AYUSHDHARA
ISSN: 2393-9583 (P)/ 2393-9591 (O)
An International Journal of Research in AYUSH and Allied Systems

Review Article

TRUPTIGHNA MAHAKASHAYA - THE REMEDY FOR FUNCTIONAL DYSPEPSIA

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Article info
Article History:
Received: 19-03-2023
Revised: 09-04-2023
Accepted: 29-04-2023

KEYWORDS:
Functional dyspepsia, *Truptighna*, Gastroprotective, *Deepana*, Anti-H.pylori.

ABSTRACT

Functional dyspepsia (FD) is a clinical condition that brings the patient to the doctor with a wide range of symptoms. Many patients go on changing the consultants thinking that they are suffering with a complicated disease. The prevalence of FD is 20% worldwide. But, in India, the prevalence of FD ranges from 7-49% as per data published in one of the studies. Modern medical science treats the condition with PPI, H2 blockers, prokinetic drugs, Probiotics and many more to provide symptomatic relief. Likewise, Ayurveda, an age old health care system of India has developed its own way of treating this condition based on symptoms. Charaka has classified 500 drugs in 50 groups known as *Maha kashaya*. Each group of *Maha kashaya* consists of 10 drugs. Among these groups, a class known as *Truptighna maha kashaya* contains those drugs that relieve the early satiety and abdominal discomfort. But, the interesting fact is that these drugs have additional pharmacological actions that can be utilized to bring relief to the patients of FD of modern era. The drugs have 11 prominent actions that help relieving the symptoms and also prevent the complication of the condition. This class becomes a good alternative, appropriate, well-meant, nicely formulated remedy for functional dyspepsia.

INTRODUCTION

The definition of FD has been challenging and despite multiple changes in the definition of FD, the challenges are not entirely addressed.[1] Functional dyspepsia is a symptom complex characterized by post prandial upper abdominal discomfort or pain, early satiety, nausea, vomiting, abdominal distension and anorexia in the absence of organic disease [2]. FD can be divided into two major subcategories: EPS-mostly related with pain and burning in the epigastric region and Post-prandial Distress Syndrome (PDS) associated with post prandial fullness and early satiety. [3] The Rome IV definition with four cardinal symptoms, (early satiation, post-prandial fullness, epigastric pain and epigastric burning) its subdivision into EPS and PDS and accessory symptoms (upper abdominal bloating, nausea, belching) are well accepted [4].

Access this article online
Quick Response Code
https://doi.org/10.47070/ayushdhara.v10iSuppl2.1201

But, the presentation of condition may differ according to the contribution of overlapping conditions. Four common overlap conditions are indicated in FD based on the studies of symptom cluster in Asia-pacific are FD overlapping with GERD, IBS-D, bloating and constipation [5]. Although other diseases, including FGIDs, often overlap FD, the prevalence is easily affected by the diagnostic criteria and the population assessed. So those factors should be taken into consideration when interpreting data on overlapping FD [6]. Many factors are involved in the pathogenesis of this condition. Different studies look at this condition from different angles to understand it properly. According to the recent audits, Bacterial infections, other than H. pylori also play an equally important role. Acute and chronic infections may be important for pathogenesis of FD.[7] One of the studies revealed that the patients with FD infected with Hp had similar clinical characteristics to those patients that were not infected and 58% of prevalence of Hp infection in patients with FD is reported. [8] The infection observed to increase with patients age.[8] Eradication of H.pylori independently improved dyspepsia symptoms. A test and treat strategy for H.pylori may be recommended for elderly patients

with dyspepsia [9]. Another important factor is intestinal dysbiosis that adds fuel to fire. Intestinal dysbiosis may be associated with symptom generation or exacerbation in subset of patients FD [10]. Alteration in GF (Gastric Fluid) micro biota in patients with FD. Reflux of the small intestinal contents including bile acid and intestinal bacteria composition change involved in the pathophysiology underlying FD. [11] Patients with functional dyspepsia show slightly higher compliance to mechanical distension [12]. Visceral hypersensitivity plays a major role in the pathogenesis of the symptoms [12]. All of these factors make the Functional dyspepsia as a complex syndrome. Choosing the correct treatment for functional dyspepsia is difficult and even though the prevalence of functional dyspepsia is increasing. Pharmacological therapeutic options remain limited. Development of new drugs to treat disorder, is therefore a priority.[13] With recent discoveries in some of the pathways involved including the role of immune system, trials with new medication are missing and some of the old drugs should be revisited.[14] Charaka Samhita- one of the oldest treatise of Indian medical science, includes various approaches for preventing and treating the diseases. The author of this compendium has classified the drugs on the basis on pharmaco-therapeutic actions and named each class as *Mahakashaya* which is also known as *Gana* (group). *Truptighna maha kashaya* is one among them containing 10 drugs [15]. Individually or altogether, they act effectively in a condition called *Trupti*- a disease exclusively caused by *Kapha*.[16] The term *Trupti* carries a meaning as to early satiety which is one of the chief complaints in functional dyspepsia. Considering this fact as a rationale, an attempt is made in this review to find out the usefulness of this class in FD.

AIMS AND OBJECTIVES

- To study different actions of the drugs mentioned in *Truptighna maha kashaya* of Charaka.
- To study the conceptual usefulness of *Truptighna maha kashaya* in the symptoms of functional dyspepsia.
- To evaluate the observation with evidence based studies.

