



A CRITICAL EVALUATION OF KADALI KANDA (*Musa paradisiaca* Linn. Rhizome) CHURNA AND KWATHA IN AMLAPITTA

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ABSTRACT

Amlapitta is one of the *Annavahasroto vikara* (gastrointestinal system) described in many classical Ayurvedic texts. Modern luxurious lifestyle and sedentary habits of people have been inviting so many diseases like *Prameha* (Diabetes), *Amavata* (Arthritis), *Amlapitta* (Gastritis) etc. The cardinal features of *Amlapitta* includes *utklesha* (nausea), *hritdaha* (heartburn), *kantadaha* (throat burn), *amlodgara* (sour and bitter belching), *chardi* (vomiting), *kukshidaha* (abdominal burn) etc. The present study was taken up to evaluate efficacy of *Kadali kanda churna* and *Kadali kanda kwatha* in *Urdwaga Amlapitta* (Functional dyspepsia). A total of 20 patients having clinical features of *Urdwaga Amlapitta* were selected and randomly divided into 2 groups with 10 patients each. Group A was treated with *Kadali kanda churna* and Group B was treated with *Kadali kanda kwatha*. Subjective parameters were suitably graded to assess the results based on the clinical observations. Statistical tests were applied to analyze the results. In the present study it was observed that the percentage of success of Group A was 93.75% and that of Group B was 65%. Group A showed better results when compared to Group B.

Keywords: *Amlapitta*, *Kadali kanda churna*, *Kadali kanda kwatha*. *Gastritis*

INTRODUCTION

Amlapitta is defined as 'Amlam vidagdham cha tat pit-tam amlapitta'^[1] and is one of the most common ailments seen all over the world. The most common upper gastrointestinal symptom seen in adults is dyspepsia. The majority of patients suffer from Functional dyspepsia or non-ulcer type, while Dyspepsia has organic causes. The prevalence of uninvestigated dyspepsia (UD) worldwide ranges from 7% to 45%, depending on the definition used and the geographical area, while the prevalence of FD has been reported to range from 11% to 29.2%^[2] The present study was taken up to treat *Amlapitta* with *Kadali kanda churna* and *kwatha* which are considered to be economical, safe with no side effects and above all it acts as both preventive and curative. *Amlapitta*, an ailment affecting the GIT, is known from Samhita period. Detailed descriptions of etiopathology, signs, symptoms, prognosis and treatment have been found in all Ayurvedic literatures. It is estimated that, nearly 25% of the populace has dyspepsia at least six times yearly, but only 10-20% present to clinicians.^[3] Patients are usually young (< 40 yrs.) and women are affected twice as common as men^[4]. Etymologically the word "Amlapitta" comprises of two components 'Amla' and 'Pitta'^[5]. Chakrapanidatta in his commentary on Charaka Samhita defines *Amlapitta* as '*Amlapittam cheti amlagunoudriktam pittam*'. Here *amla guna* of *pitta* is increased and hence called as *Amlapitta*^[6]. In this condition the *amla guna* of *pitta* is augmented and its functions are altered. This results in *Shukta paka* and production of *ama*.^[7] This condition exhibits typical clinical presentation known as *Amlapitta*. The similar symptom complex of *Amlapitta* is considered as Functional dyspepsia in modern medicine.^[8] The term Functional dyspepsia refers to a condition where a symptomatic individual is not found to have an ulcer or other structural diseases. This condition is characterized by the presence of chronic intermittent symptoms of epigastric pain often associated with epigastric fullness, early satiety, bloating and vomiting without mucosal lesions or other structural abnormalities of the gastrointestinal tract.^[9] So the symptoms similarity is seen in *Urdwaga Amlapitta* and Func-

tional dyspepsia. Hence in the present study Functional dyspepsia is taken as *Urdwaga Amlapitta*.^[10] While dealing with *Shaka varga*, Bhavamishra has mentioned the use of *Kadali kanda* in *Amlapitta*.^[11] Based on this reference, *Kadali kanda* was selected for this study to analyse its properties and action in *Urdwaga Amlapitta*.

Aim and Objectives

1. To evaluate the effect of *Kadali kanda churna* and *Kwatha* in the management of *Amlapitta*.
2. To compare the efficacy of *Kadali kanda* in two different pharmaceutical forms in *Amlapitta*.

