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# Emerging Trends In Anti Ulcer Therapy From Synthetic Drugs To Natural Remedies

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**Abstract:** Peptic ulcer disease remains a major global health concern, traditionally treated with synthetic drugs such as proton pump inhibitors, H2-receptor antagonists, antacids, and antibiotic regimens for *H. pylori*. Although effective, these therapies face challenges including drug resistance, adverse effects, and high recurrence rates. Recent research highlights a significant shift toward natural and alternative approaches, including plant-derived phytochemicals, probiotics, flavonoids, honey, and polyphenol-rich diets, which offer cytoprotective, antioxidant, and antimicrobial benefits with fewer side effects

**key word :** Anti-ulcer therapy; Peptic ulcer disease; *Helicobacter pylori*; Proton pump inhibitors; Natural remedies; Gastroprotective agents; Nanotechnology-based formulations.

## Introduction

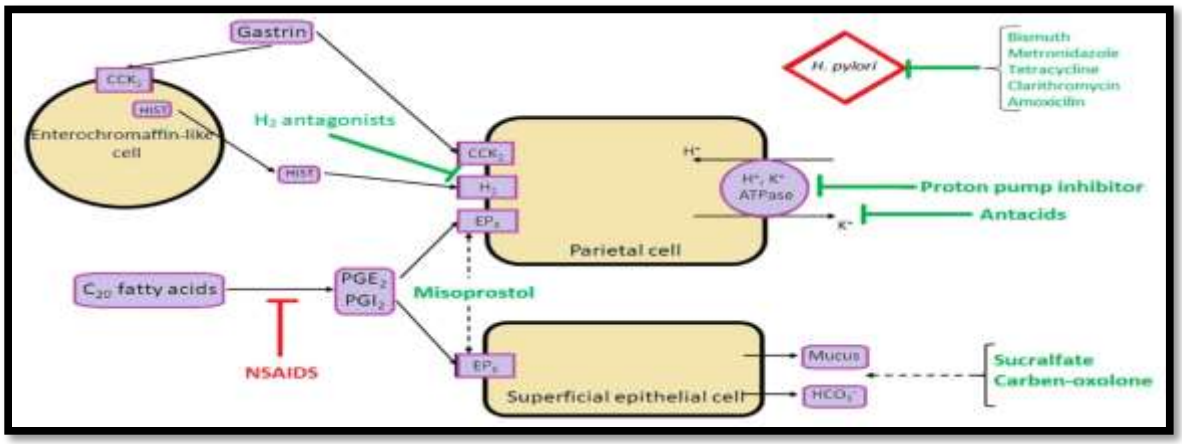
Peptic ulcer is a situation wherein a person revel in severe belly ache, especially around the inner a part of the stomach. on this disorder, mucus membrane across the digestive organs receives weakens. peptic ulcer is a chronic disorder that results from imbalance among endogenous shielding factors of gastric mucosa (mucosa and bicarbonate secretion, good enough blood drift,prostaglandinE2,nitric oxide ,and antioxidants enzymes and others) and aggressive factors (acid and pepsin secretions).behavioral and environmental factors consisting of smoking, poor weight loss program, alcohol and non- steroidal inflammatory tablets ingestion ,and helicobacter pylori infections ,amongst others had been implicated within the etiology of gastric ulcer[1]. Peptic ulcer is regularly damage more than three-five mm in the belly or duodenum with a seen intensity. Peptic ulcer is one of the global major gastrointestinal problems and affecting the ten % international populace. about 19 out of 20 peptic ulcers are duodenal. An anticipated 15000 deaths occur each yr as an outcome of peptic ulcer annual occurrence estimates of peptic ulcer hemorrhage and perforation became 19. four -15.7and three. Eight- 14 in step with one hundred,000 occurrence estimates of peptic ulcer hemorrhage and perforation have been respectively[2] the two primary types of peptic ulcers are known as "gastric ulcers" and "duodenal ulcers," named after the precise locations where they occur. The primary cause of stomach ulcers is a bacterium called Helicobacter pylori (H. pylori). H. pylori persist inside the area among the gastric epithelium and mucous layer, adeptly adapting to the tough situations of the stomach environment. to begin with colonizing the antrum, they progressively migrate closer to the extra proximal segments of the belly. Peptic ulcer disorder ranks many of the maximum prevalent gastrointestinal illnesses globally, impacting approximately10% of the population. Duodenal ulcers represent most of the people, accounting for 19 out of 20 cases. inside the Indian pharmaceutical quarter, antacids and antiulcer medicinal drugs command a substantial marketplace presence, together worth 6.2