MATERIALS

- Charaka Samhita Part-1
- e-nighantu
- Illustrated Bhavaprakasha nighantu
- Research articles on functional dyspepsia and review articles on functional dyspepsia.
- World flora online
- Research articles on drugs mentioned in *Truptighna maha kashaya.*

METHODS

- Accepted botanical names of all drugs mentioned in the *Truptighna mahakashaya* are tabulated along with their presently accepted families.
- Different actions of all drugs are collected from lexicons written at different times.
- Properties and actions of each drug is studied and its usefulness in functional dyspepsia is appreciated.
- The drugs are re arranged based on their predominant action and the conclusion is drawn on the basis of their usefulness.

OBSERVATION

Drugs mentioned in *Truptighna mahakashaya*

S.No	Drug[15]	Botanical name(accepted)[17]	Family[17]
1	*Shunti*	*Zingiber officinale* Roscoe	Zingberaceae
2	*Chavya*	*Piper retrofractum* Vahl	Piperaceae
3	*Chitraka*	*Plumbago zeylanica* L	Plumbaginaceae
4	*Vidanga*	*Embelia ribes* Burm f	Primulaceae
5	*Murva*	*Marsdenia tenacissima* (Roxb) Moon	Apocynaceae
6	*Guduchi*	*Tinospora cordifolia* (Willd.) Meirs ex Hook.f &T	Menispermaceae
7	*Vacha*	*Acorus calamus* L	Acoraceae
8	*Musta*	*Cyperus rotundus* L	Cyperaceae
9	*Pippali*	*Piper longum* L	Piperaceae
10	*Patola*	*Trichosanthes dioica* Roxb	Cucurbitaceae

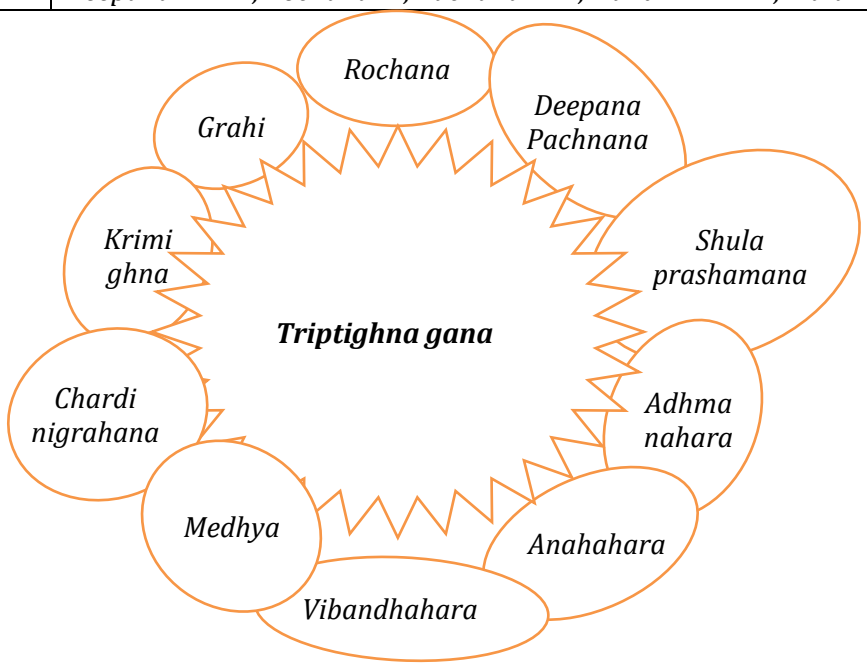
Properties of the Drugs mentioned in *Truptighna Mahakashaya*

Drug	*Guna*	*Rasa*	*Vipaka*	*Veerya*
Shunti[25]	*Laghu snigdha*	*Katu*	*Madhura*	*Ushna*
Chavya[25]	*Laghu, Ruksha*	*Katu*	*Katu*	*Ushna*
Chitraka[25]	*Laghu Ruksha Teekshna*	*Katu*	*Katu*	*Ushna*
Vidanga[25]	*Laghu, Ruksha, Teekshna*	*Katu Kashaya*	*Katu*	*Ushna*
Murva[25]	*Guru Ruksha*	*Tikta, Kashaya*	*Katu*	*Ushna*
Guduchi[25]	*Guru Snigdha*	*Tikta Kashaya*	*Madhura*	*Ushna*
Vacha[25]	*Laghu, Teekshna*	*Katu, Tikta*	*Katu*	*Ushna*
Musta[25]	*Laghu Ruksha*	*Tikta Katu, Kashaya*	*Katu*	*Sheeta*
Pippali[25]	*Laghu Snigdha, Teekshna*	*Katu*	*Madhura*	*Anushna sheeta*
Patola[36]	*Laghu Snigdha*	*Tikta*	*Madhura*	*Ushna*