Materials and Methods

1. A total of 20 patients having the clinical features of *Urdwaga Amlapitta* were selected for the study.
2. A total of 20 patients of either sex fulfilling the diagnostic criteria attending the OPD and IPD of S.D.M Ayurveda Hospital, Udupi were selected.

Inclusive Criteria:

- 1) Patients with *pratyatma lakshana* of *Urdhvaga Amlapitta* – *Avipaka, Klama, Utklesha, Amlodgara, Gourava, Hridaya, Kantadaha, Aruchi, Chardi, Kukulshidaha, Shirashoola, Hastadaha, Padadaha, Hril-lasa and Agnimandhya*.
- 2) Patients between 15 years to 60 years.
- 3) A minimum history of 3 months.

Exclusive Criteria:

- 1) Patients below 15 years and above 60 years.
- 2) Patients with *Adhoga Amlapitta, Parinama shoola, Annadrava shoola, Arbudha & Grahani*.

Investigation:

All the patients in the study were subjected to the following laboratory investigations as a routine measure.

- 1) Blood - TC, DC, ESR, Hb%
- 2) Routine urine analysis
- 3) If needed to confirm the diagnosis endoscopy was carried out.

Study Design: It is single blind comparative clinical study. 20 patients fulfilling inclusive criteria were selected and randomly allocated into Group A and Group B of 10 patients each.

Intervention

Group A-Kadali kanda choorna 3gms, three times a day was administered orally with water.

Group B- Kadali kanda Kwatha 40 ml two times a day was administered orally. The patients of group B were properly educated to prepare *kwatha* from the *kwatha choorna*.

Specific Time of Administration

Patients of both the group were suggested to take the medicine in mid-way through their food i.e. in the mid of breakfast, in the mid of the lunch and in mid of the dinner.

Duration of Treatment

To see the efficacy of the drug the present study incorporates a minimum of 21 days medication. To confirm the result and to check for recurrence, patients were followed-up with observation once in 15 days up to 1 month, after the end of 21-day medication. During these periods patients of both the groups were strictly advised diet.

Assessment Criteria:

For subjective parameters each symptom has been graded or scored with following rating method.

Normal	-	0
Mild	-	1
Moderate	-	2
Severe	-	3

The patients with mild amlapitta are defined as those with one or more of the following.

- 1) Symptoms occur less than 2 times in a week are due to exposed to risk factor.
- 2) Presence of symptoms for few hours does not interfere with work performance; occasionally feel inconvenience during routine work.
- 3) Nausea may be present, but vomiting is rare.

The patient with moderate amlapitta is defined as those with one or more of the following.

- 1) Presence of symptoms 2 to 4 times in a week.

- 2) The symptoms present during day and night has interference but doesn't prohibit work performance and other activities.

- 3) Occasional presence of vomiting

The patients with severe amlapitta are defined as those with one or more of the following.

- 1) Continuous presence of symptoms.
- 2) Symptoms develop during the day as well as in the night hrs.
- 3) Frequent vomiting.

Follow Up Study

After the completion of treatment for 21 days, patients were advised to attend OPD every 15 days for one month at regular intervals.

Drug Used

Kadali kanda

Scientific name: *Musa paradisiaca*

Nomenclature: Banana

Parts used: Rhizome

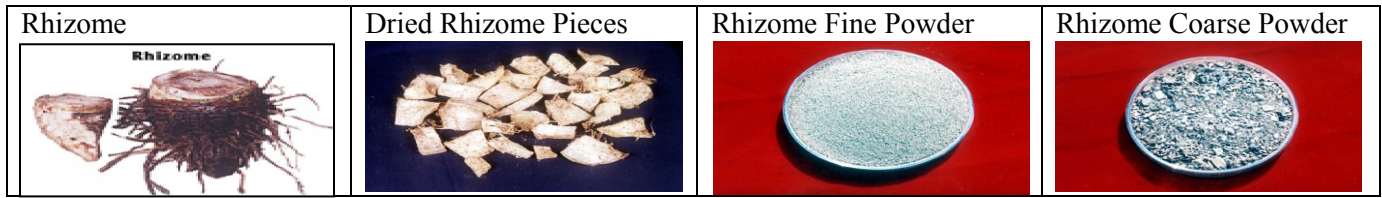
Collection of Drug

The fresh rhizome of *Musa paradisiaca* Linn was collected in required quantity from the local vicinity at Udupi.

