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EFFECTIVENESS OF HERBAL FORMULATIONS IS COMPARED WITH ALLOPATHIC DRUGS FOR THE PEPTIC ULCER TREATMENT: A REVIEW ARTICLE

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ABSTRACT

The traditional system of medicine is an old system of medicine used Ayurveda, Unani, Siddha, and homeopathy. In those, the Ayurveda is the most efficient treatment with no or less toxic effect but treatment may take time to fully cure the disease. Ayurvedic medicine obtained from nature. They used herbs, minerals, and animals product to make medicine. Modern system of medicine commonly known as allopathy but the side effect of the allopathic drug is more than the ayurvedic formulation. Allopathic system takes less time to cure the disease according to the ayurvedic system of medicine but not cure the disease permanently and cause more side effect. A peptic ulcer is a group of ulcerative disorder of the upper GIT and formation of peptic ulcer mainly need pepsin and acid and characterized by epigastric pain, loss of appetite and weight loss. The peptic ulcer is induced by the H. pylori bacteria. H. Pylori is the gram-negative bacteria and causative factor of peptic ulcer. Robin Warren and Barry J. Marshall identified the helicobacter pylori in 1982, as the first causative factor for ulcers. A peptic ulcer can be induced by a NASID like a drug due to inhibition of the COX pathway. The clinical trials have been conducted on experimental animal and the result of using allopathic and herbal drugs can be seen. The herbal formulation shows a good effect against ulcerative disease. Comparisons between allopathic and herbal formulation are based upon toxic response but MOA of both formulations are the same.

INTRODUCTION

Traditional system of medicine

The traditional system of medicine is an old system of medicine used in Ayurveda, Unani,

Siddha, and homeopathy. In all the traditional systems of medicine in which Ayurveda is the most efficient treatment with no or less toxic side effects.[1] Ayurveda is the Sanskrit word drive from "Ayus" (Life) and "Veda" (knowledge). Ayurveda treats diseases using medicines derived from nature with no side effects when taken especially as prescribed. Ayurveda used the herbs, minerals, animal products like milk and bones to make ayurvedic medicine. It may incorporate a small number of toxic materials such as lead, arsenic, and mercury.[2]

The ayurvedic treatment takes time to cure a disease which is a major disadvantage of ayurvedic treatment. The major advantage of ayurvedic drugs is the drugs having low potency or less efficacy which leads to an increase in dosage for producing a therapeutic effect. To overcome the disadvantages of a traditional system of medicine the modern system of medicine commonly known as Allopathy but only the side effect of allopathic drugs is more than that of the ayurvedic drugs.[3]

Allopathy derived from the Greek word "allos" and "pathos" which means "other than the disease". Allopathic medicine provides quick relief from the disease which may not be permanent and cause more side effects. So the side effect of ayurvedic medicine is less and can be suitable for long term usage.[4]

The ulcer is a gastrointestinal tract disease which leads to the sore formation on the walls and mucous membrane. There are different types of ulcer and classification is based on type or area damage.[5] The most common ulcer is a peptic ulcer which can be a serious disease which may be due to excessive use of Non-steroidal anti-inflammatory drugs, excessive production of the acid in the stomach, and may be due to Helicobacter pylori.[6] Ulcer effects 40-60% of people around the world. it is a pandemic disease that can be transferred to one person to another while exposer to vomited of infective person. The treatment of ulcers includes the use of allopathic drugs which can lead to severe side effects due to there intolerance nature in this article the side effect of allopathic or modern medicine is hindered by using peppermint oil.[7]

The various survey reported by WHO that 70% of ulcer treatment is possible with natural products. In future aspects the trade of herbal raw material likely to touch 6 USD 6 trillion by 2060. A peptic ulcer is most commonly found in adults of western countries due to their lifestyle or dietary intake.[8] The main cause of peptic ulcers is the imbalance between aggressive and defensive factors. The stomach composed of three layers named mucosa,

submucosa, and serosa. The ulcer begins with damage to the outer layer of the stomach and penetrates or blister formation on the membrane of the stomach. The herbal formulation shows the most efficient treatment of ulcers after or at the beginning of the ulcer.[9]

BACKGROUND

The first description of peptic ulcer was given in 1670 by princess Henrietta of England. Robin Warren and Barry J. Marshall identified the helicobacter pylori in 1982, as the first causative factor for ulcers. Karolinska Institute in Stockholm awarded the robin warren and Marshall by the noble prize in 2005 for the discovery of the bacterium "Helicobacter pylori".[10,11]

