

## AN AYURVEDIC APPROACH TO DUODENAL ULCER WITH PATOLADI GHANVATI

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**ABSTRACT**

An ulcer on the mucosa of the duodenum caused by the action of the gastric juice is known as duodenal ulcer. Every year over three lakhs people round the world have ulcer related surgeries, because of persistent symptoms or complications. All the operations for duodenal ulcer have achieved their aim to some extent but with varying degree of morbidity, mortality and post-operative side effects. Because of this condition, the person always remains in the state of discomfort. Duodenal ulcer occurs more often in men than women. The etiological factors may include genetic predisposition, altered acid secretion, rapid gastric emptying, defective mucosal defense mechanisms, psychological stress and smoking. Prevention can be done by avoiding smoking, caffeine and alcohol, exercise regularly, gets enough sleep at night and meditation. Common prescribing drugs include: Antacids, H<sub>2</sub> Antagonist, medications that block acid production and antibiotics in case of *Helicobacter pylori* infection. But the permanent improvement cannot be achieved. The beneficial effect of *Patoladi Ghanvati* may be due to its *Deepan*, *Pachan*, *Pitta-sarak*, *Udarshool-nashak*, *Vatanulomak*, Anti-inflammatory, Anti-Ulcer, Anti-oxidant, Anti-Stress and Anti-Spasmodic properties.

**KEYWORDS:** Ayurveda, Duodenal ulcer, Patoladi Ghanvati.**INTRODUCTION**

An ulcer on the mucosa of the duodenum caused by the action of the gastric juice is known as duodenal ulcer.<sup>[1]</sup>

Pre-existing *Helicobacter pylori* infection increases the risk for the subsequent development of either duodenal or gastric ulcer disease. The interplay of etiological factors in the pathogenesis of idiopathic peptic ulcer disease is poorly defined but may include a genetic predisposition, altered acid secretion, rapid gastric emptying, defective mucosal defense mechanisms, psychological stress, and smoking.<sup>[2]</sup> Smoking increases acid secretion reduces prostaglandin and bicarbonate production, and decreases mucosal blood flow, delays the healing of gastric and duodenal ulcers.<sup>[3]</sup>

A higher prevalence occurs in areas where the diet is principally polished milled rice, refined wheat or maize, corn flour, sorghum vulgar, yams, sugar, amaranths, brinjal, peanut oil, some pulses, cassava, sweet potato or green bananas and skimmed milk.<sup>[4-5]</sup>

A number of endocrine dysfunctions such as Zollinger-Ellison syndrome, Cushing's syndrome, Parathyroid tumor, Bronchial CA, Multiple adenoma syndrome, Antral G – Cell hyper-function & or hyperplasia can also lead to duodenal ulceration.<sup>[6]</sup>

Major risk factors for duodenal ulcer include smoking, low-dose ( $\leq 160$  mg) aspirin use & *H. pylori* infection.<sup>[7]</sup>

Most patients with duodenal ulcers have impaired duodenal bicarbonate secretion, which has also proven to be caused by *H. pylori* because its eradication reverses the defect. The combination of increased gastric acid secretion and reduced duodenal bicarbonate secretion lowers the pH in the duodenum, which promotes the development of gastric metaplasia (the presence of gastric epithelium in the first portion of the duodenum). *H. pylori* infection in areas of gastric metaplasia induces duodenitis and enhances the susceptibility to acid injury, thereby predisposing to duodenal ulcers.<sup>[8-9]</sup>

Most duodenal ulcers occur in the first part of the duodenum. A chronic ulcer penetrates the mucosa & into the muscle coat, leading to fibrosis. These ulcers vary in shape- circular, oval crescentic, pear shaped or triangular. The ulcer has a punched out appearance, the margins are overhanging. The granulating base is covered with muco-purulent debris. Though the muscle coat is always reached, the depth of the ulcer depends on the degree of penetration. Multiple duodenal ulcers occur in 10-15% of cases.<sup>[10]</sup> Patients with duodenal ulcer will complain of pain that awakens them from sleep. Duodenal ulcer pain would manifest mostly 2–3 hours after the meal, when the stomach begins to release digested food and acid into

the duodenum. The other symptoms are bloating and abdominal fullness, water brash (rush of saliva after an episode of regurgitation to dilute the acid in esophagus - although this is more associated with gastroesophageal reflux disease), nausea, malena (tarry, foul-smelling feces due to oxidized iron from hemoglobin).<sup>[11-12]</sup>

The most significant complication is hemorrhage, perforation; probably obstruction appears in a random fashion during an ulcer's course, penetration and residual

abscess.<sup>[13]</sup> Treatment focused on hospitalization, bed rest, and prescription of special bland foods. Antacids and medications that block acid production became the standard of therapy. Despite this treatment, there was a high recurrence of ulcers. Patients with *H. pylori* infection can be treated with antibiotics. Several studies are supporting use of herbal formulations for treating duodenal ulcers. This work has been done in random OPD patient of duodenal ulcer with using Patoladi Ghanvati along with some indigenous drugs.

