

Evaluation of antidiarrhoeal activity of *Kutajarista*- a classical Ayurvedic preparation

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Kutajarista, an antidiarrhoeal classical Ayurvedic preparation is evaluated for its biological action in albino mice. The study confirms the therapeutic activity of this polyherbal preparation. Comparative study of market samples showed differences in activity, when compared to standard preparation.

Keywords *Kutajarista*, Ayurvedic, antidiarrhoeal, *Holarrhena antidysenterica*

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Herbal products including Ayurvedic medicines are available in different forms and are composed of single plant or polyherbal components. The method of preparation as per the classical Ayurvedic literature is quite complicated¹⁻³. The products available in the market vary in quality and therapeutic efficacy due to differences in composition of the product, methods of preparation, methods of storage, geographical origin and season of the plant parts collected, lack of standards for formulations, lack of adequate documentation of production and testing. The objective of the study was to evaluate the antidiarrhoeal activity of classical Ayurvedic preparation, *Kutajarista*. *Kutajarista* is widely used in the treatment of *grahani* (sprue), *pravahika* (dysentery) and *raktatisara* (diarrhoea with blood) in doses of 12-24 ml⁴. Diarrhoea is a very common problem in tropical and subtropical countries and is caused by a variety of conditions varying from infection and allergy to emotional disturbances. Diarrhoea is defined as the frequent passage of liquid faeces with or without blood or mucus; in the case of former it is usually due to a known cause such as amoebic or bacillary dysentery⁵. Antidiarrhoeal activity of leaf extract of *Bauhinia purpurea* Linn. and a polyherbal suspension in mice have been reported^{6,7}.

Methodology

Madhuca longifolia (Koen.) Macbr. (Sapotaceae) (flowers) from the forests of Dakshina Kannada district in Karnataka, *Holarrhena antidysenterica* (Roxb. ex

Fleming) Wall. (Apocynaceae) (stem bark), *Gmelina arborea* Roxb. (Verbenaceae) (stem bark), and *Woodfordia fruticosa* (L.) Kurz (Lythraceae) were collected from Uttara Kannada forests in Karnataka; *Vitis vinifera* L. (Vitaceae) (raisins) and adjuvants viz., honey and jaggery were collected from the local Bangalore market. *Kutajarista* was prepared in the laboratory using authentic materials as per the composition described in *Bhisajyaratnavali*, (*Atisaradhikara*)⁴. All the materials were thoroughly washed and shade dried for formulation studies. The plant parts were processed, identified, specimens and crude drugs samples were deposited at Regional Research Institute (Ay), Bangalore (RRCBI)⁸⁻¹⁰. *Kutajarista* prepared in the laboratory was designated as standard (Table 1). Samples of *Kutajarista* from market coded as M1, M2 and M3 were evaluated for antidiarrhoeal activity (Table 2 & 3)¹¹. Castor (*Ricinus communis*) oil, containing triglyceride of ricinoleic acid was used as diarrhoea inducing agent¹². Loperamide (a synthetic drug of Janssen) was used as the standard drug. 1 ml of *Kutajarista* was diluted to 10 ml using distilled water and mixed well. The male mice were starved overnight with no access to water. Group 1 received normal saline and served as negative control. Group 2 received only castor oil and served as positive control. Group 3 received Loperamide as a standard for comparison at the dose of 10mg per kg¹⁰. Group 4 received *Kutajarista*. One hour after treatment with the drugs all the mice were orally fed castor oil in the dose of 1 ml per mice to induce diarrhoea.