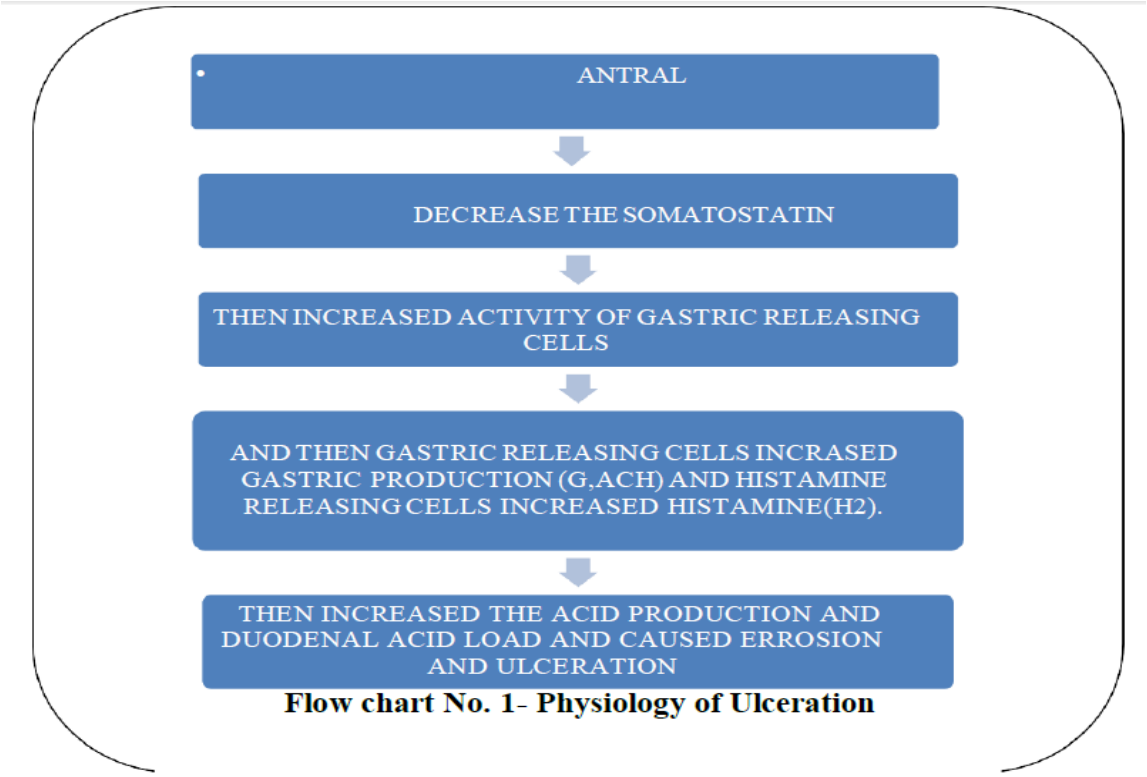
Helicobacter pylori were poorly received. So in act of self-experiment. Marshall performed an experiment he drank a Petri dish containing culture media which is extracted from the person who is suffering from an ulcer and after five days he found that there is the formation of gastritis take place. The symptoms of gastritis are visible after two weeks but other bacteria are also found in the culture media.[11]

Marshall took an antibiotic to kill the bacteria which is harmful to the human body. The important symptom of this infection which is found that is halitosis. Halitosis is also called bad breath. The experiment which is performed by the Marshall is broadcast in the Australian medical journal.[12] The center of disease control and prevention provides the link between the H. pylori and ulcer. In 2005 Marshall all received a noble prize for the discovery of H. pylori. After that modern discovery are discovered by the warren and Marshall. They go for further research. H. pylori infection can be easily identified. After some inexpensive methods are also used for testing. These are important for epidemiological studies. The population which is infected by H. pylori infection is the two-third of the worldwide. It is also found that the children who are 10 years old and which are living in developing countries are more chances to effected by H pylori infection. The person which is suffered from H pylori infection doesn't have to have a peptic ulcer. Hence further researches are done by the scientist. Scientists discovered the link between H pylori and gastric cancer.[13]

Pathophysiology

A peptic ulcer is a group of ulcerative disorders of the upper GI tract that necessarily needs acid and pepsin for their formation. Peptic ulcer disease is characterized by epigastric pain, loss of appetite, and weight loss caused by inflamed ulcers of mucosa and the underlying