Actions of Drugs of *Truptighna maha kashaya* with respect to FD

S.No	Drug	Actions
1	*Shunti*	*Ruchyam*[19], *Vamihanti*[21], *Shulaharini*[23], *Adhmanaharini*[23], *Pachani*[24], *Vibandhanut*[19,24], *Deepanam*[19], *Grahi*[19], *Hanti anaha*[24]
2	*Chavya*	*Jantuhrut*[18], *Jantudrekapaha*[23], *Deepana*[19,22,23,24], *Kaphodrekaharam*[18], *Bhedi*[19,21,24], *Ruchikrit*[19,23], *Pachana*[22,24], *Shulahara*[22], *Anahapaha*[22], *Baddhavid syandini*[20]
3	*Chitraka*	*Grahanivinashana*[18], *Grahanijit*[21], *Grahi*[21], *Deepana* [22], *Pachana*[22,24], *Rochana*[22]
4	*Vidanga*	*Kriminashana*[18], *Vahnikaram*[21,24], *Agnimandyanashini*[23], *Adhmananut*[21,24], *Vibandhanut*[21,24], *Ruchya*[22], *Visthambhahara*[22], *Shulahara*[22], *Amahara*[22]
5	*Murva*	*Vaminashini*[18], *Vamiharini*[23], *Kriminut*[22], *Sara*[24]
6	*Guduchi*	*Sangrahini*[18,21,22,24], *Chardijit*[18], *Vamiharini* [23], *Agni deepani*[21,24]
7	*Vacha*	*Vahnikrut*[21,24], *Pachanam*[18], *Amapachani*[22], *Jantughnam*[18], *Shulaghni*[24], *Kapha mahrut*[19], *Vibandhaghni*[24], *Hanti adhmana*[22], *Kaphama granti nut* [23], *Atasaraghni*[23]
8	*Musta*	*Atisaraghni*[18], *Kriminashini*[18], *Jantujit*[22], *Grahi*[19,21], *Sangrahi*[20], *Pachanam*[19,20,24], *Pachana*[21,22], *Pachani*[23] *Deepana*[21,22], *Aruchi jit*[22,24]
9	*Pippali*	*Vahnikrut*[21][24], *Deepani*[22], *Pachanam*[18], *Amapachani*[22], *Jantughnam*[18], *Shulaghni*[24] *Kaphamahrut*[19], *Hantivibandha*[22], *hantiadhmana*[22], *Kaphamagrantinut*[23], *Atisaraghni* [23]
10	*Patola*	*Jantunashini*[18], *Amanashini*[18], *Pachani*[22], *Deepani*[19,20,21,22,23,24], *Sara*[19], *Rechani* [21], *Deepana*[19,22,24], *Rochana*[22], *Pachana*[21,22], *Hantikrimin*[21], *Malanulomana* [22]

DISCUSSION



The botanicals mentioned in *Truptighna mahakashaya* mainly relieve early satiety and pacifies *Kapha* owing to their *Kaphahara* property. After a comprehensive study on the properties of drugs mentioned in *Truptighna mahakashaya*, it is evident that each drug works to augment the *Agni* and bring back the normalcy in vitiated *Dosha*. Though Functional dyspepsia (FD) cannot be equated to *Trupti* (a condition caused by *Kapha* and also considered as *Rasa dhatu dusti lakshana*), yet, the drugs cited in the class *Truptighna maha kashaya* possess all the attributes that are required to treat various symptoms of FD efficiently. *Truptighna maha kashaya* is group of botanicals of 10 plants belonging to different families. These 10 drugs can be rearranged in to 6 sub-groups in order to highlight their action in accordance with different presentation of Functional dyspepsia (FD).

Group -1, DPAPD (Drugs predominantly act on Post prandial distress syndrome of FD)

Group-2, DPAEPS (Drugs predominantly act on epigastric pain syndrome of FD)

Group -3, DPAHp (Drugs predominantly act on h.pylori associated FD)

Group-4, DPAIBS (Drugs predominantly act on IBS overlapping FD)

Group-5, DPAGERD (Drugs predominantly act on GERD overlapping FD)

Group-6, DPAB&C (Drugs predominantly act on bloating and constipation overlapping FD)

Group -1, DPAPDS (Drugs predominantly act on Post prandial distress syndrome of FD)

Post distress syndrome of FD generally presents with early satiety and discomfort after meals. Ayurveda looks at it as a condition that occurs as result of obstruction caused by *Ama* to the normal movement of *Vata*. *Ama* is always a consequence of *Agnimandya*. Based on the references found in different classics of Ayurveda, *Shunti* (*Zingiber officinale* Roscoe), *Pippali* (*Piper longum* L) *Chavya* (*Piper retrofractum* Vahl) and *Chitraka* (*Plumbago zeylanica* L) are found to be effective in treating the discomfort caused by this condition. Acharya charaka has appreciated *Deepaniya* and *Shulaprashamana* activities of these four drugs in addition to *Truptighna* action.[26] *Shunti* augments digestive fire with *Katu* and *Ushna* properties and aids in *Ama pachana*. Being *Ushna* and *Snigdha*, it normalizes the movement of *Vata*. *Pippali* re-establishes *Samagni*, normalizes *Vata* and promotes easy evacuation of stool. *Chavya* works in same way as that of *Pippali's* root.[27] *Chitraka* being *Teekshna*, breaks the *Dosha sanghata* and brings about *Amapachana* and *Agni deepana*. Following few studies support the usefulness of these drugs in this group

Zingiber officinale Roscoe	Anti-ulcerogenic effect (Zaman SU et al 2014)[28] Gastro protective effect (Siddaraju M et al 2011)[29] Antispasmodic effect (Nemat AZ yasin et al 2012)[30]
Piper longum L	Gastroprotective effect of piperine (Duan Z et al 2022)[31] Spasmolytic activity (Peerarat Thiana et al 2005)[32]
Piper retrofractum Vahl	Gastroprotective effect (Toshio Morikawa et al 2004)[33]
Plumbago zeylanica L	Anti-ulcer activity (Kakjing Dabul Falang et al 2012)[34] Gastroprotective effect (Ittiyavirah SP et al 2016)[35]

Group-2, DPAEPS (Drugs predominantly act on epigastric pain syndrome of FD)