Method of Preparation.^[12]

Musa paradisiaca rhizome was processed and packed in S.D.M. Ayurveda Pharmacy in the following way.

The fresh rhizome after collection was washed properly to remove mud and other physical impurities. The outer blackish or dark greyish peel was scraped and removed. The cleaned cream coloured rhizome was made into small pieces and dried in dryer at 60°C. Completely dried pieces were made into *sookshma choorna* and *kwatha choorna* separately. The 200 gms, *sookshma choorna* was filled in plastic covers and then sealed. The 400 gms, *kwatha choorna* was also filled in plastic covers, sealed and labeled properly. The plastic packet were kept within airtight plastic containers and stored in cool dry place. Thus, the trial medicine was prepared.



Determination of Heavy Metals:

The ash of the Banana rhizome powder was subjected to following heavy metal detection through Inductively Coupled Mass Spectrophotometry [13] and the results obtained were mentioned.

Iron	267.3
Mercury	< 0.1
Lead	1.1
Zinc	7.5

Table 1: Result of Heavy Metals Detection

Parameter	Results (in ppm)
Arsenic	<0.1
Cadmium	<0.1
Copper	2.9

RESULTS

Total 20 Patients were registered for the study and they were randomly distributed in 2 groups as Group A & Group B consisting of 10 patients each. Results of each Group and comparative results of both Groups were analysed by using Paired t test.

Table 2: Effect of Treatment on Clinical Features of Urdhvaga Amlapitta in Group A

Sl No	Lakshanas	No of Patients	Before Treatment	After Treatment	After Treatment (In Percentage)
01	Avipaka	3	0.300	0.100	66.66
02	Klama	4	0.400	0.000	100
03	Utklesha	10	2.000	0.000	100
04	Amlodgara	10	2.100	0.200	90.48
05	Gourava	2	0.200	0.000	100
06	Hritdaha	10	2.300	0.200	91.30
07	Kantadaha	10	2.000	0.200	90
08	Aruchi	2	0.200	0.100	50
09	Chardi	10	1.700	0	100
10	Kukshidaha	10	1.600	0.100	93.75
11	Shirashoola	3	0.300	0.100	66.66
12	Hastadaha	3	0.300	0.000	100
13	Padadaha	3	0.300	0.000	100
14	Hrillasa	3	0.400	0.000	100
15	Agnimandhya	4	0.400	0.000	100

In-Group-A maximum relief was observed in *Klama*, *Utklesha*, *Vanti*, *Hastadaha*, *Padadaha*, *Jwara*, *Hrillasa*, *Agnimandya*, *Mukalepa*, *Nidradhikya* (100 %), *Kukshidaha* (93.75 %), *Hritdaha* (91.30 %), *Amlodgara* and *Kantadaha* (90.48 %) after the course of treatment.

Table 3: Effect of Treatment on Urdhvaga Amlapitta in Group B

Sl. No.	Lakshanas	No of Patients	Before Treatment	After Treatment	After Treatment (In Percentage)
01.	Avipaka	4	0.400	0.100	75
02.	Klama	4	0.400	0.000	100

03.	<i>Utklesha</i>	10	2.200	0.600	72.72
04.	<i>Amlodgara</i>	10	2.000	0.700	65
05.	<i>Gourava</i>	3	0.300	0.100	66.66
06.	<i>Hritdaha</i>	10	2.100	0.400	80.95
07.	<i>Kantadaha</i>	10	1.500	0.400	73.33
08.	<i>Aruchi</i>	5	0.500	0.000	100
09.	<i>Chardi</i>	10	1.600	0.000	100
10.	<i>Kukshidaha</i>	10	2.000	0.700	65
11.	<i>Shirashoola</i>	4	0.400	0.100	75
12.	<i>Hastadaha</i>	4	0.400	0.000	100
13.	<i>Padadaha</i>	4	0.400	0.000	100
14.	<i>Hrillasa</i>	4	0.800	0.700	87.5
15.	<i>Agnimandhya</i>	5	0.600	0.100	83.33

In Group-B maximum relief was appreciated in *Klama*, *Aruchi*, *Hastadaha*, *Padadaha*, *Jwara* (100 %) and *Hrillasa* (87.5 %) after the course of treatment

Assessment of Overall Result

The data of the two groups were compared, they were found to be statistically significant after treatment. In Group A, percentage of improvement after treatment was 93.75% and in group B improvement was 65%.