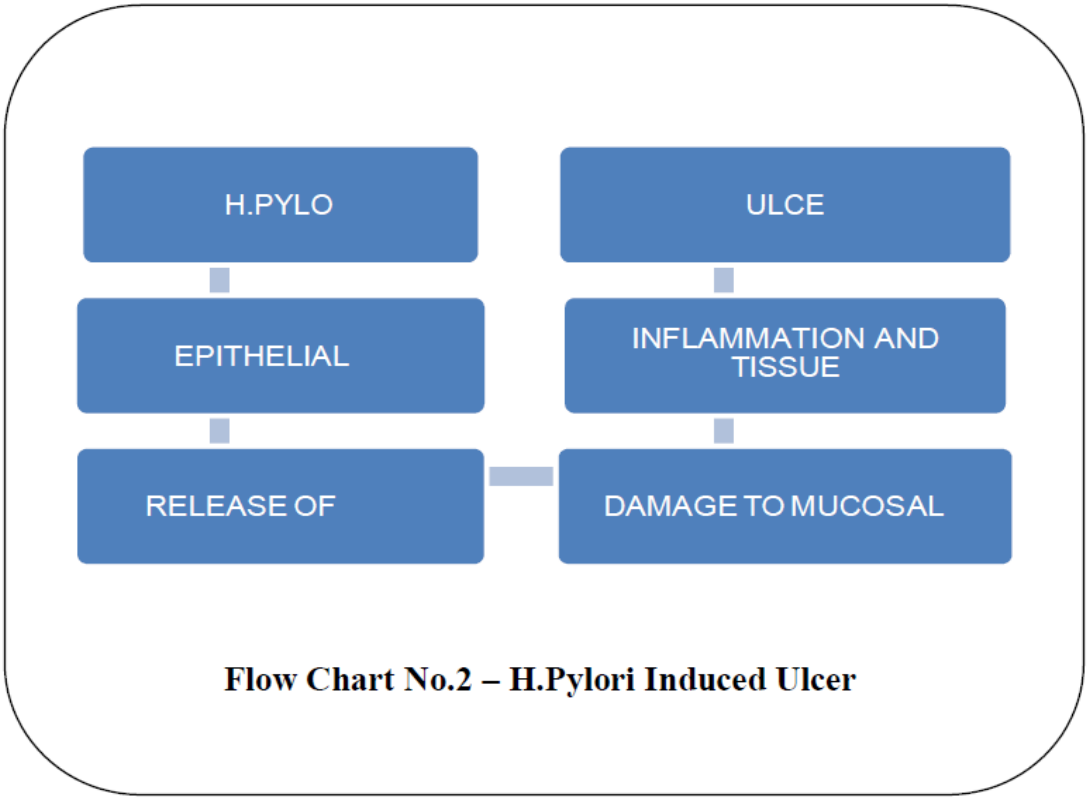
tissues of the upper GI tract. These ulcers results due to damage to the mucous membrane that normally protects the stomach, duodenum, and esophagus from gastric acid and pepsin. Also, this damage is often caused by helicobacter pylori infection. Most of the ulcers occur in the stomach or duodenum but may also occur in the esophagus due to acid reflux.[12,5,6] The common symptom of an ulcer is burning, pain in abdomen, nausea, vomiting, loss of appetite, loss of weight, bleeding from ulcer.[14]



Flow chart No. 1- Physiology of Ulceration

Antral inflammation decreases somatostatin production and then increased the activity of gastric release cells and also increased the activity of a histamine-releasing cell. Gastric release cells increased the gastric (G) production and histamine release cell increase the histamine (H_2).[15] Both gastrin and histamine act on parietal cell and increased acid production and increase the duodenal acid load and caused erosion and ulcer take place.[16]