EPS generally presents with epigastric burning pain. Epigastric pain as per Ayurveda, occurs when aggravated *Vata* gets mixes with *Kapha* and *Pitta*. As a result of which burning pain occurs in the epigastrium. *Guduchi* (*Tinospora cordifolia* (Willd) Meirs ex Hook f & Thomson) *Patola* (*Trichosanthes dioica* Roxb) *Pippali* (*Piper longum* L) and *Shunti* (*Zingiber officinale* Roscoe) appear to be effective in relieving burning pain associated with this condition. *Guduchi* normalizes the movement of *Vata* and pacifies all deranged *Doshas*. *Patola* acts as *Pittasaraka* and *Dustha kapha nashak*. It alleviates all *Doshas*[36]. *Pippali* acts as *Shula prashamana* and *Vatanulomana*. Likewise, *Shunti* acts as *Shula prashamana* and *Vatanulomana*. All these drugs undergo *Madhura vipaka* and hence very much useful in pacifying *Vata* which is the most powerful denominator of the pathogenesis. The following few studies support the usefulness these drugs in this group.

Tinospora cordifolia (Willd) Meirs ex Hook f & Thomson	Gastroprotective effect (Paulrayer Antonysamy et al 2014) [37] Analgesic activity (Bhomik Goel et al 2014)[38]
Trichosanthes dioica Roxb	Analgesic and anti-inflammatory activity (Deka et al 2018) [39] Gastroprotective effect (Kumar et al 2018)[40]
Piper longum L	Analgesic activity (G Vedhanayaki et al 2003)[41] Anti-inflammatory effect (A.Kumar et al 2009)[42] (B.K Ashok et al 2012)[43] Gastroprotective effect of piperine (Duan Z et al 2022)[31]
Zingiber officinale Roscoe	Anti-nflammatory effect (Hassan et al 2017)[44] Gastro protective effect (Siddaraju M et al 2011)[29]

Group -3, DPAHp (Drugs predominantly act on H.pylori associated FD)

Amashayaja krimi is the name given to 7 different types of *Shleshmaja krimi* in Ayurveda [45]. The term *Krimi* is used to signify various forms of organisms that affect human beings. It includes all the parasites including helminths, bacteria and virus. H pylori is a gram negative bacteria that causes dyspepsia in some individuals. Since H. pylori reside in the stomach and takes shelter in the mucus, it can be equated with one of the *Amashayaja krimi* explained in Ayurveda. Considering *Kleda* as the main factor in the pathogenesis of *Krimi*, administering drugs with *Kledahara* property can be a useful strategy in the management. *Chitraka* (*Plumbago zeylanica* L), *Musta* (*Cyperus rotundus* L) *Vidanga* (*Embelia ribes* Burm. f) and *Shunti* (*Zingiber officinale* Roscoe) can be employed as an anti h pylori regimen. Among these 4 drugs, the combination of *Chitraka*, *Vidanga* and *Musta* is called as *Trimada* which is mainly recommended to treat *Krimi*.[46] *Chitraka* acts as *Deepana, Shulaprashamana* and *Truptighna* in addition to *Krimighna* action. *Mustaka* is considered as the best drug among *Sangrahi* and *Pachana* drugs [47]. *Vidanga* is admired as best *Krimighna dravya* in Ayurveda. [47] Following studies support their usefulness

Plumbago zeylanica L	Anti-Helicobacter pylori activity (WangYC & HuangTL 2005) [48] (Paul AS et al 2013)[49]
Cyperus rotundus L	Inhibitory activity against VacA (Atanda H et al 2022)[50]
Zingiber officinale Roscoe	Gastro protective effect (Siddaraju M et al 2011)[29]

Group-4, DPAIBS (Drugs predominantly act on IBS overlapping FD)

IBS usually presents with alternate episodes of diarrhoea and constipation which, in Ayurvedic perspective, considered as *Grahani roga* that occurs due to *Grahani dosha*. Other symptoms of functional dyspepsia might add extra discomfort when it co-exists with IBS. A number of psychiatric co morbidities affect the patients with IBS, in particular, anxiety disorder and mood disorders occur with a significant greater frequency [47]. The drugs that act as *Sangrahi, Deepana, Pachana* and *Medhya* are mainly preferred in this condition. *Musta* (*Cyperus rotundus* L), *Guduchi* (*Tinospora cordifolia*(Willd) Miers ex Hook f & Thomson) *Vacha* (*Acorus calamus* L) and *Shunti* (*Zingiber officinale* Roscoe) can act better in this condition. For the reason, *Musta* is considered as best among *Sangrahika*, *Deepaniya* and *Pachaniya* drugs according to Charaka[15]. Besides being *Medhya, Guduchi* is appreciated as best among *Sangrahi-vatahara-deepaniya-shleshmashonita-vibandha prasha mana* drugs [15]. *Vacha* is considered as *Adhmanahara, Shakrit mutra vishodhini*[51] and *Medhya dravya*. While *Shunti* acts as *Vibandha bhedini* and *Sangrahaka*[51]. The following studies signify their importance in this group.

