# Clinical Study on the Effectiveness of *Pippali Khanda* in the Management of *Amlapitta*

## Research Article

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## Abstract

Background: *Amlapitta* (Acid peptic disorder) is disease of the *Annavaha Srotas* (gastrointestinal tract) which results primarily because of indulgence in *Ahita Ahara Vihara Sevana* (irregular dietary habit and day to day activity). *Khanda* (sugar granules) is widely acceptable dosage forms in the present scenario due its palatability, shelf life and easy administration. The selected drug *Pippali Khanda* possesses *Deepana* (enhances digestion), *Pachana* (digestive) and *Vatanulomana* (regulates *Vata*). Study has been undertaken to evaluate the effectiveness of *Pippali Khanda* in the management of *Urdhvaga Amlapitta* having dominance of *Kapha* and *Pitta Dosha*. Methods: Among the 32 registered patients 30 of them completed the course of treatment. *Pippali Khanda* was administered in a dose of three gram twice daily, fifteen minutes after food, for fifteen days. Patients were assessed before, end of first of week and 15$^{th}$ day of treatment. For statistical analysis, ordinal data were assessed by Friedman's test and Wilcoxon signed rank as Post Hoc after applying Bonferroni correction. Results: There were statistically highly significant improvements in the signs and symptoms of *Amlapitta.* ($p < 0.05$) observed. Conclusion: *Pippali Khanda* is effective and useful in the management of signs and symptoms of *Amlapitta* besides improved the parameters of Agni and digestion.

**Keywords:** Ayurveda, acid peptic disorder, *Amlapitta, Pippali Khanda, Agni.*

## Introduction

*Amlapitta* (acid peptic disorder) is one of the commonest *Annavaha Srotas Vyadhi* (gastrointestinal tract disorder) (1). When any of causative / triggering factors causes *Mandagni* (reduced digestive power), it leads to undigested food particles (*Vidagdhajirna*) manifesting as *Amlapitta* (2). *Amlapitta* is a condition where sour nature (*Amla* Guna) of *Pachaka Pitta* aggravates due to *Shuktata* of the undigested food (*Anna*) leading to burning sensation (*Vidaha*). Hence, *Amlapitta* being Pitta-Kapha Pradhana *Tridoshaja Vyadhi*, respective *Lakshana* of involved *Dosha* will be seen according to variation of involved *Dosha*.

In the management of *Amlapitta, Vamana* (emesis) or *Virechana* (purgation) are the main line of *Shodhana* (detoxification) and followed by this, *Langhana* (fasting), *LaghuBhojana* (light digestive food) and *Agnideepana* (enhances digestion) measures to adopt (3). A population-based study, using a validated questionnaire, found that 58. 7% of the population has heartburn or acid regurgitation at least once during the course of a year and that 19. 8% experience symptoms at least once weekly. It is estimated that approximately 50% of patients with typical reflux symptoms have erosive oesophagitis.

*Pippali Khanda* is *Katu* (pungent), *Madhura* (sweet), *Tikta* (bitter) in *Rasa, Laghu* (lightness) *Ruksha* (dry) in *Guna, Veerya* is *Sheeta* (cold), *Vipaka* is *Madhura* (sweet) and *Doshagnatha* is *Pitta Kaphahara*. *Pippali* is the best medicine for *Amapachana* and alleviates the *Srotasrodha* by *Laghu Tikshna Guna*. Hence drug was selected.

## Objectives

The study was conducted to assess clinical effectiveness of *Pippali Khanda* in the management of *Urdhvaga Amlapitta.*

## Methodology
### Source of data:

Patients were recruited from outpatient and inpatient unit of Department of Kayachikitsa, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India.

### Methods of collection of data:

Patients were screened and selected based on the screening form. A case report form was prepared with all points of history taking, physical signs and symptoms of *Urdhvaga Amlapitta*. The selected patients were subjected to detail clinical history and complete physical examination before undergoing the clinical study. Institutional ethics clearness was obtained from
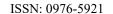
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Institutional Ethics Committee, Sri Dharmasthala Manjunatheshwara College of Ayurveda & Hospital, Hassan (SDM/ICE/45/2014-2015 dated 01-04-2015) and study was registered in Clinical Trials Registry of India (CTRI/2016/05/006918).

**Diagnostic criteria:**

Diagnosis was made on the basis of *Samanya Lakshanas* of *Urdhvaga Amlapitta viz. Hrullasa* (nausea)*, Mandagni* (reduced digestive power )*, Chardi* (vomiting), *Kaphanishteevan* (excessive salivation)*, Bhuktevigdagdha* (burning sensation after food intake)*, Utklesha* (sour belching), *Tikta- Amla Udgahra* (bitter-sour belching), *Klama* (triedness), *Gaurava* (heaviness), *Hrith- Kanta daha* (burning sensation of throat and chest region)*, Analasada* (reduced food intake) and *Aruchi* (lack of taste) (4).