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Table 1—Composition of *Kutajarista*

Sanskrit name	Plant name	Parts used	Quantity used
<i>Kutaja</i>	<i>Holarrhena antidysenterica</i>	Stem bark	4.80 kg
<i>Mrdvika (Draksa)</i>	<i>Vitis vinifera</i>	Dry fruit (raisins)	2.40 kg
<i>Madhuca pushpa</i>	<i>Madhuca longifolia</i>	Flower	0.48 kg
<i>Kashmari (Ghambari)</i>	<i>Gmelina arborea</i>	Stem bark	0.48 kg
<i>Water</i>	-	-	49.152 litre
<i>Guda (Jaggery)</i>	-	-	4.80 kg
<i>Dhataki</i>	<i>Woodfordia fruticosa</i>	Flower	0.96 kg

Table 2—Observations on antidiarrhoeal activity in mice

Drug administered	Mice	Observations made at the end of hours....							
		1 Hour	2 Hour	3 Hour	4 Hour	5 Hour	6 Hour	7 Hour	8 Hour
Loperamide	1	H	H	H	H	H	H	H	S
	2	H	H	H	H	H	H	S	S
	3	H	H	H	H	H	S	S	S
	4	H	H	H	H	H	SS	H	S
	5	H	H	H	H	H	H	S	S
	6	H	H	H	H	H	H	S	S
STD <i>Kutajarista</i>	1	H	H	H	H	S	S	S	S
	2	H	H	H	H	S	S	S	S
	3	H	H	H	H	S	S	S	S
	4	H	H	H	H	S	S	S	S
	5	H	H	H	H	S	S	S	S
	6	H	H	H	H	S	S	S	S
<i>Kutajarista</i> M1	1	H	H	SS	S	S	S	S	S
	2	H	H	SS	S	S	S	S	S
	3	H	H	SS	S	S	S	S	S
	4	H	H	H	S	S	S	S	S
	5	H	H	SS	S	S	S	S	S
	6	H	H	SS	S	S	S	S	S
<i>Kutajarista</i> M2	1	H	H	SS	S	S	S	S	S
	2	H	H	SS	S	S	S	S	S
	3	H	H	SS	S	S	S	S	S
	4	H	H	SS	S	S	S	S	S
	5	H	H	SS	S	S	S	S	S
	6	h	H	H	S	S	S	S	S
<i>Kutajarista</i> M3	1	H	H	H	S	S	S	S	S
	2	H	H	H	S	S	S	S	S
	3	H	H	H	S	S	S	S	S
	4	H	H	S	S	S	S	S	S
	5	H	H	H	S	S	S	S	S
	6	H	H	H	S	S	S	S	S

Hard-H, Soft-S, SS-Semisoft

Table 3— Comparison of duration of action of Loperamide, standard *Kutajarista* and market samples

Mice	Loperamide	Standard <i>Kutajarista</i>	M1	M2	M3
1	7	4	3	2	3
2	6	4	3	2	3
3	5	5	3	2	3
4	5	4	4	2	2
5	6	4	3	2	3
6	6	4	3	3	3

Results and discussion

The protection given against diarrhoea was observed as the parameter for 8 hrs. The animals were examined for presence or absence of diarrhoea. Absence of diarrhoea was the criteria for efficacy of the product. The antidiarrhoeal activity of *Kutajarista* prepared in the lab with authentic inputs was found to provide 4 hrs protection against castor oil induced diarrhoea in mice (Fig. 1). Loperamide was found to provide protection for 5 hrs. Market samples, M1 &

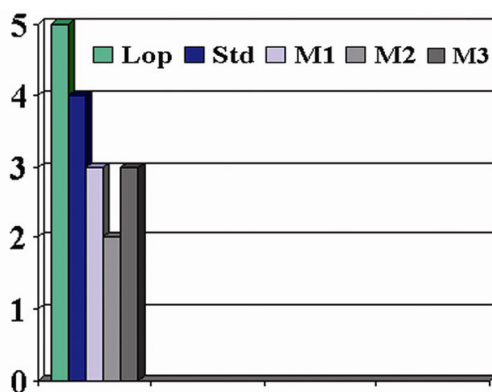


Fig 1 — Duration of antidiarrhoeal activity of *Kutajarista*

M3 showed protection for a period of 3 hrs, whereas M2 showed the effect for a period of 2 hrs. This shows a difference in the quality of market products in respect of antidiarrhoeal activity. This could be due to one or more of the variables listed above. It is suggested that the antidiarrhoeal activity test should be applied, whenever the source and or time of harvest of the major constituents of the formulations are changed by the manufacturers to ensure optimum antidiarrhoeal activity of the product.

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