Ulcer induced by H. Pylori

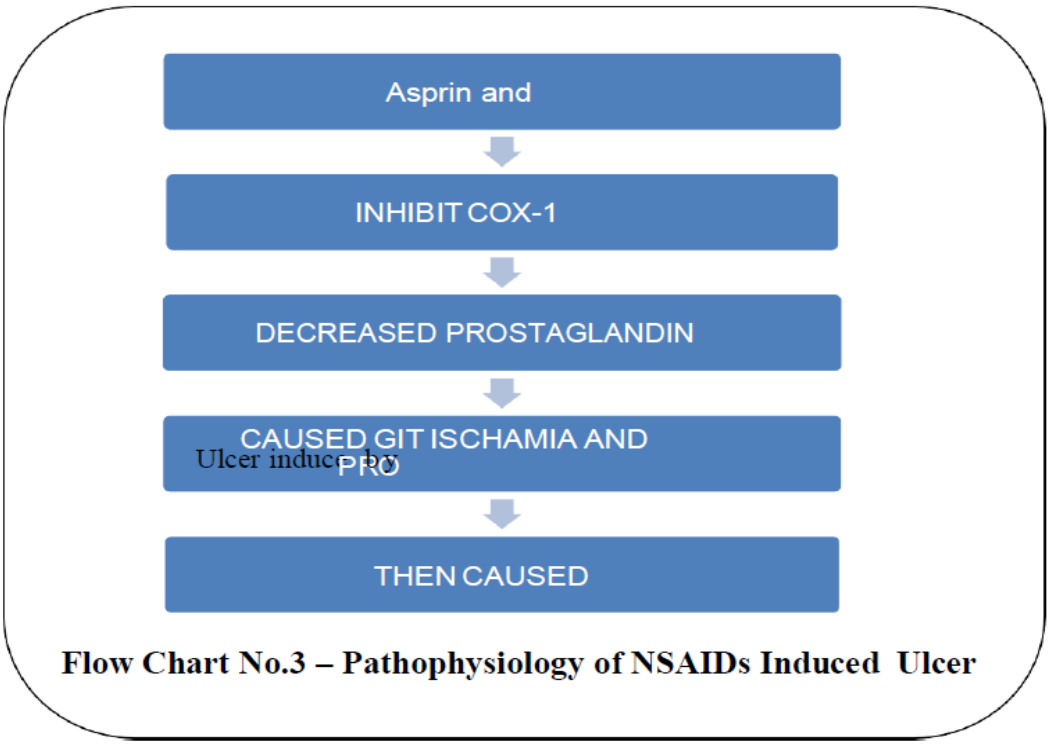


Flow Chart No.2 – H.Pylori Induced Ulcer

H. pylori are gram-negative bacteria and the causative factor of peptic ulcer. Urease enzyme is released by the H. pylori bacteria and it converts urea into ammonia and bicarbonate.[17] Ammonia neutralizes the acid PH of the stomach and allows the environment to the organism to survive in the stomach. Then they cause the mucosal inflammation and damage the mucosal cells and cause a sore, or ulcer. [18]

Ulcer induced by Aspirin & NSAIDS

Aspirin belongs to the NSAID categories. NSAIDs are the drugs that stop the cyclooxygenase pathway. By which this agent decreases the prostaglandin production.[19] Prostaglandin by binding to mucus membrane cause increase production of mucus and while using NSAID the mucus production is impaired. The impaired production of mucus leads to weak protection against gastric acid. The gastric acid gets directly in contact with the stomach and cause damage. That damage leads to an ulcer.[20]



Flow Chart No.3 – Pathophysiology of NSAIDs Induced Ulcer

Comparison of allopathic Medicine and Ayurvedic medicine in treatment of peptic ulcer

A peptic ulcer is caused by different types of factors so the drugs produce their effects by neutralizing the excessive acid production in the stomach. The two major systems of medicines are involved in peptic ulcer is Allopathic and Ayurvedic. The Allopathic system of Medicines refers to the treatment of disease by using chemicals which on a longer basis lead to side effects. While on the other hand, the System of Medicines in Ayurveda in which the treatment is often done by powders of crude drugs. The major difference is Ayurvedic drugs in long term not cause any side effects.[21]

Allopathic drugs: These are commonly known as Antiulcer in the case of ulcer disease and treatment is based on the administration of certain chemicals to protect, Reduce or heal the damaged area of GIT which is due to overproduction of gastric acid.[22]

The majorly allopathic drugs used in Peptic ulcer are

- **Antacids:** The antacids are the drugs that neutralize and eliminating the peptic ulcer on the stomach. The antacid is available in the form of powder suspension and syrup.[23]

The main antacid is used in various hospitals are

- **Sodium bicarbonate:** Crystalline compound soluble in water.
- **Magnesium hydroxide:** It is a liquid preparation of magnesium, also called "magnesium

milk".

