A STUDY ON THE PURGATIVE ACTIVITY OF *TRIPHALA*

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Biological studies of *Triphala* and each of its three components reveal that emblic and belleric myrobalans not only increase the purgative effect of chebulic myrobalans to a certain extent but also possibly render the irregular peristalsis induced by the latter to somewhat uniformly progressive, till the maximum effect is achieved.

Triphala, an indigenous remedy, has been described as a safe and effective laxative and is also extensively used as adjuncts to other medicines in numerous diseases of liver and gastrointestinal tract (Nadkarni, 1954 ; Charaka Samhita 1949). It consists of equal parts of powdered chebulic myrobalans (*Harar*), belleric myrobalans (*Behra*) and emblic myrobalans (*Amla*) (Council of scientific and industrial research, 1952). Each of these components individually has been claimed to possess laxative properties depending upon the maturity of myrobalans while emblic and belleric myrobalans in addition manifest carminative and astringent action respectively (Chopra *et al.*, 1958 ; Kirtikar and Basu, 1933).

The purgative activity of *Triphala* and its components (Inamdar *et al.*, 1962 ; Chakravarti and Tayal, 1947. Patel *et al.*, 1959) has been investigated in the past and this has indicated that the activity of *Triphala* resides only in chebulic myrobalans.

A survey of the literature, however, revealed that the effect of emblic and belleric myrobalans on the purgative activity of chebulic myrobalans in *Triphala* has not been studied so far and this proposition has been investigated, for which *Triphala* as a whole and each of the three components individually have been tested biologically on rats for their purgative activity.

METHODS

The aqueous extracts of *Triphala* and its components were prepared separately by extracting the coarse powder of the drug with four times its quantity of distilled water for 24 hours in a mechanical shaker working at a speed of 102 strokes per min. The aqueous extract was strained and the marc

(residue) pressed. The combined extract was clarified by filteration. The filtrate was used in all the experiments.

Purgative activity.—The purgative activity was asscssed essentially by the method of Green *et al.*, (1936). White albino rats each weighing 120-130 g were selected as experimental animals. The rats were transferred to special cages (Lou, 1949) with raised bottoms, 24 hours before the experiment. Their faeces were examined and the rats having soft or watery faeces were rejected. In each experiment two groups of six rats each, have been used for the test, one group for the drug and the other for the control. The weight of rats in each group was approximately the same.

The aqueous extract of each drug under test was administered into the stomach of six rats of one group with the help of a rubber catheter while an equal amount of distilled water was given to the six animals of the second group which acted as a control. During the test period a special food consisting of 2 parts of powdered rat diet and 1 part of water was supplied and to avoid increased peristalsis, green vegetables were excluded from the diet one week before the experiment.

The degree of catharsis was determined by the rate of faecal output (per 100 g of rat weight), the faeces being collected and weighed every three hours, These observations have been recorded in Table. A period of at

TABLE

Mean weight of faeces excreted in g per 100g of the rat weight

Time in hrs after the dose	Emblic myrobalans (a)	Belleric myrobalans. (b)	Chebulic Myrobalans (c)	Chebulic Myrobalans (d)	*Triphala* (e)	*Triphala* (f)	Control (g)
3	0.030	0.000	0.095	0.054	0.000	0.000	0.000
6	0.000	0.000	0.0 6	0.000	0.000	0.000	0.002
9	0.022	0.022	0.184	0.272	0.081	0.135	0.103
12	0.094	0.070	0.156	0.154	0.065	0.129	0.190
15	0.058	0.687	0.297	0.369	0.080	0.130	0.235
18	0.016	0.000	0.271	0.309	0.195	0.408	0.193
21	0.160	0.175	0.149	0.167	0.211	0.118	0.145
24	0.067	0.000	0.070	0.165	0.137	0.258	0.055

a,b,d and e : Aqueous extracts representing 0.3 g of the drug per 100g of rat weight. c and f : Aqueous extract representing 0.2 g and 0.6 g of the drug respectively per 100 g of rat weight g : distilled water equivalent to the volume of the aqueous extract,

least 15 days was allowed between experiments to permit the animals to re-adjust themselves to normal.