#### Patoladi Ghanvati<sup>[14]</sup> The ingredients are

Sr. No.	Name	Latin Name	Family	Part Used
1	Amrita	Tinospora Cordifolia	Menispermaceae	Stem
2	Patola	Trichosanthus dioica	Cucurbitaceae	Leaves
3	Shweta Chandan	Santalum album	Santalaceae	Stem bark
4	Rakta Chandan	Pterocarpus santalinus	Leguminaceae	Stem bark
5	Murva	Marsdenia tenacissima	Asclepiadaceae	Leaves, Root
6	Patha	Cissampelos pareira	Menispermaceae	Leaves
7	Kutki	Picrorhiza kurroa	Plantaginaceae	Root & Rhizome
8	Mulethi	Glycyrrhiza glabra	Leguminaceae	Root
9	Nimb	Azadiracta indica	Meliaceae	Bark
10	Chitra	Plumbago zeylenica	Plumbaginaceae	Root
11	Sunthi	Zingiber Officinale	Zingiberaceae	Rhizome

**Method of preparations:** Each contents of Patoladi ghan vati were taken in equal amount. Except Shweta Chandan stem bark and Rakta Chandan stem bark, rest of the contents (Amrita stem, Patola patra, Kutki root, stem, Sunthi rhizome, Nimb bark, Murva leaves, Chitrak root, Mulethi root and Patha leaves) were cleaned, dried and powdered separately to prepare decoction. Then the decoction was heated up till the Ghan satva was prepared. As soon as the Ghan satva was prepared, fine powder of Shweta Chandan stem bark and Rakta

Chandan stem bark was mixed. Since these contain essential volatile oil hence these were not added in starting during the decoction preparation. Finally after mixing the binding agent, Ghan vati of 500 mg was prepared as per classical method. The prepared drug was kept in air tight containers.

**Method of administration** - Patoladi ghan vati was administered in dose of two vati, thrice a day, with honey, before meals.

#### Pharmacodynamic properties of contents of Patoladi Ghan vati-

Rasa	Guna	Veerya	Vipaka	Dosha Karma
Tikta(8), Kashaya(3), Madhur(3), Katu(2)	Laghu(7), Ruksha(6), Guru(4), Tikshana(2)	Ushna(6), Sheeta(5)	Katu(8), Madhur(3)	Kapha-pittashamak(5), Kapha-vatashamak(3), Tridoshshamak(3)

#### Action of drugs used in Patoladi ghan vati

<b>Deepan</b>	7, Guduchi, Kutki, sunthi, Patha, Chitrak, Murva, Patola
<b>Paachan</b>	5, Guduchi, sunthi, Patha, Chitrak, Murva
<b>Pittasarak</b>	7, Guduchi, Kutki, Mulethi, Nimb, Chitrak, Murva, Patola
<b>Amlapittashamak</b>	7, Guduchi, Kutki, Mulethi, Nimb, Shwetachandan, Murva, Patola
<b>Aamashayagata vrana ropak</b>	1, Mulethi
<b>Udarshool</b>	4, Chitrak, Mulethi, Patha, Sunthi
<b>Shoolnashak</b>	3, Guduchi, Sunthi, Murva
<b>Krimighana</b>	6, Murva, Nimb, Chitrak, Patha, kutki, Patola
<b>Vatanuloman</b>	5, Murva, Mulethi, Sunthi, Patola, Guduchi
<b>Anti-inflammatory</b>	5, Guduchi, Neem, Patola, Sunthi, Honey
<b>Anti-stress</b>	4, Neem, Patola, Shwetachandan, Guduchi
<b>Anti-spasmodic</b>	4, Chitrak, Mulethi, Patha, Sunthi
<b>Anti-oxidant</b>	7, Patola, Sunthi, Kutki, Mulethi, Patha, Chitrak, Honey
<b>Anti-ulcer</b>	6, Neem, Raktachandan, Mulethi, Patha, Sunthi, Chitrak
<b>Anti-H. pylori</b>	3, Mulethi, Sunthi, Honey
<b>Anti- haemorrhagic</b>	2, Swetachandan, Raktachandan