- **Calcium carbonate:** It is a chemical compound very abundant in nature, both in inorganic matter, etc.
- **Side effects:** These drugs lead to quick gastric emptying time.
- **Anticholinergics:** These are the drugs that suppress the secretion of acid production in the stomach, GI movement**,** and stomach cramps**.** Acetylcholine is a neurotransmitter that acts on the M_1 receptor and causes the parietal cells to secrete Gastric acid. Anticholinergics are the drugs that act on the M_1 receptor and reduce acid production.

The drugs used are

- **Hyoscyamine:** It is an anticholinergic drug used to treat irritable bowel syndrome (IBS) and peptic ulcers. Hyoscyamine used to reduce muscle spasms, which can used to prevent IBS and allow for quickest mechanism to heal ulcers. The drug is available in sublingual tablet formulation.
- **Glycopyrrolate:** It is used to treat peptic ulcer disease. The combination is preferred rather then 1 single drug and combination can be involve with PPI and other antiulcers.
- **Chlordiazepoxide**: CLIDINIUM is a benzodiazepine and also provide stomach relaxant properties. It decreases the production acid production in peptic ulcer disease. It is also used to treat problems of the intestines, like irritable bowel syndrome and enterocolitis etc.

Side effects: These drugs lead to Constipation, Dry mouth, Headache, Blurred vision.

- **H_2 receptor antagonists:** These are the drugs which act on histamine receptor that leads to increase acid production so these drugs bind on H_2 receptor and decrease acid production.[24]

The drugs used are

- **Cimetidine:** These are the drugs which are used to prevent peptic ulcer and it also causes the ulcer to not come back after once it is healed.
- **Ranitidine:** It is an H_2 blocker that works by reducing acid production. It also used to treat heartburn and other symptoms associated with the gastric acid disease.
- **Famotidine:** It is an H_2 blocker that works by reducing acid production. It also used to treat heartburn and other symptoms associated with the gastric acid disease.

Side effects: These cause headaches, Dizziness, Constipation, and purities**.**

- **Proton pump inhibitors:** These are the antiulcer drugs that act by acting on the proton pump and inhibit the entry of protons which leads to decreased secretion of gastric acid inside GI. These are most commonly used in duodenal and esophageal ulcers.[25]
- **Omeprazole:** It is PPI that acts in the stomach and GIT and causes the reduced release of gastric acid.
- **Pantoprazole:** It is PPI that acts in the stomach and GIT and causes the reduced release of gastric acid. These are most commonly used in duodenal and esophageal ulcers.

Side effects: These cause headache, Dizziness, Constipation, and purities

- **Ulcer protective drugs:** These are the drugs that mainly act by protecting action of there on the walls of GIT. The gastric ulcer when reaching to submucosa it leads to lesions and sometimes leads to bleeding so these drugs provide a covering to the damaged area. The main drug of choice is Sucralfate and Misoprostol.[26]

Side effects: These drugs associated with Constipation and Diarrhea**.**

Table 1: Mechanism and Adverse effects associated with the use of allopathic drug.

Sr. no	Type of drug	E.G	Moa of drugs	Side effects
1	Antacid	Sod. bicarbonate	Neutrilise gastric acid	Quick-gastric emptying time
		Sod. citrate	Neutrilise gastric acid	Quick-gastric emptying time
		Mag. hydroxide	Neutrilise gastric acid	Quick-gastric emptying time
		Cal. carbonate	Neutrilise gastric acid	Quick-gastric emptying time
2	Anticholinergics	Pirenzepine	Inhibit m_1 receptor	Constipation, Dry mouth, Headache, Blurred vision
		propantheline	Inhibit m_1 receptor	Constipation, Dry mouth, Headache, Blurred vision
3	H_2 antihistamine	Cementadin	H_2 blocker	Constipation, Dry mouth,
		Rantadine	H_2 blocker	Constipation, Dry mouth,
		Famotidine	H_2 blocker	Constipation, Dry mouth,
4	Proton pump inhibitor	Omeprazole	Inhibit H+K+ Atpase	headache, Dizziness
		pantaprazole	Inhibit H+K+ Atpase	headache, Dizziness
		Rabeprazole	Inhibit H+K+ Atpase	headache, Dizziness
5	Ulcer protectives	Sucralfate	Cover the	Constipation and

			Ulcer effective Area	Diarrhea.
		Misoprostal	Cover the Ulcer effective Area	Constipation and Diarrhea.