billion rupees and keeping a marketplace share of 4. five%. additionally, ulcers can end result from the immoderate use of ache relievers, which include aspirin and non-steroidal drugs like ibuprofen and naproxen as well as alcohol and tobacco intake, and Zollingera Ellison syndrome. it's miles usually extra not unusual in individuals who maintain themselves in a rush, grow to be fear and devour curry [3]

## 2. Pathogenesis of Peptic Ulcer:

Almost half of the arena population is colonized by H. pylori, which stays one of the maximum common place causes of peptic ulcer disease [4]. the prevalence of H. pylori is better in developing international locations, specifically in Africa, vital America, critical Asia, and Japanese Europe [5]. The organism is generally received in adolescence in surroundings of unsanitary conditions and crowding, mostly in international locations with lower socioeconomic repute. H. pylori reasons epithelial cellular degeneration and injury, that is typically more intense in the antrum, by means of the inflammatory reaction with neutrophils, lymphocytes, plasma cells, and macrophages. The mechanism by which H. pylori induce the development of different styles of lesions within the gastroduodenal mucosa isn't absolutely explained. H. pylori infection can result in both hypochlorhydria or hyperchlorhydria, as a result determining the form of peptic ulcer. the main mediators of H. pylori infection are cytokines that inhibit parietal mobile secretion, however H. pylori can without delay have an effect on the H+/k+ ATPase Î±-subunit, prompt calcitonin gene-related peptide (CGRP) sensory neurons connected to somatostatin, or inhibit the production of gastrin [6] even though the formation of gastric ulcers is associated with hyposecretion, 10-15% of patients with H. pylori contamination have expanded gastric secretion as a result of hypergastrinemia and decreased antral somatostatin content [7]

**FIG.1 Main pathophysiological Mechanism an the sites of action of antiulcer treatment**




Schematic presentation of major pathophysiological mechanisms concerned in the development of peptic ulcer disorder, and the websites of movement of the most commonly used pharmacological options in the remedy of peptic ulcer ailment. CCK2 = Cholecystokinin Receptor; PGE2 = Prostaglandin E2; PGI2 = Prostaglandin I2; EP3 = Prostaglandin E receptor 3; HIST = Histamine.

## PATHOGENESIS OF PEPTIC ULCER:

The pathology may be divided in three wide categories:

1. 1.H. pylori nice
2. 2.H. pylori terrible and non- NSAIDS related.
3. NSAID associated
4. NSAIDS plays an critical function in pathogenesis of peptic ulcer [ 8].

**Control Gastric Acidity Levels:**

In vitro and animal research have demonstrated its gastroprotective, antioxidant and anti inflammatory impact. The impact of the plant is because of salicylates, just like aspirin. however, its complicated composition includes flavonoids, tannins and different compounds that assist guard the stomach lining [9]. management of feelings like tension or irritability are a ought to in a holistic approach to decreasing belly acidity. vegetation like Melissa, Passiflora and Valeriana mildly increase GABA activity and inhibits its reuptake, assisting in inducing relaxation and sleep [10] Matricaria is mildly anti-depressant and analgesic, with some antioxidant, antibacterial, anti-inflammatory and anti-allergic effects [11]