**Action of the drugs according to their Rasa-**

Rasa	Guna	Karma
Tikta	Ruksha, Sheet, Laghu	Jwarghan, Deepan, Pachan
Kashaya	Ruksha, Sheet, Guru	Sanshman, Sandhankar, Ropan, Stambhan, Sleshma-rakta-pittaprashman
Katu	Ruksha, Ushana, Laghu	Deepan, Rochan, Krimighan, Vrana-awashadan, Marga-vishodhan
Madhur	Snigdha, Sheet, Guru	Pittshamak, Vishnashak, Trishnadahaprashman, Chatasandhankar

**Pharmacological action of individual content****1. GUDUCHI**

Dry bark of *Tinospora cardifolia* has Anti-inflammatory, Antipyretic, Anti-allergic, Anti-spasmodic activity. Alcoholic and aqueous extract of *Tinospora cardifolia* has been tested successfully for its immunomodulatory activity.<sup>[15]</sup>

**2. PATOLA**

Two main phytosterols present in *T. dioica* are namely, 24 $\alpha$ -ethylcholest-7-enol and 24 $\beta$ -ethylcholest-7-enol 13. Crude drug *T. dioica* is known to have anti-ulcerous effect in polyherbal preparation.

Aryavansha *et al.* (1981) studied the efficacy of single herb Patola in 20 patients with duodenal ulcer. Efficacy of Patola in duodenal ulcer was found 45% excellent response.

Leaves, fruits and seeds of *Trichosanthes dioica* plant may be used as antibacterial agents. It also has the Anti-inflammatory activity and wound healing potential.<sup>[16]</sup>

**3. SHWETA CHADAN**

Banerjee *et al.* (1993) reported its Anti-bacterial, Astringent, Haemostatic, refrigerant properties.<sup>[17]</sup>

**4. RAKTA CHANDAN**

The wood is used as an astringent and used in inflammation. The wood and fruit is used in treating diaphoretics, bilious infections and chronic dysentery. Flavonoids are found to be effective antimicrobial substances against a wide range of microorganisms, probably due to their ability to complex with extracellular and soluble proteins and to complex with bacterial cell wall; more lipophilic flavonoids may also disrupt microbial membrane.

Phenolics and polyphenols present in the plants are known to be toxic to micro-organisms. Antibacterial activity of tannins may be related to their ability to inactivate microbial adhesions, enzymes and cell envelope transport proteins, they also complex with polysaccharides. The broad spectrum antibacterial activity exhibited by *Pterocarpus santalinus* may be attributed to the various active constituents present in it.<sup>[18]</sup>

**5. MURVA**

Its nature and flavor is bitter and sub cold. It can clear away the heat evil, expel superficial evil, eliminate

inflammation, clear away heat-toxins and relieve cough, asthma and pain by removing the obstruction.<sup>[19]</sup>

**6. PATHA**

Tetrandrine have pain-relieving, Anti-inflammatory, fever-reducing properties, smooth muscle relaxant, antispasmodic, and uterine relaxant actions. Berberine, has been documented to have hypotensive, antifungal, and antimicrobial actions and it has been used for the treatment of irregular heartbeat, cancer, *Candida*, diarrhea, and irritable bowel syndrome.

It has antioxidant properties; antibacterial actions against *Staphylococcus*, *Pseudomonas*, *Salmonella*, and *Klebsiella*; and antimalarial effects.<sup>[20]</sup>

**7. KATUKA**

Its Anti-inflammatory activity proved to be as a result of its ability to selectively prevent the formation of free radicals, oxygen ions and peroxides in the body. The roots and rhizomes of *Picrorhiza kurroa* are used in traditional and modern medicines for liver disorders, fever, asthma, and jaundice. The plant possesses hepatoprotective principles such as iridoid glycosides.

It exhibits potent Anti-oxidant activity because of principles like apocynin and androsin, Anti-inflammatory, Anti-allergic action, Antitumor principles like cucurbitacin glycosides.<sup>[21]</sup>

**8. MULETHI**

Anti H. Pylori activity, Anti-inflammatory, Anti-pyretic, Anti-oxidant, tonic, mild laxative, blood purifier, immune-stimulant.<sup>[22]</sup>

**9. NEEM**

Extract possess immune-stimulant activity, Anti-ulcer activity, Anti-malarial, Anti-fungal, Anti-bacterial and Anti-viral activity with hepato-protective activity. Nimbidin stimulates the production of T-cells to mount a head on attack against infections.<sup>[23]</sup>

**10. CHITRAK**

The roots, root barks, and seeds are used medicinally as a stimulant, caustic, digestive, antiseptic, anti-parasitic and also for killing intestinal parasites.

The roots and leaves of *P. zeylanica* contain plumbagin, which has been identified as Anti-microbial activity against both gram-positive and gram-negative bacteria, Anti-cancer, wound healing, Anti-inflammatory.