Table 4: Statistical analysis of Group A and Group B

Group	N	BT	AT	Paired 't' test					
				Difference	%	SD	SEM	t	P
A	10	1.600	0.1000	1.500	93.75	0.527	0.163	9.000	<0.001
							0.100		
B	10	2.000	0.700	1.300	65	0.823	0.258	4.993	<0.001
							0.153		

DISCUSSION

Urdhvaga Amlapitta is said to be located in *Amashaya* that is within the upper part of the gastrointestinal tract causing gastrointestinal disturbances. By reviewing the *Urdhvaga Amlapitta roga nidana* it is evident that due to *pitta* and *kaphakara nidana*, *pitta* and *kapha doshas* are increased leading to the *Urdhvaga Amlapitta* and could be compared with Functional dyspepsia in contemporary modern medical science. *Kadali kanda* is one such drug mentioned in the classics for its multiple varied benefits in therapeutics. It is having *kashaya*, *madhura*, *guru guna* and *sheeta veerya* hence reduces *pitta* and due to its *rooksha guna* reduces *kapyaa*.^[14] Thus on this basis of *rasa* and *guna* the *Amlapittahara* action of *kadali kanda* could be justified.

A Clinical trial has been conducted to know the toxic heavy metals in *kadali kanda* it was subjected to Inductively Coupled Mass Spectrophotometry. Finally it was found that the trial drug is having within normal values of heavy metals i.e. body resistance toxic heavy metals in PPB/PPM levels. After the study of toxic heavy metals, the clinical study was conducted to evaluate the therapeutic efficacy of the trial drug in the management of patients with the established *Urdhvaga Amlapitta lakshanas*.

Incidence of disease:

Age-*Urdhvaga Amlapitta* may begin at any age mainly in middle aged adults or below 40 years of age. In this study, the same was observed that majority of the patients belong to the age group of 21-30 years with 45% & to some extent 30-40 years with 30%.

Occupation-This study shows that persons who are under extreme stress and strain, persons having irregular and faulty food habits were the sufferers.

Dietary habits-In this study it was observed that 90% patients were mixed diet, the reason for the disease may be due to their faulty food habits like excess intake of spicy, oily, salty and heavy food.

Aggravating factors-The majority of patients were observed to have diet and seasonal variations in relation with acute exacerbation of the disease. Food items having more pungent, sour and salt tastes and drinks like tea, coffee, alcohol etc. Viharas like *akalabhojana*, *dhumapana* and mental status like *chinta*, *krodha* etc, were commonly identified as aggravating factors.

Relieving factors- Majority of the patients were able to identify the relieving factors like regular food intake, coldmilk, and sweet foods. Also, many patients observed that vomiting voluntarily is also one of the relieving factors in *Urdhvaga Amlapitta*.

Overall effect of medication on the features of Urdvaga Amlapitta.

Kadali kanda choorna is better compared to *kadali kanda kwatha* in the following features like *Utklesha*, *amloudgara*, *gourava*, *hritdaha*, *kantadaha*, *kukshidaha*, *hrillasa*, *agnimandhya*, *mukalepa*, *nidradhikya*. *Kadali kanda kwatha* is better compared to *kadali kanda choorna* in the following features like *avipaka*, *aruchi* and *shirashoola*.

Overall pictures of the results obtained in both the group suggests that *Kadali kanda choorna* showed better response in controlling the severity of the disease and is effective in significantly reducing most of the manifestations. In few of the features of *Urdhvaga Amlapitta*, *kadali kanda kwatha* produced better response. The trial drug had no side effects or any sort of toxic effect on the patients.

CONCLUSION

According to classical and contemporary modern literatures the trial drug *kadali (Musa paradisiaca Linn Rhizome)* is having much significance and importance being extensively used for its varied benefits. The drug when used in *choorna* form was more

effective than in *kwatha* form and the response were very good in cases of mild and moderate severity. The trial drug is free from any sort of side effects or toxic effects in its therapeutic dose and hence it is found to be a safe remedy. The drug is having all the actions on *Amlapitta (Urdhvaga)* mentioned by the classics namely *dahaprashamana* and *agnideepana*, which was observed during clinical study. The drug is rich in fibre and starch; it relieved constipation when administered in *choorna* form. In *kwatha* form there was comparatively poor effect in relieving constipation. The presence of high percentage of iron may be useful in the Iron Deficiency Anaemia. Further studies can be carried out in this subject.

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