

Effects of Turmeric in Peptic Ulcer and *Helicobacter pylori*

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Abstract: The study examined patients who had symptoms indicating peptic ulcer. A bacterium called *Helicobacter pylori* (*H. pylori*) is a major cause of peptic ulcers. Fifty five patients diagnostic as peptic ulcer patients. Thirty five patients, aged between 22-50 years, 20 males and 15 females were positive *Helicobacter pylori* were included in the study. Capsule-filled turmeric was given orally in the dose of 2 capsules (250 mg each) 4 times daily, 1 h before meals for 4 and 8 weeks. After 4 weeks of treatment showed that ulcers were absent in 35 cases 20 cases were positive *Helicobacter pylori* and 13 cases had absence of ulcer after 8 weeks of treatment, 8 cases of them were positive *Helicobacter pylori*. About 7 cases remain positive. The patients they received turmeric capsules in the 1st and 2nd week, they could take normal foods instead of soft meals.

Key words: *H. pylori*, turmeric, peptic ulcer, meals, treatment, Jordan

INTRODUCTION

The incidence and mortality of gastric cancer has declined in industrialized nations, it still remains the second leading cause of cancer deaths worldwide, particularly in Southeast Asia (Jemal *et al.*, 2002; Kneller *et al.*, 1992). Globally as many as 1 million people die each year of gastric cancer (Anonymous, 2006). Gastric cancer evolves through a multi-step mechanism in which the Gram-negative bacterium *Helicobacter pylori* (HP) plays a major role (IARC, 1994). *Helicobacter pylori* (HP) is a spiral or helical-shaped aerobic bacillus that colonizes the gastric epithelial surface and can withstand the stomach's environment by microaerophilic growth capability and high urease activity (Forman and Graham, 2004). Chronic HP infections are associated with the development numerous gastrointestinal disorders including dyspepsia, duodenal and gastric ulceration, gastric cancer and Mucosa-Associated Lymphoid Tissue (MALT) lymphoma (Breuer-Katschinski *et al.*, 1999; Figueiredo *et al.*, 2002; Forman and Graham, 2004). In 1994, the International Agency for Research on Cancer classified HP as a human carcinogen and a definite cause of gastric cancer (IARC, 1994). According to statistics from the World Health Organization, approximately 50% of the population in industrialized nations and 80% of the populations in developing countries infected with HP (Perez-Perez *et al.*, 1990).

The reasons for this paradox are not well understood but appear to be related to diet and life style (Bhamarapavati *et al.*, 2003). The current and most effective treatment for peptic ulcer disease is a triple therapy regimen consisting of a proton pump inhibitor

such as omeprazole and two antibiotics, clarithromycin and either amoxicillin or metronidazole. However, there is an increase that disturbs due to the prevalence of antibiotic resistance which is high in some areas of the world. Metronidazole resistance is more common than clarithromycin, the latter particularly having an adverse effect on the eradication rate. Second line therapies following failure of one of the initial regimes include triple and quadruple regimens containing antibiotics such as levofloxacin or furazolidone or even regimens containing five agents. Although, the use of molecular methods can rapidly detect antibiotic resistance and host polymorphisms which may lead to reduced efficacy of treatment and thus, eradication failure (Basset *et al.*, 2004; Megraud, 2004) this is not a long-term solution to the rising trend of antibiotic resistance. Resistance to antibiotics is not limited to *H. pylori* and has been an increasing problem for many years. There is therefore, a constant need for new antimicrobial agents and novel approaches to treatment, ideally preventing disease such as inhibition of adhesion or vaccination (Basset *et al.*, 2003). Plants are known to be the source of phytochemicals which are beneficial for health and could also prevent diseases (Lampe, 1999). Among these phytochemicals, two are of particular interest in the case of infectious diseases: Antimicrobial and antiadhesive agents. Numerous studies have been undertaken in order to find antimicrobial agents from plants against organisms ranging from viruses to protozoa (Cowan, 1999). The major concern is the validation in human beings with well-designed clinical trials and this has also been true for *H. pylori* infection. Several *in vitro* studies have looked at the effect of plant extracts on *H. pylori*. Anti-microbial

effects have been reported for garlic (Jonkers *et al.*, 1999; Limuroa *et al.*, 2002), green tea (Matsubara *et al.*, 2003) and the essential oils from several species of mint (Nariman *et al.*, 2004). Some of these studies have been validated in animals and confirmed the potential benefit of using plants as the source of anti-microbial agents against *H. pylori*. Although, garlic and cinnamon have been tested in human clinical trials with no significant effect (Martin and Ernst, 2003), a recent study has shown that consumption of broccoli sprouts is associated with the eradication of *H. pylori* in some patients (Galan *et al.*, 2004) but more research needs to be done in determining the active ingredients of broccoli as well as performing studies on a larger number of patients. As mentioned earlier, many plants have been shown to kill microorganisms in this study we will use the turmeric plant.