The decoction of root bark (30-60 ml, BD for 1-2 weeks) gives relief from abdominal disorders, peptic ulcers and improves appetite. Antioxidant effects of aqueous extract of root is significant.<sup>[24]</sup>

### 11. SUNTHI

(1) 1,8-Cineole-Anti-inflammatory, Antispasmodic, Antibacterial, Anti-ulcer.

(2) 10-Dehydrogingerdione, 10-Gigerdione and 6-Gingerdione show Anti-inflammatory activity.

(3) 8-Gingerol-antihistaminic, anti 5HT,  $\alpha$ Linolenic acid  $\alpha$ -Curcumine,  $\alpha$ -pinene-Anti-inflammatory.

(4)  $\alpha$ -Phillandrene -Antibacterial, laxative.

(5) Caffeic acid- Antibacterial, Analgesic.

(6) 6-Shogaol- Antiallergic, Antiulcer, Antispasmodic

- Anti H. Pylori activity and Anti-oxidant property.
- Compounds found in sunthi bind to serotonin receptor, hence used as Anti-depressant.
- Because of gingerol, it has analgesic, sedative, antipyretic and anti-bacterial properties.<sup>[25]</sup>

### HONEY (As Anupan)

It shows Anti-inflammatory, Anti-oxidant, Anti H. Pylori, Antibacterial activity and Anti-hemorrhagic. It is also useful in Vamana, Vibandha and Daha.

The fatty acids present in honey stimulate peristalsis, digestion and appetite of weak stomach and loose bowels. It decreases flatulence and increases general metabolism.

It restricts the availability of nutrients for micro-organism, so compromise their metabolism. Its pH (3.4-6.1) also helps to restrict microbial growth.<sup>[26]</sup>

### Probable mode of action of Patoladi Ghan Vati

#### (a) Ayurvedic aspect

1. Since *Vata* is the most predominant and most potent factor in initiating and maintaining the pathogenesis of *Parinaam Shoola* (duodenal ulcer), so *Vatanulomana* property of *Murva*, *Mulethi*, *Sunthi*, *Patola* and *Guduchi* might probably helped in disease regression.

2. *Pitta dosha* is taken as the predominant *Dosha* in *Parinaam Shoola*, so we can say that *Pittasarak* property of *Guduchi*, *Kutki*, *Mulethi*, *Nimb*, *Chitrak*, *Murva* and *Patola* might helped in removing *Saam Pitta*.

3. *Parinaam Shoola* is a *Rasaja Vyadhi* and according to our ancient literature *Langhan* is one of the treatments of *Rasaja vyadhi*. Ingestion of *Pachak Aushdhi* comes under the process of *Langhan*. *Guduchi*, *Sunthi*, *Patha*, *Chitrak* and *Murva* might help in proper digestion.

4. *Guduchi*, *Kutki*, *Sunthi*, *Patha*, *Chitrak*, *Murva* and *Patola*, because of their *Deepan* activity might help in stimulating the appetite.

5. *Shoola*, in case of *Parinaam Shoola*, might be reduced due to *Udar Shoola Shamak* property of *Chitrak*, *Mulethi*, *Patha* and *Sunthi*.

#### (b) Modern aspect

1. Ulcer regression may be because of Anti-ulcer activity of *Mulethi*, *Neem*, *Raktachandan*, *Patha*, *Sunthi* and *Chitrak*.

2. Since there is a strong causal relation between *H. pylori* infection and duodenal ulcer, hence Anti *H. pylori* activity of *Mulethi*, *Sunthi* and Honey probably stopped the disease progression.

3. Because of Anti-spasmodic property of *Chitrak*, *Mulethi*, *Patha* and *Sunthi*, it probably helped in reducing and/ or pulverizing the epigastric pain, periodicity of pain, pain in relation with food and hunger pain.

4. Anti-inflammatory activity of *Guduchi*, *Neem*, *Patola* and *Sunthi* probably helped in checking the progress of the disease.

5. The relationship between stress and ulcers is so strong that people with ulcers should be treated for psychological conditions. So, anti-stress effect of *Neem*, *Patola*, *Swetachandan* and *Guduchi* might help in alleviating stress.

6. Infection with *H.pylori* is associated with generation of reactive oxygen molecules, which leads to oxidative stress in the gastric mucosa, so anti-oxidative therapy stimulates the healing of duodenal ulcers. Anti-oxidative property of *Patola*, *Sunthi*, *Kutki*, *Mulethi*, *Patha* and *Chitrak* probably helped in checking the progression of the disease.

### CONCLUSION

With this study Duodenal ulcer can be completely treated and prevented by use of herbal formulation in spite of any modern chemical drugs. Even though this herbal formulation is free from any complication and restriction of use.

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