Effect on the isolated gut.—The stimulant effect of *Triphala* and chebulic myrobalans was studied by suspending the isolated ileum of rabbit in the oxygenated Tyrode solution at 37°. One and two ml (1 ml representing 0.1 g of the drug) of the aqueous extract of chebulic myrobalans and *Triphala* were added to the 40 ml. of the bath solution successively and effects produced by these drugs were recorded in Figs. 1 and 2. A ten times concentration of the aqueous solution of chebulic myrobalans produced spasm in the loop.

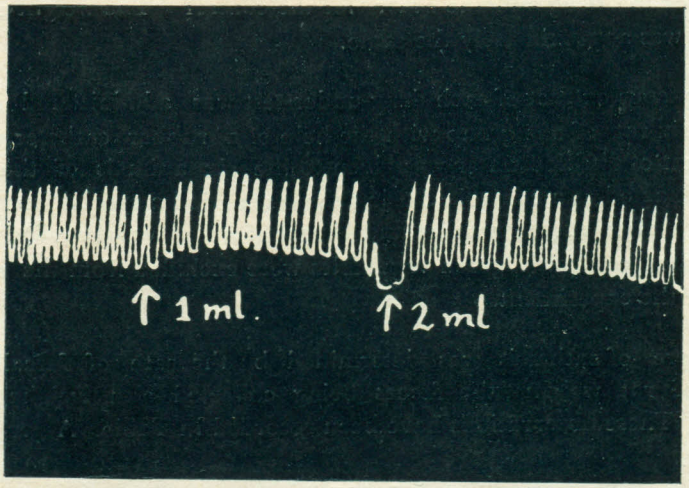

Fig. 1. Effect on the isolated gut of 1 ml (representning 0.1 g of drug) and 2 ml. of aqueous extract of 'Triphala'

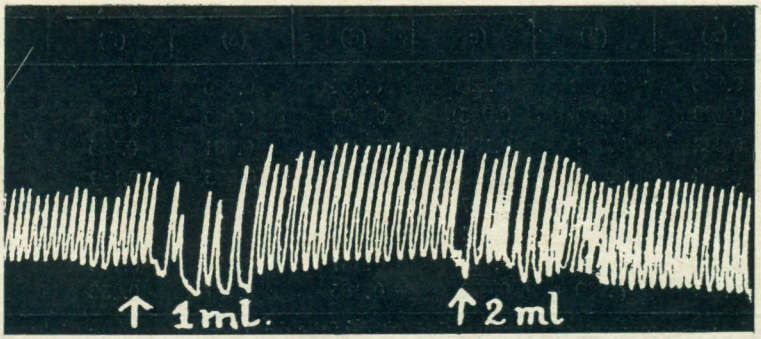

Fig. 2. Effect on the isolated gut of 1 ml (representing 0.1 g drug) and 2 ml of aqueous extract of chebulic myrobalans.

RESULTS AND DISCUSSION

Triphala, emblic and belleric myrobalans in the dose of 0.3 g per 100 g of rat weight did not possess any laxative property while chebulic myrobalans in the same dose showed definite laxative effect. On increasing the dose of Triphala from 0.3 g to 0.6 g purgative effect was observed which was found to be more than that produced by chebulic myrobalans in the dose of 0.3 g, though Triphala actually contained 0.2 g of the former. This indicates that emblic and belleric myrobalans increase the purgative activity of chebulic myrobalans in Triphala to a certain extent.

It has also been observed that the abnormal curve obtained in the case of chebulic myrobalans is indicative of the irregular peristalsis brought about by this drug. The results have been substantiated by the study of the effect of these drugs on the isolated gut. Chebulic myrobalans and Triphala stimulated the peristalsis to a varying degree and the curve obtained with the latter was comparatively regular. It appears that carminative and astringent properties of emblic and belleric myrobalans in Triphala seem to play an important part in soothing the irregular peristalsis induced by chebulic myrobalans and thus the peristalsis with Triphala rendered somewhat uniformly progressive till the maximum purgative effect is achieved.

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