**Inclusion Criteria:**

Patients with chronicity upto 5 years between age group of 18-55 years of either gender, irrespective of socio-economic status and those who are ready to sign the informed consent form were included.

**Exclusion criteria:**

Patients with history of systemic illness namely diabetic mellitus and hypertension, thyroid disorders, cardiac pathology, immunodeficiency disorders like AIDS, *Parinama Shula* (gastric ulcer, duodenal ulcer), *Annadrava Shula, Krimiroga* (worms manifestation) and *Arbuda*(tumour)*,* hematemesis, melena and anaemia, drug, alcohol and tobacco induced *Amlapitta* were excluded. Routine laboratory investigations were performed to rule out any major pathology.

**Intervention:**

The trial drug *Pippali Khanda* (5) is taken from *Amlapitta Adhikaara* of *Bhaishajya Ratnavali* for the management of *Urdhvaga Amlapitta.*

**Table 1: list of ingredients, Latin names, part used and quantity of *Pippali Khanda***

| Sl. | Sanskrit Name | Botanical name | Part used | Proportion |
|---|---|---|---|---|
| 1 | *Pippali* | *Piper longum* | Dried rhizome | 15 parts |
| 2 | *Satavari* | *Asparagus racemosus* | Decoction | 32 parts |
| 3 | *Amalaki* | *Emblica officinalis* | Fruit | 1 part |
| 4 | *Dhanyaka* | *Coriander sativum* | Fruit | 1 part |
| 5 | *Krishna jiraka* | *Carum bulbocastanum* | Seed | 1 part |
| 6 | *Twak* | *Cinnamomum zeylanicum* | Bark | 1part |
| 7 | *Ela* | *Elettaria cardamomum* | Seed | 1part |
| 8 | *Tejapatra* | *Cinnamomum tamala* | Leaf | 1part |
| 9 | *Mustaka* | *Cyperus rotundus* | Tuber | 1part |
| 10 | *Swetajiraka* | *Cuminum cyminum* | Seed | 1part |
| 11 | *Shunti* | *Zingiber officinale* | Dried rhizome | 1part |
| 12 | *Vamsalochana* | *Bambusa arundinaceae* | - | 1part |
| 13 | *Haritaki* | *Terminalia chebula* | Fruit rind | 1part |
| 14 | *Khadir* | *Acacia catechu* | Sara | ½ part |
| 15 | *Maricha* | *Piper nigrum* | Fruit | ½ part |
| 16 | *Ghrita* | - | - | 23 parts |
| 17 | *Goksheera (Cow milk)* | - | - | 125 parts |
| 18 | *Madhu (Honey)* | | | 12 parts |
| 19 | *Mishri (Sugar)* | | | 70 parts |

**Method of Preparation of Pippali Khanda:**

*Ksheera* (milk) was boiled with *Pippali churna* (powder) on *mriduagni*. When paste was formed than, it was mixed with *Go ghrita, Satavari kwatha* (decoction) and sugar, fried on *mridhuagni* until Ghrita got separated from the paste form. When Paka Lakshanas were obtained, vessel taken out of the fire and *Sukshma Churna* (fine powder) of Prakshepaka drugs was added and mixed uniformly. After it gets cooled, *Madhu* (honey) was added to it. (6)

**Packing:**
Prepared drug was packed in airtight bottle, properly labelled and weighted 100 gm.

**Dosage:**
3 gm twice daily

**Duration:**
15 days

**Anupana:**
Normal water and milk (7)

**Pathyapthya:**
For diet list of included items are as follow old rice, barley, wheat, mudga, cool boiled water, sugar, honey, well ripened fruit of white gourd (kusmanda), pomegranate (dadima), gooseberry (Amalaki) and all bitter juices should be used. Spicy food item should be avoided along with oily and fried items.

**Assessment Criteria**
The effect of therapy was assessed on the basis of changes in signs and symptoms of *Urdhvaga Amlapitta* using questionnaire that was developed for the study. Patients were assessed at three intervals i. e. before, end of first of week and 15th day of treatment. These were assessed by giving specific scores which were helpful in Statistical analysis. These scores are presented as follows.