Cyperus rotundus L	Cytoprotective effect (Zhu M et al 1998)[52], Anti-diarrhoeal activity (SJ Uddin et al 2006)[53], Anti-diarrhoeal activity (Daswani PG et al2011)[54], Anti-depressant activity (Zhou ZL et al 2016)[55] (Hao et al 2017)[56]
Tinospora cordifolia (Willd.) Miers ex Hook .f & Thomson	Anti-diarrhoeal activity (Gahlawat et al 2015)[57], Anti-depressant like activity (Dhingra and Goyal PK 2008)[58], Anti-anxiety potential (Gururaja MP et al 2022)[59]
Acorus calamus L	Anti-diarrhoeal activity (FG Shobha et al 2001)[60], Anxiolytic activity (Kaushik and Kaushik 2020)[61]
Zinger officinale Roscoe	Anti-diarrhoeal activity (Daswani PG et al 2010[62], Anxiolytic activity (Vishwakarma SL et al 2002)[63]

Group-5, DPAGERD (Drugs predominantly act on GERD overlapping FD)

GERD (Gastro Oesophageal Reflux Disease) is a condition where in reflux of gastric acid causes irritation to oesophagus. This condition, as per Ayurveda, occurs when there is a formation of *Samapitta*. The drugs that digest *Ama* and pacify *Nirama pitta* are of paramount importance. GERD condition, if not treated, might land up in complication such as oesophageal cancer. The drugs that digest *Ama*, pacify *Nirama pitta* and normalize the movement of *Vata* are preferred. *Guduchi*, *Patola Murva* and *Shunti* act better in this condition. For the reason, *Guduchi* (*Tinospora cordifolia* (Willd.) Miers.ex Hook.f & Thomson) brings about digestion of *Ama* owing to its *Tikta rasa* and pacifies *Nirama pitta* with its *Madhura vipaka*. *Patola* (*Trichosanthes dioica* Roxb) act as *Pachana* and *Pitta shamaka* due to *Tikta rasa* and *Madhura vipaka*. *Murva* (*Marsdenia tenecissima* (Roxb)Moon) possesses *Tikta kashaya rasa* which aids the digestion of *Ama*. *Shunti* (*Zinger officinale* Roscoe) being *Katu* promotes the digestion of *Ama* and pacifies *Pakva pitta* with *Madhura vipaka*. The following studies hint at the usefulness of these drugs.

Tinospora cordifolia (Willd.) Meirs ex Hook.f & Thomson	Improvement in GMA activity (Ravi Bhargava et al 2020)[64]
Trichosanthes dioica Roxb	Gastro protective effect (Kumar et al 2018)[40], improvement of symptoms in *Amlapitta* (Sahu S et al 2016)[65]
Marsdenia tenecissima (Roxb) Moon	Cell cycle arrest in human esophageal carcinoma cells (Wei Fan et al 2015)[66], Adjuvant to chemotherapy (Zhou X et al 2019)[67]
Zingiber officinale Roscoe	Anti-emetic activity (Vishwakarma et al 2002)[63], Efficacy in urdhwaga amlapitta (Lad SL 2014)[68]

Group-6, DPAB & C (Drugs predominantly act on bloating and constipation overlapping FD)

Bloating and constipation needs to address by correcting *Apanavata* (a type of *Vata* responsible for defecation) as per Ayurveda. *Patola* (*Trichosanthes dioica* Roxb) *Shunti* (*Zingiber officinale* Roscoe) *Vidanga* (*Embelia ribes* Burm f) and *Chavya* (*Piper retrofractum* Vahl) with their *Ushna* property normalizes *Vata* and relieve the symptoms. Following useful activities of these drugs are reported

Trichosanthes dioica Roxb	Stimulant laxative activity (Sanjib Bhattacharya et al 2012) [71]
Zingiber officinale Roscoe	Enhancing Laxative action (Abidu et al 2022)[69] Positive effect on constipation (Bipin R et al 2020)[70]
Embelia ribes Burm f	Carminative (Khare CP 2007)[72]
Piper retrofractum Vahl	Stimulant, Carminative (Khare CP 2007)[72]

CONCLUSION

After a thorough understanding of the properties and actions of the drugs mentioned in *Truptighna maha kashaya* of *Charaka*, it is obvious that the class is so aptly designed to target different factors involved in the pathogenesis of Functional dyspepsia of modern era. *Shunti* is one such drug that has multiple actions with respect to gastro intestinal disorders and satisfies its other name as *Mahaushadha*. All the 10 drugs produce their effect in their own way to reduce different symptoms. When put together, they absolutely make an appropriate remedy for functional dyspepsia. Many drugs used in modern medical science to treat functional dyspepsia are not that effective. On other hand, they pose certain threat to the health. Hence, re visiting the old treatises to revive the health care system is really a burning need. This article will help researchers to contemplate on *Truptighna maha kashaya* not only as an early satiety modulator group but also a class that benefits many patients suffering with morbid symptom complex of Functional dyspepsia.

REFERENCES

1. Yarandi SS, Christie J Functional dyspepsia in review: Pathophysiology and challenges in the diagnosis and management due to co-existing gastroesophageal reflux disease and Irritable bowel syndrome, Gastro-enterology research and practice, vol 2013
2. Thumshirn M, Pathophysiology of functional dyspepsia, Gut, vol-51, issue suppl 1
3. Chaves J, Pita L, Libano D, Pimentel-Nunes P; Pharmacological treatment of functional dyspepsia: An old story revisited or a new story to be told? A clinical review GE Port J Gastroenterol, 2023, 30; 86-97
4. Wauters L, Dickman R, Drug R, Mulak A, Serra J, Enck P, Tack J et al United European gastroenterology(UEG) and European society for neurogastroenterology and motility(ESNM) concensus on functional dyspepsia; United European gastroenterol J, 2021: 9(3) 307-331
5. Gwee KA, Lee YY, Suzuki H, Ghoshal UC, Holtmann G, Bai T,Min-Hu chen GB et al, Asia pacific guidelines for managing functional dyspepsia overlapping with other gastrointestinal symptoms. Journal of Gastroenterology and Hepatology, vol38, issue 2, p 197-209
6. Miwa H, Nagahara A, Asakawa A, Arai M, Oshima T, Kasugai K,Kamada K, Suzuki H et al Evidance – based clinical practice guidelines for functional dyspepsia 2021, J gastroenterol 2022, 57(2); 47-61
7. Tally NJ, Walker MM, Emerging evidence that irritable bowel syndrome & functional dyspepsia are microbial diseases; 2019, 149 (4) p 437-440
8. Rodriguez-Garcia JL, Carmona-sanchez R, Functional dyspepsia and dyspepsia associated with Helicobacter pylori infection: Do they have different clinical characteristics? Rivista de Gastroenterologia de Mexico 2016: 81(3) p 126-133
9. Tanaka I, Ono S, Shimoda Y et al, Eradication of Helicobacter pylori may improve dyspepsia in the elderly for long term; BMC Gastroenterol 2021, 445

