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EVALUATION OF MUKKADUGU KUDINEER POLYHERBAL FORMULATION FOR ITS ANTI-FLATULENT AND IMMUNOSTIMULANT EFFECTS IN WISTER RATS

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ABSTRACT

Herbal remedies are given first preference in siddha system of medicine. Mukkadugu kudineer[1] is a traditional siddha polyherbal formulation was examined for Anti-flatulent and Immunostimulant effects for its treatment of Functional dyspepsia in children. Mukkadugu kudineer composed of 5 herbal ingredients. According to the scientific review each ingredients of Mukkadugu kudineer possess anti-flatulent, immunostimulant and antioxidant activity. Mukkadugu kudineer showed significant anti-flatulent and immunostimulant activity in the above study.

KEYWORDS: Mukkadugu kudineer, Siddha polyherbal formulation, Anti-flatulent and Immunostimulant activity, Functional dyspepsia.

INTRODCTION

Siddha is an ancient system of medicine that orginated in south india. Polyherbal formulations, originally used in traditional system of medicine, are now being investigated and effectively tried in a variety of pathophysiological states particularly, Functional dyspepsia(FD) is a major health problem in all over the world among children. Functional

dyspepsia (Indigestion) is characterized by abdominal pain, excessive seating, diarrhea or constipation, fever, lethargy, irritability.

According to the siddha system of medicine, diet and lifestyle play a major role in health and curing diseases. Diet with respect to quantity and quality should be taken according to gender, age, the person, consideration the period of day, seasonal variations and geographic locations. Otherwise basic body constitution of the person (Vatham, Pitham,Kabam) changes and diseases occurs. "Food is medicine and Medicine is food". The ingredients of the Mukkadugu kudineer are Zingiber officinale, Piper nigrum, Piper longum, Carum coptcum and Allium sativum. In the present study an attempt has been made to evaluate the anti-flatulent and immunostimulant effects of the polyherbal formulation.

MATERIALS AND METHODS

The study drug was selected from the Siddha text book and made into Kudineer form under basic siddha principles. This formulation composed of 5 herbal ingredients.[7]

Phytochemical analysis of the Mukkadugu kudineer indicates the presence of Alkaloids, Glycosides, Saponins, Phytosterols, Phenol, Flavanoides, Phenols, Diterpenoids and Quinones.

Therapeutic dosage: 15ml, Twice a day, After meals, 14 days.

Its ingredients and formulation composition are tabulated in **Table.1**

Tamil name	Botanical name[14]	Part used	Quantity(gm)
Chukku[8]	*Zingifer offinale*	Root	10gm
Milagu[9]	*Piper nigrum*	Fruit	10gm
Thippili[10]	*Piper longum*	Fruit	10gm
Omam[11]	*Carum copticum*	Seeds	10gm
Vellai poondu[12]	*Allium satuvum*	Bulb	10gm

ANTI-FLATULENT ACTIVITY

Germination of chickpea seeds

Chickpea seeds were obtained from local market and were identified by a botanist. The seeds were washed and soaked in water for overnight. The soaked seeds were rinsed and placed in commercially available sprout maker and allowed to sprout for two days. Fresh sprouts were used in the preparation of respective experimental diet on a daily basis. The same batch of the seeds was used throughout the experimental period.

Chemical, Reagents and animals

All chemicals and reagents were obtained from sigma chemical Ltd, USA. Allwister rats weighing about 220-250 gms was obtained from the animal house of king institute of preventive medicine, Guindy, Alanthur road, SIDCO industrial estate, Chennai-600032.

Procedure

Animals were divided into five groups (I-V) consisting of six animals per group. The animals were housed in individual cages. Initially all the animals are fed with normal diet. In the first 10 days duration, all animals are trained to consume 10g diet in an hour time. On the 11th day group (I) was fed the normal diet and served as control while the remaining experimental groups (II-V) received chickpea highly flatulent diet.

Mukkadugu Kudineer at 10% and 20% levels were incorporated into flatulent diet of III-IV of the groups receiving chickpea flour and group (II) served as negative control.

The group V received standard antiflatulent drug (Simethicone) 10 mg/10 g of flatulent diet, p.o.

The diet cups were withdrawn from the cages after an hour of giving diet. Four hours later the animals were anaesthetized, and the volume of gas in the intestinal tract was determined as described by Hedin and Adachi.[2] Four hour after removal of the diet from the cages, animals were sacrificed and the gastrointestinal tract exposed by a midline incision. Evident pockets of gases were then removed by a commercial gas-tight syringe and the volume was measured for the uniformity, the gases collected from the cecum were assumed to represent an average of all gases in the intestinal tract.