Do you have vomiting sensation (Hrullasa)
0 – No
1 – Very less
2 – Sometime
3 - Always

Do you have appetite (Aruchi)
0 – No
1 – Very less
2 – Sometime
3 – Always

Do you have feeling of indigestion (Mandagani)
0 – No
1 – Very less
2 – Sometime
3 – Always

Do you have Vomiting before and after food intake (Chardi)
0 – No
1 – Very less
2 – Sometime
3 – Always

Increased frequency of sputum (Kapha nishteevan )
0 – No
1 – Very less
2 – Sometime
3 – Always

Increased frequency of sour belching (Tiktamlodgara)
0 – No

1 – Very less
2 – Sometime
3 – Always

Burning sensation of chest, throat and stomach region after taking food (Bhukte vidagdha)
0 – No
1 – Very less
2 – Sometime
3 - Always

Burning sensation of chest, throat and stomach region (Hrith- kanta daha)
0 – No
1 – Very less
2 – Sometime
3 – Always

Weakness effecting day to day activity (Analasada)
0 – No
1 – Very less
2 – Sometime
3 - Always

Do you have abdominal pain (Udara shoola)
0 – No
1 – Very less
2 – Sometime
3 - Always

Bitter taste of mouth. (Tiktasyata)
0 – No
1 – Very less
2 – Sometime
3 – Always

Tongue coating present (Jihwalipta)
0 – No
1 – Very less
2 – Sometime
3 – Always

Do you have headache (Shirashoola)
0 – No
1 – Very less
2 – Sometime
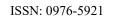3 - Always

Do you have heaviness of body (Shareera Gaurava)
0 – No
1 – Very less
2 – Sometime
3 – Always

Do you have feeling of tiredness present (Klama)
0 – No
1 – Very less
2 – Sometime
3 - Always

**Observation**
In this study among 32 patients 30 completed the whole treatment course, as 2 patients left the treatment due to their personal problems.

### Table 2: Demographic Profile of patients

| Geographic observation | Predominance | Precentage | No of patients |
|---|---|---|---|
| Age (range 18-55yrs) | 28-37 years | 53. 1% | 17 |
| Gender | Equally distributed(male and female) | 50. 0% | 16 |
| Marital status | Married | 87. 5% | 28 |
| Socio-economic status | Upper middle class | 62. 5% | 20 |
| Education status | Graduate | 46. 9% | 15 |
| Chronicity | More than 3 months | 50. 0% | 16 |
| Occupation | Profession | 40. 6% | 13 |
| Nature of work | Standing | 65. 6% | 21 |
| Working environment | Equally distributed (Stressful and comfortable ) | 50. 0% | 16 |
| Diet | Mixed | 87. 5% | 28 |
| Dietary Habits | Vishamashana | 65. 6% | 21 |
| Agni | Manda | 62. 5% | 20 |
| Koshtha | Madhyama | 78. 1% | 25 |

### Results

Friedman's test ($p<0. 05$) was applied to assess the significant change in the symptoms having ordinal data followed by Post hoc analysis with Wilcoxon signed rank tests was conducted with a Bonferroni correction applied, resulting in a significant level of $P<0. 017$ to interpret the time of significant change. (Table 3)

### Table 3: Parameters of Urdhvaga Amlapitta

| Serial No. | Parameter | Chi-Square | P value | Remark |
|---|---|---|---|---|
| 1. | *Hrullasa* | 33. 364 | 0. 001 | Significant |
| 2. | *Mandagni* | 32. 000 | 0. 001 | Significant |
| 3. | *Aruchi* | 19. 538 | 0. 001 | Significant |
| 4. | *Chardi* | 25. 087 | 0. 001 | Significant |
| 5 | *Kapha nishteevan* | 13. 556 | 0. 001 | Significant |
| 6 | *Tiktamlodgara* | 47. 516 | 0. 001 | Significant |
| 7 | *Bhukte vidagdha* | 24. 000 | 0. 001 | Significant |
| 8 | *Utklesha* | 12. 250 | 0. 001 | Significant |
| 9 | *Hrith-Kanta Daha* | 48. 000 | 0. 001 | Significant |
| 10 | *Analasada* | 21. 143 | 0. 001 | Significant |
| 11 | *Udara Shoola* | 30. 525 | 0. 001 | Significant |
| 12 | *Tiktasyata* | 18. 667 | 0. 001 | Significant |
| 13 | *Jihwalipta* | 37. 324 | 0. 001 | Significant |
| 14 | *Shira shoola* | 34. 522 | 0. 001 | Significant |
| 15 | *Shareera Gaurava* | 35. 521 | 0. 001 | Significant |
| 16 | *Klama* | 43. 000 | 0. 001 | Significant |

### Discussion

'*Amlapitta*' is a combination of two words *Amla* and *Pitta.* Among these two words the *Amla* denoted the Rasa (sour taste) and the *Pitta* denotes the *Dosha* involved in this disease. The Pitta Dosha is bestowed with the function of digestion and metabolism.

The overview of the ingredients of the drug suggests that dominant *Rasa* of the Combination in whole turns out to be *Katu-Madhura Rasa* followed by *Tikta-Kashaya Rasa*. All these three Rasas are *Kapha-Pitta Hara* in nature. Mainly *Katu-Tikta Rasa* is *Kapha Hara*, *Tikta-Madhura* is *Pitta Dosha Hara*, Where as*Kashaya* is acting on both *Kapha and Pitta*. By this we can conclude that *Pippali Khanda* has the action of *Agni Deepana*, *AmaPachana*, *Vatanulomana, Dahaprashamana* (reduce burning sensation)and *Trishnanigrahana* (reduced thrist).