10. Tziatzios G, Gkolfakis P, Papinikolaou IS, Mathur R, Pimentel M,Bourboulis EJG, Triantafyllou K; Gut microbiota dysbiosis in functional dyspepsia; Microorganisms 2020, 8(5) 691
11. Igarashi M, Nakae H, Matsuoka T, Shunsuke T, Hisada T, Tomita J, KogaY, Alteration in gastric microbiota and its restoration by probiotics in patients with functional dyspepsia: BMJ open gastroenterology, vol 4, issue 1, 2017
12. Salet GAM, Samsom M, Roelofs JMM, Henegouwen GPVB, Smout AJPM, Akkermanas LMA, Response to gastric distension in functional dyspepsia; Gut, vol 42, issue 6
13. Yamawaki H, Futagami S, Wakabayashi M, Sakasegawa N, Agawa S, Higuchi K,et al Management of functional dyspepsia: State of the art and emerging therapies: Sage journals 2017
14. Chaves J, Pita L, Libano D, Pimentel-Nunes P; Pharmacological treatment of functional dyspepsia: An old story revisited or a new story to be told? A clinical review GE Port J Gastroenterol, 2023, 30; 86-97
15. Pandeya GS(editor) The Charaka samhita of of Agnivesha, Part-1 Varanasi Chaukhambha Sanskrit sansthan, 2007 58p, 62p,319p
16. Tripathi RD, Astanga sangraha of srimad Vriddha vagbhata, Sutrasthana, Delhi, Chaukhambha Sanskrit paristhan, reprint edition 2003, 387p
17. WFO (2023): World Flora online. published on the internet: http://www.worldfloraonline.org.
18. Mahendra bhogika, Dhanvantari nighantu(e nighantu); Hyderabad, National Institute of Indian Medicinal Heritage for CCRAS 2012
19. Sodhala, Sodhala nighantu (e nighantu); Hyderabad, National institute of Indian Medicinal Heritage for CCRAS 2012
20. Madhava, Dravyaguna (e nighantu); Hyderabad, National Institute Of Indian Medicinal Heritage for CCRAS 2012
21. Madanapala, Madanapala nighantu (e nighantu); Hyderabad, National Institute Of Indian Medicinal Heritage for CCRAS 2012
22. Kaiyyadeva, Kaiyyadeva nighantu(e nighantu); Hyderabad, National Institute Of Indian Medicinal Heritage for CCRAS 2012
23. Narahari, Rajanighantu (e nighantu); Hyderabad, National Institute Of Indian Medicinal Heritage for CCRAS 2012
24. Bhavamishra Bhavaprakasha nighantu (e nighantu); Hyderabad, National Institute Of Indian Medicinal Heritage for CCRAS 2012
25. Sharma PV, Dravyaguna vijnana Vol 2, Reprint edition, Varanasi Chaukhambha Bharati academy, 2011 333p, 277p 699p, 698p, 336p, 29p, 371p, 360p, 504p, 762p
26. Sharma PV, Dravyaguna vignanaVol.1, Revised golden jubilee edition Varanasi, Chaukhambha Bharati academy, Varanasi 2010, 46p, 51p
27. Chunekar KC (commentator), Pandya GS (editor), Bhavaprakasha nighantu of Bhavaprakasha, Varanasi, Chaukhamba Bharati academy, 19p
28. Sameer Uz Zaman, Mrityunjay M.Mirze and Ramabhimaiah, Evaluation of anti ulcerogenic effect of Zingiber officinale (Ginger) root in rats, Int.J. curr. Microbiol. App. Sci, 2014, 3(1), 347-354p
29. Siddaraju M.Nanjundaiah, Harish Nayaka, Mysore Annaiah, Shylaja M Dharmesh, Gastroprotective effect of Ginger rhizome (Zingiber officinale) extract, Role of gallic acid and cinnamic acid in H+K+ATpase/H.pylori inhibition and anti-oxidative mechanism, Evidance based complementary and alternative medicine, vol. 2011, available from https://doi.org/ 10.1093/ecam/nep060
30. Nemat A.Z.Yasin, El-sayed M, Elrok, Siham M.A.El-sheneway, Basant M.M Ibrahim, The study of the antispasmodic effect of ginger (Zingiber officinale) in vitro; Der pharmacia letter 2012, 4(1): 263-274, available from www.scholarsresearchlibrary.com
31. Zhouwei Duan, Shasha YU, Shiping Wang, Hao Deng Lijun Guo, Hong Yang, Hui xie, Effects of piperine on ethanol induced gastric mucosa injury by oxidative stress inhibition, Nutrients, 14(22) 4744, https://doi.org/10.3390/nu14224744
32. Peerat Thiana Pattana Poonpanang & Kitja Sawangjaroen, Comparison on spasmolytic activities of Piper longum, P.sarmentosum and Quercus infectoria extracts with Loperamide and Verapamil in rat and Guinea pig intestinal tissues, Acta Horticulture 2005 680(680) 183-189p, DOI:10.7660/ActaHortic2005.680.28
33. Toshio Morikawa, Hisashi Matsuda, Itadaki Yamaguchi, Yutana Pongpiriyadacha, Masayuki Yoshikawa, New amides and gastroprotective constituents from the fruit of Piper chaba, Planta Med 2004, 70(2), 152-159p DOI:10.1055/s-2004-815493
34. Kakjing Dabul Falang, Mary Ogonnaya Uguru, Neolnenman Wannang, Iliya Hosea azi, Nwoye Chiamaka, Antiulcer activity of Plumbago zeylanica Linn root extract, J.Nat. prod. plant Resour, 2012, 2(5), 563-567p.
35. Sibi P.Ittiyavirah, Ann Shine Paul, Gastroprotective effect of plumbagin and ethanolic extract of Plumbiginales in experimentally induced ulcer, J Herb Med pharmacol 2016 5(3) 92-98p
36. Deshpande AP Javalagekar R.N Dravyaguna vijnana Part 1 & 2, reprint edition, Pune, Proficient publishing house, 2013, 968p
37. Paulrayer Antonisamy, Muniyappan Dhanasekaran, Savarimuthu Ignacimuthu, Veeramuthu