Animal Grouping

Group I--------- Control group (normal diet)

Group II--------- Negative control (chicken pea only)

Group III -------- MUKKADUGU KUDINEER 10% + (chicken pea)

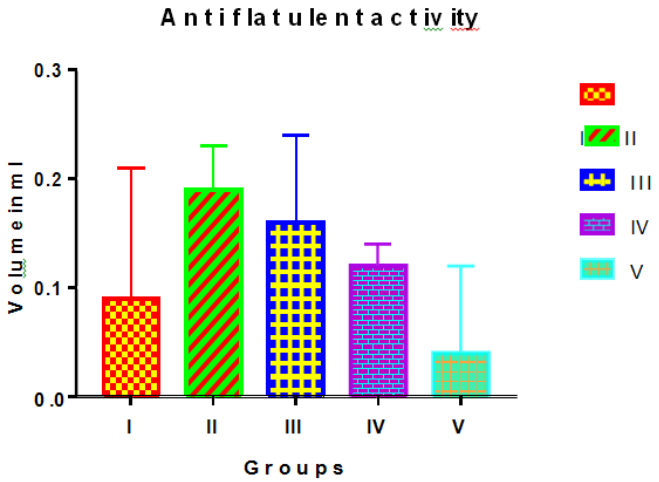
Group IV--------MUKKADUGU KUDINEER 20% + (chicken pea)

Group V---------- STD (Simethicone) + (chicken pea).

STATISTICAL ANALYSIS

The statistical analysis was carried by one way ANOVA (Analysis of variance) followed by Dunnet's test and results are expressed as mean ±error.

S. No.	Group	Treatment(10gm/p.o)	Volume of gas in ml	% inhibition of gas
1	I	Control	0.09±0.12	--
2	II	Negative control	0.19±0.04*	--
3	III	MK 10%	0.16±0.08*	45
4	IV	MK20%	0.12±0.02*	77
5	V	Simethicone	0.04±0.08*	>90



IMMUNO STIMULANT ACTIVITY

Animals

Wistar rats of either sex, weighing 180–200 g were used. They were kept in standard environmental conditions and fed with rodent diet and water ad libitum.

All the experimental procedures and protocols used in this study were reviewed and approved by the Institutional Animal Ethics Committee (IAEC) of C.L. Baid Metha College of Pharmacy (Chennai, India).

Phagocytic activity

Phagocytic index was determined as per the method reported by Stuar et al [1]. Mice were divided into 3 groups, of six animals each. The control group received distilled water only as vehicle; while animals of the treatment groups were given test extract (200 and 400 mg/kg, p.o.) in distilled water daily for 20 days.

Carbon ink suspension diluted with saline (1:8) was injected via tail vein to each mouse 48 hours after 20 days treatment. Blood samples were drawn from retro orbital plexus under ether anesthesia at 0 and 15 min.

Blood (25µl) was mixed with 0.1 % sodium carbonate (2ml) and subjected for determination

of optical densities at 660 nm. The phagocytic index K, was calculated by using following equation: $K= (\ln OD_1 - \ln OD_2) / (t_2 - t_1)$ where OD_1 and OD_2 are the optical densities at times t_1 and t_2, respectively.

WBC study

Rats were euthanized by CO2 asphyxiation followed by cardiac puncture to collect blood. The blood from each animal was collected and placed into a lavender top collection tube containing EDTA and kept at ambient temperature.

The blood samples were analyzed using a Bayer Advia 120 Hematology Analyzer, after blood collection.

Effect of Mukkadugu Kudineer on phagocytic index, WBC.

S. No.	Groups	Phagocytic index	Total WBC count/cu.mm
	Control	0.096±0.01	9180±2310
	N.Control	---	4483±346
	M.Kudineer low dose	0.103±0.02	6187±1495
	M.Kudineer high dose	0.145±0.01	6426±642

All values are expressed as mean ± SE, n = 6. *Statistically significant difference at $p < 0.05$ as compared to vehicle control as seen by applying the Dunnett's test followed by Bon Ferroni's test.

CONCLUSIONS

The results of present study demonstrate that the drug Mukkadugu kudineer has significant anti-flatulent and immunostimulant activity in wistar rats and the results contribute towards the validation of the traditional use of Mukkadugu kudineer in treatment of functional dyspepsia in children.

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