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THE ROLE OF FOLK MEDICINE IN THE TREATMENT OF GASTRIC AND DUODENAL ULCER (literature review)

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Resume. It is well known that gastric ulcer and duodenal ulcer rank first among diseases of the gastrointestinal tract. This disease has been scientifically proven through a number of scientific studies aimed at its treatment. However, more than 90% of treatments aimed at curing the disease are medicinal. The article discusses the role of natural plants in the treatment of peptic ulcer disease, while limiting pharmacotherapy.

Keywords: medicinal plants, helicobacter pylori, gastric ulcer and duodenal ulcer, Allium sativum, Zingiber officinalis, Cistus Laurifolius, Curcuma Longa, Artemisia Asiatica.

Various medicinal plants and their anti-H. pylori activities have been reported in many studies. In recent years, inhibition of enzymatic (dihydrofolate reductase, DNAse, myeloperoxidase N-acetyltransferase and urease) and adhesion activities, high redox potential and hydrophilic/hydrophobic nature of the components play an important role in their anti-H. pylori activity. Gastric inflammation induced by H. pylori can lead to superficial gastritis and atrophic gastritis, and possibly gastric cancer. Various natural products have been found to have anti-inflammatory activities and the main mechanisms include inhibition of nuclear factor-B and activation of the mitogen-activated protein kinase pathway and suppression of oxidative stress [4,7].

The role of H. pylori infection in carcinogenesis is to promote carcinogenesis rather than directly playing a major role as a carcinogen, and its eradication alone cannot eliminate H. pylori-associated gastric cancer [10].

Medicinal plants such as Allium sativum, Zingiber officinalis, Korean red ginseng, and Cistus laurifolius have been shown to inhibit precancerous changes by binding to nuclear factor-kappa B DNA, inhibiting chemokine production, cytokine inhibition, and mutagenesis, and inducing multiple levels of apoptosis. Other unresolved issues need to be addressed before they can be accepted as standard therapy for H. pylori infection [13].

Allium sativum. Throughout history, the health benefits of garlic have been documented, and the primary use of Allium sativum has been for its medicinal properties. Organosulfur compounds of Allium sativum, including S-allyl-L-cysteine (SAC) sulfoxides and -glutamyl S-allyl-L-cysteine, have been identified as the main compounds. Raw Allium sativum is easily converted to a biologically inactive form. Accordingly, many types of its extracts with different compositions of biologically active components have been developed and their efficacy has been observed and evaluated in many studies. The main role of Allium sativum extract is to exert antioxidant effects by scavenging reactive oxygen species, inhibiting lipoprotein oxidation, and reducing plasma glucose levels by reducing the induction of antioxidant enzymes. It has also shown in vivo inhibitory effects on gastric inflammation caused by H. pylori and has antitumor effects by promoting apoptosis and inducing cell cycle arrest. Allicin and allyl-methyl plus methyl-allyl thiosulfinate from acetone Allium sativum extract inhibited the growth of H. pylori in vitro [15].

Cistus Laurifolius. Flavonoids are one of the most important components of the human diet, responsible for many biological activities, in particular antioxidant activity. Due to their limited availability and high cost, rapid synthesis of polyoxygenated flavones has been developed starting from convenient and inexpensive flavanones. The limited flavone 30-demethoxysudaxitin has been shown to be active against H. pylori through a methoxylation and bromination protocol. Many studies on flavonoids have been carried out with Cistus laurifolius extract [2,3]. This has been proven by testing the antimicrobial activity of the most active compounds against H. pylori, such as 3-demethoxysudaxitin and sudaxitin. A similar study has shown that the chloroform extract of Cistus laurifolius has a very high anti-H. pylori activity. According to these studies, the isolated flavonoids can be used as an additional component in the standard treatment of H. pylori infection [11,14].

Li HQ et al. observed various degrees of anti-H.pylori activity of many isoflavones. Several metronidazole-flavonoid extracts were used for the experiment to determine the antimicrobial activity against H.pylori. Only one compound was shown to significantly increase the level of IL-8 in gastric cancer cells stimulated with H.pylori aqueous extract. On the other hand, the experiments of Nakagawa et al. revealed that new flavonoid compounds such as 6, 7 and (2C)-40,7-dihydroxy-8-methylflavan were most effective against H.pylori [8].

Similarly, Ustun et al. found that the chloroform extract of Cistus laurifolius has significant anti-H. pylori activity [5,9]. Therefore, the isolated flavonoids may be used as alternative or complementary compounds to the current treatment of H. pylori infection.

Zingiber Officinalis and Zingiber Zerumbet. Zingiber officinalis is known as ginger, which is consumed as a flavoring agent. The plant extract has shown antitumor

effects on colon cancer cells by inhibiting their growth, increasing DNA synthesis; and inducing apoptosis. In addition, the main potent phenolic compound of Zingiber officinalis is 6-gingerol, which has many pharmacological activities. Zingiber officinalis extracts containing gingerols play a major role in the inhibition of prostaglandin E2 (PGE2). On the other hand, active phenolic compounds such as gingerol and zingerone have a significant effect on inhibiting parietal cell H+, K+-ATPase. Therefore, the activities of gingerol and zingerone play a very important role in inhibiting the proton pump and reducing gastric acid secretion. In addition, it has a protective effect against ulcers caused by H. pylori [1,15].

Furthermore, Sidahmed et al. demonstrated that zerumbone from Zingiber zerumbet plays a significant role in gastroprotective activity against ethanol-induced gastric ulcer in rats. Pretreatment of gastric ulcer-bearing rats with zerumbone or omeprazole significantly reduced ulcer formation compared with the control group. Furthermore, pretreatment with omeprazole at 20 mg/kg body weight ($p < 0.05$) inhibited ulcer formation by 76.77%, while zerumboneate at 5 and 10 mg/kg body weight inhibited ulcer formation by 75.59% and 88.75%, respectively. On the other hand, zerumbone and its gastroprotective mechanisms have not been tested against other ulcer models; therefore, other mechanisms may exist and their effects need to be investigated and elucidated [9].

Camellia Sinensis is one of the most widely consumed beverages today. The chemopreventive effects of Camellia Sinensis are not only due to its antioxidant activity, but also to its molecular regulation of cell growth, development, and apoptosis, and are associated with the selective improvement of the function of the intestinal bacterial flora. Among the numerous components of green tea, polyphenols and epigallocatechin gallate suppress the expression of the tumor necrosis factor-alpha (TNF-α) gene. On the other hand, H. pylori urease is very important for its colonization and has been proven in studies. Camellia sinensis extract has shown inhibitory activity of this enzyme. As a result, bacterial colonization is inhibited. Many similar studies have shown that Camellia sinensis extract enhances cell vacuolation and has an inhibitory effect on cytotoxin A vacuolation and urea transport in H. pylori infection. Consequently, it can pursue anti-H.pylori activity in vivo [7].

Conclusion. The combination of herbal products and standard antiulcer drugs has a synergistic effect against H. pylori and peptic ulcer disease and may clearly improve outcomes for peptic ulcer patients. Only a few studies have been conducted, suggesting that further clinical trials with larger sample sizes are warranted on the efficacy and safety of medicinal plants with antiulcer activity. In addition, it would be beneficial to design studies to investigate and further elucidate the mechanisms of action of medicinal plants used to treat or prevent peptic ulcers.

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