Duraipandiyan, Joseph Devadass Balthazar, Paul Agastian, Jong-Hoon Kim, Gastroprotective effect of epoxyclerodane diterpene isolated from Tinospora cordifolia Miers (Guduchi) on Indomethacin-induced gastric ulcer in rats, phytomedicine, 2014, 151(7), 966-969p doi:10.1016/j.phymed.2014.02.010
38. Bhoomik Goel, Nishant Pathak, Devendra Kumar Nim, Sanjay kumar Singh, Rakesh kumar Dixit, Rakesh Chaurasia, Clinical evaluation of analgesic activity of Guduchi (Tinospora cordifolia) using animal model, J Clin Diagn Res 2014, 8(8) HC01-HC04, doi: 10.7860/JCDR/ 2014/9207.4671
39. Satyendra Deka, Ramakanta Sharma and Mangala Lahkar, Analgesic, anti-inflammatory and antipyretic activity of Trichosanthes dioica Roxb leaf extracts, Interantional Journal of Pharmaceutical sciences and Research 2018, vol.9(1) 227-235p
40. Anurag Kumar, Ch.V.Rao, Kuldeep Singh, Gastroprotective effect of ethanolic extract of Trichosanthes dioica fruit on experimental gastric ulcer in rats; International journal of pharmaceutical sciences & Research 2018, vol 9(10) 4481-4486
41. G Vedhanayaki, Geeta V Shastru, Alice Kuruvilla, Analgesic activity of Piper longum Linn root Indian J Exp Biol 2003 41(6) 649-651p
42. A.Kumar, S.Panghal, S.S Mallapur, M.Kumar, Veerma Ram, B.K Singh; Anti-inflammatory activity of Piper longum fruit oil, Indian J Pharm Sci 2009, 71(4) 454-456p
43. Mamta kumara, B.K Ashok, B.Ravikumar, Tarulata N Pandya, Ravinaryayan Acharya, Anti-inflammatory activity of two varieties of Pippali (Piper longum L); Ayu 2012, 33(2), 307-310p
44. Ndanusa Abdullahi Hassan, Rohini Karunakaran, Uma sankar A, Khin Maraye, Anti-inflammatory effect of Zingiber officinale on Sprague Dawley rats, Asian Journal of Pharmaceutical and clinical research 2017, 10(3) 353-355p
45. Paradakara HSS (editor) Astanga hridaya of Vagbhata; reprint edition, Varanasi Chaukhamba Sanskrit sansthan, 2010, 529p
46. Hegde P, Harini A, Dravyaguna vijanana, vol-1, first edition, New Delhi, Chaukhambha publications 2011, 433p
47. Mihaela Fadgyas-stanculete, Ana-Maria Buga, Aurel-Popa-Wagner, Dan L Dumitrascu, The relationship between irritable bowel syndrome and psychiatric disorders: from molecular changes to clinical manifestations, Journal of Molecular psychiatry 2014, 4
48. Wang YC, Huang TL, Anti-Helicobacter pylori activity of Plumbago zeylanica, FEMS Immunol Med Microbiol, 2005, 43(3): 407-412p doi:10.1016/j.femsim.2004.10.015
49. Anne Shine Paul, Aneesul Islam, P.Yuvaraj, Anti-Helicobacter pylori and cytotoxic activity of detoxified root of Plumabgo auriculata, Plumbago indica and Plumbago zeylanica, The Journal of Phytopharmacology 2013, 2(3): 4-8p, online at www.phytopharmajournal.com
50. Halimat Atanda, Toheeb Adewale Balogun, Mohammed M Alshehri, Gustavo Olivos-Ramirez, Julissa Vilca-Quispe, Manuel chenet-zuta et al, In silico study revealed the inhibitory activity of selected phytomolecules of C.rotundus against vacA implicated in Gastric ulcer, Journal of Biomolecular structure and dynamics
51. Sitaram B Bhavaprakasha of Bhavamishra, vol-1, reprint edition, Varanasi, Chaukhambha orientalia, 2012 136p, 150p
52. M.Zhu, H.H.Luk, H.S Fung, CT Luk, Cytoprotective effects of Cyperus rotundus against ethanol induced gastric ulceration in rats, Phytotherapy research, vol-2, issue 5, 392-394p
53. S J Uddin, K Mondal, J.A Shilpi, MT Rahman, Anti-diarrhoeal activity of cyperus rotundus, Fitoterapia 2006, 77(2); 134-136p
54. Poonam G Daswani, S.Brijesh, Pundarikakshudu Tetali, Tannaj J Birdi, Studies on the activity of Cyperus rotundus Linn tubers against infectious diarrhoea, Indian J Pharmacol 2011; 43(3) 340-344p
55. Zhong-liu Zhou,Wen-quing Yin, Ya-mei yang, Chun Hong He, Xiao-Na Li,Cui-Ping Zhou et al, New iridoid glycosides with anti-depressant activity isolated from Cyperus rotundus, Chemical and Pharmaceutical Bulletin, 2016, vol 64, issue-1, 73-77p
56. Gui-feng Hao, Mao-quin Tang , Yin-Jin Wei, Feng-Yuan che, Li-ju Qian, Determination of anti-depressant activity of Cyperus rotundus L extract in rats, Tropical journal of pharmaceutical research 2017, 16(4) 867-871p,
57. Deepak Gahlawat, Charan Singh, Geeta, Tarun virmani, Jyoti Gupta, Reshu virmani; Anti-diarrhoeal activity of the whole plant of Tinospora cordifolia; world journal of pharmaceutical research, vol 4, issue-9, 781-788p
58. D.Dhingra and P.K Goyal, Evidences for the involvement of Mono aminergic and GABAergic systems in Anti-depressant like activity of Tinospora cordifolia in mice, Indian J pharm Sci 2008, 70(6) 761-767p doi: 10.4103/0250-474x.49118
59. Gururaja MP, Anjali Krishna M, Himanshu Joshi, Evaluation of anti-anxiety potential of Tinospora

