea and dysentery and effective treatment for hiccough, a useful remedy in salivation and sore throat and diseases of the gums. A decoction of the bark is effective for uterine disorders, bark cures bilious disorders. The gum is demulcent and constipating, and is used in treatment of diarrhoea, dysentery, gastropathy, hemorrhoids and diabetes. The gum can also be used as a soothing agent for skin and mucous membranes. Hence, the present work was undertaken to evaluate its potential antidiarrhoeal efficacy in Swiss albino Mice [1-8].

MATERIAL AND METHODS

Plant Material

The bark of *Limonia acidissima* Linn (Rutaceae). were collected in the month of August 2008 from the ABS Botanical Garden, Salem-Dist, Tamilnadu. The species for the proposed study was identified and authenticated as *Limonia acidissima*, Linn (Rutaceae). by Dr. P. Jayaraman, Botanist, Plant Anatomy Research Center (PARC), Chennai.

Preparation of Extracts

Preparation of the different extracts of *Limonia acidissima*, Linn (Rutaceae). powdered bark is done successively in a continuous soxhlet extractor with the following solvents. Alcohol and distilled Water. The yield of alcoholic and aqueous extracts was found to be 2.7 % and 5.7 % w/w respectively. Both the extracts revealed the presence of alkaloids, glycoside and triterpenoids. The extracts were stored in desiccators and used for further experiments.

Animals Used

Female wister rats for antidiarrhoeal activity and Wister rats of female sex weighing 140-180gms were used for acute toxicity. Animals were maintained under standard laboratory conditions. Study protocol was approved from the Institutional Animals Ethics Committee (IAEC).

ANTIDIARRHOEAL ACTIVITY

Gastrointestinal Motility Test

For gastrointestinal motility test, animals were divided into four groups of six rats in each group. The animals were divided into control and test groups containing six mice in each group. Control group received vehicle (1% Tween 80 in water) at a dose of 10 ml/kg body

weight orally. Positive control group received atropine sulphate at the dose of 100 µg/kg intraperitoneally, and test groups received the alcohol extract and aqueous extract at the doses of 200 mg/kg body weight orally respectively. After 30 min, mice of each group were fed with 1ml of charcoal meal (3% suspension of deactivated charcoal in 0.5% aqueous methyl cellulose). After 30 min of the administration of charcoal meal, the animals of each group were sacrificed and the length of the intestine (pyloric sphincter to caecum) as well as the distance travelled by charcoal as a fraction of that length was measured. The charcoal movement in the intestine was expressed as a percentage.

Statistical Analysis

The results are expressed as mean ± SEM of six independent experiments. Statistical significance between group was evaluated by one-way analysis of variance (ANOVA) followed by Dunnett's test. P < 0.001 value was considered as statistically significant.

RESULTS AND DISCUSSION

In the gastrointestinal motility test, the both extract, Ethanolic and aqueous extracts of bark of *Limonia acidissima*, Linn showed Antidiarrhoeal activity in the concentration of 200mg/kg compared with the control group.

Ethanolic extract showed a significant antidiarrhoeal activity and significantly decreased the propulsion of charcoal meal through the gastro intestinal tract when compared with the control group.

Thus, the results obtained in present studies suggest that the ethanol extract (200mg/kg) have potential of an Antidiarrhoeal activity as compared to aqueous extract (200mg/kg). There is a need to pursue the work further to optimize this lead [9-10].

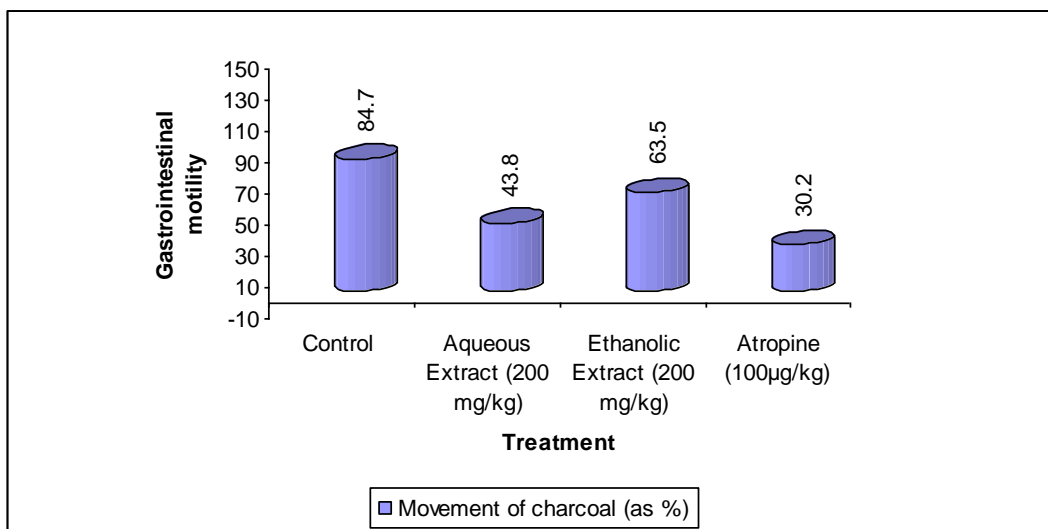
TABLE NO. 1: EFFECT OF ETHANOLIC AND AQUEOUS EXTRACTS OF *LIMONIA ACIDDISIMA*, LINN. STEM BARK ON GASTROINTESTINAL MOTILITY

S. NO	Treatment	Mean movement of charcoal meal as %
1	Control	84.7± 7.2
2	Alcohol extract 200mg/kg	43.8± 3.7**
3	Aqueous extract 200mg/kg	63.5± 5.3*
4	Atropine (100ug/kg, i.p.)	30.2± 2.6**

*P < 0.01 Vs control

** P < 0.001 Vs control by students t test.

GRAPHICAL REPRESENTATION OF EFFECT OF ETHANOLIC AND AQUEOUS EXTRACTS OF *LIMONIA ACIDISSIMA*, LINN. STEM BARK ON GASTROINTESTINAL MOTILITY



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