Ayurvedic drugs: These are the drugs which are obtained from Natural origin and used to treat ulcer by providing less acid production, healing the damaged area and not associated with severe side effects like allopathic drugs. The major disadvantage is it takes too long to cure disease.[27]

The commonly used drugs of choice in ayurvedic therapy are

- **Bio flavonoids:** These heal the peptic ulcer but some of the flavonoids found in Citrus fruits can also irritate the Ulcer.[28] The formulation contains the bioflavonoid is
- **Yashtimadhu:** In this formulation, the licorice is taken with honey for thrice daily in a day for up to 1-3weeks but exact it is not known how it heals the stomach acid.[29]

- **Polyphenyl rich food:** In recent studies, it has been proven that vitamins rich foods help to treat ulcer and also is due to the antioxidant property. The drugs used are Cabbage, Carrot juices, Cyanene paper.[30]

- **Food containing probiotics**: Probiotic are highly effective against H. pylori infection. Probiotics are the living microorganism and provide a health benefits. These are highly useful in ulcer healing. Buttermilk, yoghurt, miso and kimchi are the source of probiotics.[31]

The other formulation of the probitcs

- **Honey:** It is the plant sweetener which has been used for various formulations. In research it has been proved that The nectar from Manuka flower found to cure the gastric ulcer and also very potent to H. Pylori.

Side effect: The side effect of garlic is Gas and Bloating.[32]

- **Garlic**: Alium sativum lin is the Underground bulb which is used in various formulations. The Garlic Effect has been shown by the clinical trials and it act by Preventing the Parietal cell to stimulate more acid. It has been proven the H. Pylori which a bacteria cause ulcer also killed or stoped by intake of Garlic. The garlic formulation are basically combination of 2or 3 drugs.

Side effect: The side effect of garlic is Gas and Bloating.[33]

Table 2: Mechanism and adverse effects associated with the use of ayurvedic drugs.

Sr. no	Type of drug	E.G	Moa of drug	Side effect
1	Bio flavonoids	Yashtimadhu	Protect and treat Ulcer	Headache,Low energy
2	Food containing probiotics	Honey	Used in combination	Gas and Bloating
		garlic	Anti bacterial Against H. pylori	Gas and Bloating
3	Polyphenyl rich food	Carrot juice	Contain Vit-A protectective against Ulcer	Nausea and Vometing
		Cyanene paper	Unknown but reduce risk of Ulcer	Diarrhea and Runny Nose
		Cabbage	Anti bacterial Against H. pylori	Gas and Bloating

DISCUSSION

A peptic ulcer is a gastrointestinal disorder and when it occurs with GERD, it can cause respiratory distress.[34] In recent studies, it has been proven and shown the long term uses of an allopathic dosage form such as PPI(proton pump inhibiter)like omeprazole can lead to serious side effects.[35] Peptic ulcer clinical trials have been conducted on experimental animal and the result of using can be induced by a NASID like a drug due to inhibition of the COX pathway.[36] The allopathic and herbal drugs can be seen.[37] The herbal formulation shows a good effect against ulcerative disease.[38]

Comparisons between allopathic and herbal formulation are based upon toxic response. The MOA of both formulations is the same. The herbal formulation such as agnitundirasa shows better antiulcer activity then H_2 blockers.[39] In the herbal formulation of two or more drugs are combined based on their therapeutic activity.[40]

CONCLUSION

The treatment of peptic ulcer is based upon lowering the production of gastric acid. The most of allopathic formulations had a great impact on peptic ulcer but they can leads toxic response. The another traditional system involved in cure is ayurvedic system of medicine. The ayurvedic system involves usage of herbal formulation in combination. The herbal formulations are very effective due to targeting of two to three receptor involved in production of gastric acid. These formulations can also cause more production of mucus on GIT wall. The herbal formulations can be given in combination with allopathic formulation. It had been concluded based on above study that the herbal formulations are very effective against peptic ulcer.

Abbreviation used

GIT - Gastro intestinal tract

NSAIDs - Non Steroidal Anti Inflammatory Drugs H.pylori - Helicobacter pylori

COX - Cyclo oxygenase pathway M_1 receptor - Muscuranic Receptor

IBS - Inflammatory Bowel Syndrome PPI - Proton Pump Inhibitors

GERD - Gastro Oesophageal Reflux Disease MOA - Mechanism of Action

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