cordifolia (Willd)leaf extracts inmice using experimental models, J young Pharm 14(1) 46-49p
60. FG Shobha M Thomas, Study of anti-diarrhoeal activity of four medicinal plants in castor-oil induced diarrhoea, J Ethnopharmacol 2009(1)73-76p
61. Shipra Kaushik and Shobit Kaushik, Study of the anxiolytic activity of ethanol extract of root Acorus calamus in albino mice; Asian journal of pharmaceutical and clinical research 2020 13(12), 77-80p
62. Poonam G Daswani, S.Brijesh, P undarikakshudu Tetali, Noshir H Antia, Anti- diarrhoel activity of Zingiber officinale, Current Science, vol-98, No-2, 2010, 223-229p
63. S. Vishwakarma, S.C Pal,Veena S Kasture, S.B Kasture, Anxiolytic and anti-emetic activity of Zingiber officinale, Phytotherapy Research 2002 16(7) 621-626p L
64. Ravi Bhargava, Martin Chasen, Michel Elten, Neil Macdonald; The effect of ginger (Zingiber officinale Roscoe) in patients with advanced cancer, Support care cancer 2020, 28(7) 3279-3286p
65. Subash Sahu, Rajendra kumar Soni, Utkalini Nayak, Clinical evaluation of Patola leaf powder in the management of Amlapitta, Paripex-Indian Journak of Research 2016, 5(12) 460-462p
66. Wei Fan, Li Sun, Jing-quion zhou Cang zhang, Sung qin, Ying Tang, Yang Liu et al Marsdenia tenacissima extract induces G_0/G_1 Cell cycle arrest in human esophageal carcinoma cells by inhibiting mitogen-activated protein kinase (MAPK) signalling pathway. Chin J Nat Med 2015, 13(6) 428-437.
67. Xu Zhou, Meilu Liu, Qing Ren, Weiteng zhu,Yang Wang,Haochen Chen and Jianrng chen, oral and injectable Marsdenia tenacissima extract (MTE) as adjuvant therapy to chemotherapy for gastric cancer. A systemic review BMC complement Altern Med 2019, 19, 366
68. Lad Sudhir Laxman, Efficacy of Guduchi satva in Urdhwaga amlapitta, IAMJ 2(1)2014, 10-12p
69. Chaisma Abidu, Kais Rtibi, Salima Boutahiri, Haifa Tounsi, Afifa Abdellaoui, Soumaya wahabi et al, Dose dependent action of Zingiber officinale on colonic dysmotility and ex vivo spontaneous intestinal contraction modulation, Dose-Response 2022, https:// doi.org/ 10.1177/ 1559325822112 7556
70. Bipin R, Gayatri Devi, A.Jyotipriya, Effect of Ginger oil on constipation individuals, Pal Arch's journal of Archeology of Egypt/Egyptology 17(7) 2020, 1965-1970p
71. Sanjib Bhattacharya, Pallab Kanti Haldar, Trichosanthes dioica root posseses stimulant laxative activity in mice, Nat Prod Res 2012, 26(10) 952-957p
72. Khare CP, Khare: Indian medicinal plants-An illustrated dictionary, New Delhi, Springer (India) Private limited, 2007 237p, 490p

Cite this article as:
Karnam Chandrashekhar. Truptighna Mahakashaya - The Remedy for Functional Dyspepsia. AYUSHDHARA, 2023;10(Suppl 2):55-63.
https://doi.org/10.47070/ayushdhara.v10iSuppl2.1201
Source of support: Nil, Conflict of interest: None Declared

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