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PHARMACOLOGICAL EVALUATION OF THE ANTIEMETIC ACTION OF EMBLICA OFFICINALIS – GAERTN

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Emblica officinalis-Gaertn was evaluated for its antiemetic activity. The crude aqueous extract of the dry fruits administered orally was found effective in controlling centrally induced emesis by apomorphine in dogs. *Key words: Emblica officinalis*-Gaertn, Emesis, Apomorphine.

Introduction

In connection with programme aimed at developing safe herbal drugs, as substitute for allopathic medicines used to cure common ailments, we were lately interested in the development of potential herbal antiemetic agents. In the previous paper [1], the antiemetic action of *Prunus domestica* Linn. was described while the present studies are concerned with the evaluation of antiemetic activity of *Emblica officinalis* (Amla).

Amla belongs to the family Euphorbiaceae [2]. It is a moderate-sized deciduous tree which grows wild or planted, throughout the forests of tropical Indo-Pakistan and Burma [3]. The pulpy portion of the fruit, dried at 100° and freed from the nuts contains gallic acid 11.32%; tannin, sugar 36.10%; gum 13.75%; albumin 13.08%; crude cellulose 17.80%; mineral matter 4.12% and moisture 3.83% [4]. The fruit is a rich natural source of vitamin C and finds use in the treatment of human scurvy [5]. The aqueous extract of *Embica officinalis* fruit is also reported to provide protection against radiation induced chromosomal damage in both pre and post irradiation treatment. The radio-protective effects may be attributed to the anti-oxidation system of ascorbic acid-gallic acid reducing sugars tannins [6].

Materials and Methods

Experimental animals	:	Albino mice, dogs
Emetic drug	:	Apomorphine
Antiemetic drugs		- Crude aqueous extract of
		Emblica officinalis.
		- Metoclopramide.
		- Chlorpromazine.

Emblica officinalis (dried fruit, 1kg) was purchased from the local market and got identified by the Pharmacognosy section of these Laboratories. It was washed with water and soaked in 95% ethyl alcohol (3 litres). After one week, the seeds were removed and the resultant flesh was macerated with 95% ethyl alcohol (3 litres) and filtered. From the filtrate, solvent was completely removed under reduced pressure, and the resulting blackish viscous residue was partitioned between petroleum ether and water (1:3v/v). The aqueous phase was withdrawn and water was removed under reduced pressure below 70° to furnish a dark-brown syrup (250 grams), having sour taste.

Acute toxicity tests. Acute toxicity of the aqueous extract of *Emblica officinalis* was determined by oral administration of aqueous extract dissolved in distilled water in doses of 1500,1800,2100, and 2200 mg/kg body weight respectively to four groups of albino mice and the fifth group was maintained as control and was administered only distilled water orally. Each group comprised of six albino mice, which observed for 72 hrs. (Table 1).

Screening procedure. The screening procedure employed in this study was the same as used earlier [1]. It involved feeding each dog with 6 loaves of bread soaked in milk alongwith the extract, 3 hours before subcutaneous injection of apomorphine. Antiemetic effect is presented by (-ve emesis) and refers to inhibition of emesis while induction of emesis is presented by (+ve emesis) which indicates emetic action.

Results and Discussion

The results recorded in Table 1. indicated that oral administration of aqueous extract of *Emblica officinalis* to albino mice in doses of 1500,1800, and 2100 mg/kg body weight did not show any toxic effect. Whereas dose of 2200 mg/kg body weight showed toxic effect in 72 hr.

TABLE 1. ACUTE TOXICITY TEST ON ALBINO MICE						
*Group No.	Mean weight; ± S.D. gm	Oral dose of extract mg/kg body weight	Toxic effects			
1.	30 ± 3	1500	Nil			
2.	25 ± 4	1800	Nil			
3.	30 ± 3	2100	Nil			
4.	25 ± 3	2200	Toxic			
5.	25 ± 4	Normal saline	Nil			

*Each group consisted of 6 animals. The first 4 were test and received *Emblica officinalis* aqueous extract while the 5th group was control and received Normal salins only.

	Time between Emblica	Mean body	Dose of Emblica	Experimental animals		Control Animals	
Group No.	officinalis and apomor- phine administration	weight kg; ± S.D.	officinalis mg/kg	Emesis +ve	Emesis –ve	Emesis	Emesis +ve _ve
1.	3 hours	14 ± 0.08	100	4	_	2	-
2.			200	4	_	2	·
3.			300	4	· · · ·	2	
4.		· · · · · · ·	450	1	3	2	_
5.			500	· · ·	4	2	_
6.			600		4	2	_

TABLE 2. ANTIEMETIC EFFECT OF EMBLICA OFFICINALIS AQUEOUS EXTRACT, ADMINISTERED ORALLY, ON TEST DOGS

* Each group consisted of 6 dogs. Out of these four were test dogs and received *Emblica officinalis* aqueous extract orally while two were control dogs and received only distilled water orally. 0.044 mg/kg body weight of apomorphine was injected subcutaneously to all dogs of each group.

The results in Table 2 showed that oral administration of the aqueous extract of drug to a group of four dogs in doses of 100, 200, and 300 mg/kg body weight caused no antiemetic effect. When the dose was raised to 450 mg/kg antiemetic effect was observed in three dogs while a dose of 500 mg/kg showed antiemetic effect in all the four dogs. Further increase in dose had no appreciable effect.

A comparative assessment of the efficacy of *Emblica* officinalis with the standard drugs (Metoclopramide and Chloropromazine) was also studied and the results are given in Table 3. It was found that whereas metacolopramide and chloropromazine in dose of 0.212 and 0.404 mg/kg body weight respectively, antagonizes the emetic stimulus of 0.044 mg/kg body weight of apomorphine given subcutaneously to dogs, the *Emblica officinalis* extract exhibits the same action by administrating a comparatively larger dose of 500 mg/kg body weight. Furthermore animals receiving chloropromazine showed drowsiness, lethargy and dryness of mouth and the aminals receiv-

TABLE 3. COMPARATIVE ASSESSMENT OF THE ACTION OF EMBLICA OFFICINALIS AQUEOUS EXTRACT, METOCLOPRAMIDE

*G No	roup).	Drug	Minim nise t mg/	um dose to antago- he action of 0.044 kg apomorphine	Observation	Results
1.	Emb	olica offic cous extra	inalis ct	500	Calm & quite	+Ve
2.	Chlo	rpromazir	ne	0.404	Drowsiness,	+Ve
					lethargy dryness of mouth.	
3.	Met	oclopram	ide	0.212	Weakness,	+Ve
					Hunger.	

*Each group consisted of 4 dogs, 2 male and 2 female. First group received *Emblica officinalis*, 2nd group received Chlorpromazine and 3rd group received Metoclopramide. ing metoclopramide showed weakness and hunger while animals receiving *Emblica officinalis* aqueous extract were calm and quite, lying comfortably on the ground. Repeated vomiting (as in morning sickness) causes metabolic alkalosis [7]. As the fruit contains salts, it can make up the salts losses. The fruit is carminative and laxative [8].

Conclusion

Emblica officinalis. dried fruit extract is non-toxic and inhibits emesis induced by apomorphine (Table 2).

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