**Peptic Ulcer:**

Peptic ulcer is a extensive time period which includes ulcers of digestive tract in the belly or the Peptic ulcer is an acid-brought about lesion of the digestive tract this is typically located within the belly or duodenum. earlier it turned into believed that one evolved this sort of ulcers due to strain and highly spiced meals but, current studies has proven that these are just traumatic factors. The causative agent is infection as a result of the bacteria H. pylori or response to positive medicines like non- steroidal anti- inflammatory capsules.[12]

**Types Of Peptic Ulcer: -**

**1. ESOPHAGEAL ULCER**

**2.APTHOUS ULCER**

**Symptoms Of Peptic Ulcer:**

A few belly ulcers may not purpose any signs. those belly ulcers also are called silent ulcers. some commonplace signs and symptoms of stomach ulcers are Burning pain within the abdomen Bloating (the belly swells due to accumulation of gasoline)

1. Nausea
2. Vomiting
3.Indigestion
4.Burning abdominal pain
5. Heartburn and acid reflux [2]

**CLASIFICATION OF DRUGS:**

**Drugs for Peptic Ulcer:**

**1. Gastric Acid Secretion Inhibitors**

**$H_2$ Antihistamines**

1.Cimetidine

2.Ranitidine

3.Famotidine

4.Roxatidine

**Proton Pump Inhibitors (PPIs)**

1.Omeprazole

2.Esomeprazole

3.Pantoprazole

4.Lansoprazole

5.Rabeprazole

6.Dexrabeprazole

**Prostaglandin Analogue**

1.Misoprostol

**Anticholinergics**

1.Pirenzepine

2.Propantheline

3.Oxyphenonium

**2. Gastric Acid Neutralizers (Antacid**

**Systemic Antacids**

1.Sodium bicarbonate

2.Sodium citrate

**.Nonsystemic Antacids**

1.Magnesium hydroxide

2.Magnesium trisilicate

3.Aluminum hydroxide

4.Magaldrate

5.Calcium carbonate

**3. Ulcer Protectives**

1.Sucralfate

2.Colloidal bismuth subcitrate (CBS)

**4. Anti H. pylori Drugs**

1.Amoxicillin

2.Clarithromycin

3.Metronidazole

4.Tinidazole

5.Tetracycline

6.Colloidal bismuth subcitrate (CBS)

**Natural Remedies for Peptic Ulcer:**

**1.Turmeric**

**Family name:** Zingiberaceae

**Common name:** Turmeric, Haldi

**Parts used**: Rhizome (brownish yellow in colour) Active constituent: Flavonoids, curcumin, phenolic compounds, tannins, zingiberene, borneol, cineol and sabinene

**Roles in Human Body:** wound recovery, anti-oxidant, anti-fungal, anti-bacterial, anti-venom, antiprotozoal, hypolipemic, hypoglycemic, anti-coagulant, anticarcinogenic and prevention of gastric ulcer [13]

**2.Aloevera**

**2. Aloevera**

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- Family name: Liliaceae
- Common name: Aloevera
- Parts used: Leaf

**Roles in Human body :** detoxing, laxative, wound recovery, pores and skin burns care, antiulcer, cytoprotective, anti-fungal, hepatoprotective,immunostimulator, mucus secreting and anti-diabetic [13]

**3.Honey**

**Family Name**: Apidae

**Common Name**: Madhu

**Uses of Honey**: Sweetener,

**Role In Human Body:**

Honey serves multiple roles in the human body, including providing antioxidants and energy, acting as an antimicrobial and anti-inflammatory agent, and aiding in wound healing Honey is one of the most famous medicinal substances used inside the Ayurvedic machine of medication. It is ideal for many stomach conditions which include gastritis and peptic ulcers. it's miles mainly endorsed to manipulate belly ulcers. Honey has restoration powers that is probably beneficial in coping with belly ulcers [14]

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