Majority of parameters found statistically significant improvement at the level of P< 0. 001 (by Friedman test and post hoc Wilcoxson test analysis). All symptoms recorded at 3 intervals i. e. baseline, on $7^{th}$ day and on $15^{th}$ day.

**Effect of Pippali Khanda on parameter**

**Table 4: Effect of Pippali Khanda on Parameters of Urdhvaga Amlapitta**

| Parameter | Reduction on $7^{th}$ day No of patients (%) | Reduction on $15^{th}$ day No of patients (%) |
|---|---|---|
| *Hrullasa* | 15 (60. 0%) | 11 (44. 0%) |
| *Mandagni* | 12 (50. 0%) | 12 (50. 0%) |
| *Aruchi* | 8 (53. 3%) | 9 (60. 0%) |
| *Chardi* | 4 (22. 2%) | 12 (66. 6%) |
| *Kapha nishteevan* | 4 (36. 3%) | 5 (45. 5%) |
| *Tiktamlodgara* | 19 (61. 2%) | 20 (64. 5%) |
| *Bhukte vidagdha* | 10 (62. 5%) | 10 (62. 5%) |
| *Utklesha* | 3 (30. 0%) | 5 (50. 0%) |
| *Hrith-Kanta Daha* | 19 (59. 3%) | 19 (59. 3%) |
| *Analasada* | 10 (71. 4%) | 8 (57. 1%) |
| *Udara Shoola* | 11 (50. 0%) | 12 (54. 5%) |
| *Tiktasyata* | 4 (30. 7%) | 8 (61. 5%) |
| *Jihwalipta* | 11 (42. 3%) | 15 (57. 6%) |
| *Shira shoola* | 14 (60. 8%) | 13 (56. 5%) |
| *Shareera Gaurava* | 15 (57. 6%) | 14 (53. 8%) |
| *Klama* | 18 (64. 2%) | 18 (64. 2%) |

On analysis from baseline and $15^{th}$ day effect, *Pippali Khanda* significantly reduced *Hrullasa* in 68. 7% patients, the sensation nausea caused due to the indigested food, *Vruddha Kapha* and *Pitta*. Second most important symptom, *Mandagni* caused due to both irregular dietary habit and improper *Gati* of *Vata*, *Pippali Khanda* effectly reduced *Mandagni* in 65. 6% patients.

*Chardi* is primarily a gastro-intestinal symptom caused due to the stomach trying to empty its undigested or stale food material (*Aama)* and *Vata* moving in *Pratiloma Gati,* being *Deepana, Pachana* and *Ama hara* nature of drug contributes in reducing *Chardi* in 59. 3% of sufferer.

*Ama* formation at *Agni* level cause *Aruchi* and *Jihwalipta* simultaneously which is neatly controlled by *Tikta-Kashaya Rasa* of *Pippali khanda* and reduced symptom in 81. 2% of effected persons.

*Shuktata* of the *Anna Rasa* in time period will attained *Shuktata* vitiates the *Pitta* and causes *Vidagdhata* and *Aruchi* is maintained with *Tridoshahara* action of combination, reduces in 88. 7% of patients. *Pitta Dosha* when vitiated has *Amla Rasa* dominant cause for *Utklesha, Tiktamlodagara, Tiktasyata, Hrith –Kanta Daha* and *Analasada*, all symptoms showed remarkable improvement.

On evaluating *Sarvadahika* symptoms, *Dushti* of *SamanaVata, Pachaka Pitta* and *Kledaka Kapha* along with the formation of *Ama* will give rise to *Udaras hoola*, same Dosha in later stage manifest into *Shira shoola, Shareera Gaurava* and *Klama*. So drug acting at Ama level having *Deepana, Pachana* property helps to reduces symptoms. *PippaliKhanda* has the action of *Agni Deepana, AmaPachana, Vatanulomana, Dahaprashamana* and *Trishnanigrahana* helps in reducing above symptoms.

**Conclusion**

*Pippali Khanda* at a dose of 3gm twice daily, 15 minutes after food, orally for 15 days significantly reduced symptoms of *Urdhvaga Amlapitta* like *Hrullasa, Mandagni, Chardi, Kaphanishteevan, , Utklesha, Hrit-kantaDaha, Analasada, Urdarashoola, Tiktasyata* and *Aruchi*. The therapy also significantly improved Sarvadaihika Lakshana namely, *Klama, Gaurava* and *Shirashoola*. The trial drug dose not manifests any side effects, adverse reaction or untoward events in the patients of *Urdhvaga Amlapitta.*
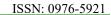
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