MATERIALS AND METHODS

The study design was utilized to show the impact of turmeric supplementation on *Helicobacter pylori* (*H. pylori*). The study was conducted in Jordan at Al Mafraq Governmental Hospital from January 2010 to March 2011. The endoscopy was performed to the patients, fifty five diagnostic with peptic ulcer aged between 22-50 years were included in the study. Thirty five patients, 20 males and 15 females were positive *Helicobacter pylori*. The individuals were told to take 2 capsules orally filled with whole turmeric powder each (250 mg) 4 times daily, 1 h before meals for 4 and 8 weeks. The research did not suggest any alterations in other aspects of the subject's medical care, diet or exercise. Compliance was monitored by contact with the subjects. The study was approved by Medical Ethical Committee of the Zarqa University. Plants were obtained from the market.

Biochemical analysis: Biochemical analysis done by collection of stool sample from the patients before breakfast, used *H. pylori* Antigen test is an immunochromatographic assay that uses antibody-coated colloidal gold to detect the presence of *H. pylori* antigens in stool specimens. The test detects directly antigens in specimens for an active infection. The test is simple and easy to perform and the test results can be visually interpreted within 10 min. These tests done in the central laboratory of the Mafraq Hospital. All biochemical measurements were carried out by the same team of laboratory technicians. Prior to implementation of the training program, an official permission was obtained from the supervisors of the selected units. This was intended to facilitate data collection and to explain study purpose.

At the beginning of the study, participants' were invited to participate in the study. The researcher explained the study purpose and procedures for the randomly selected sample. Potential subjects were further informed that the participation was voluntary and that study findings would be presented group wise and no individual would be recognized.

RESULTS AND DISCUSSION

In this research, researchers investigated whether the turmeric powder treated the patients with peptic ulcer and *Helicobacter pylori*. Table 1 shows the characteristics of fifty five patients with peptic ulcer, 35 of them were positive *Helicobacter pylori* and showed no significant difference between the mean age of male and female. The effect of turmeric administration for 4 weeks shown in Table 2, 20 patients with positive *Helicobacter pylori* the ulcer were disappear and 15 with negative *Helicobacter pylori* were also disappeared after administration 2 g of turmeric. Researchers continue administration of turmeric for 8 weeks researchers found that 13 cases had disappear of ulcer, 8 cases of them were positive *Helicobacter pylori*. About 7 cases remain positive. The patients they received turmeric capsules in the 1st and 2nd week. They could take normal foods instead of soft meals.

Turmeric or *Curcuma longa* Linn. (Zingiberaceae) is a medicinal plant widely used in traditional medicine as an anti-ulcer, carminative, wound treatment and anti-inflammatory agent (Rafatullah *et al.*, 1990; Kositchaiwat *et al.*, 1993; Wuthi-Udomler *et al.*, 2000; Koosirirat *et al.*, 2010).

In the present study, the effect of turmeric on healing of peptic ulcer and *Helicobacter pylori* was studied by stool analysis in 55 patients (34 men and 21 women). Thirty five patients (63%) had no more ulcers after turmeric treatment for 4 weeks. Twenty of those patients became *H. pylori* negative (57% of patients with the bacterium). The healing percentage was smaller than that reached by Prucksunand *et al.* (2001) who used a higher dose; 2 capsules of turmeric (300 mg each) 5 times daily

Table 1: Socio-demographic characteristics of study participants (N = 55)

Gender	No. of patients	Mean of age	<i>H. pylori</i> +ve	<i>H. pylori</i> -ve
Male	34	37	20	14
Female	21	34	15	6

Table 2: Number of healed patients after treatment with turmeric in peptic ulcer and *Helicobacter pylori* after 4 and 8 weeks

Gender	4 weeks of treatment	8 weeks of treatment	No recover +ve H-P
Male	13 +ve, 10 -ve	3 +v, 4 -ve	4
Female	7 +ve, 5- ve	4 +v, 1 -ve	4

for 4 weeks and reached a healing rate of 48%. After 8 weeks of treatment, the rate of ulcer absence was increased in 13 of 55 patients (24%), a percentage identical to that reached by Prucksunand *et al.* (2001). For the study, turmeric could heal approximately 87% of ulcers in 4-8 weeks; 63% were healed in 4 weeks and 24% were healed in 8 weeks.

Treatment of *H. pylori* with curcumin caused relief of symptoms in peptic patients (Koosirirat *et al.*, 2010). The antiulcer effect of bisdemethoxycurcumin, a yellow pigment found mainly in rhizomes of *Curcuma longa* might be due to its properties of decreasing gastric acid secretion and enhancing the mucosal defensive mechanism through suppression of inducible nitric oxide synthase-mediated inflammation (Mahattanadul *et al.*, 2009). Curcumin SDs (SDs, curcumin and Polyvinylpyrrolidone (PVP) k30 in the ratio of 1:8) had anti-gastric ulcer effects by inhibiting gastric acid secretion, reducing gastric juice acidity, inhibiting the activity of pepsin and promoting healing of ulcer (Mei *et al.*, 2009).

Another interesting property of turmeric is antibacterial activity, especially on enteric bacteria (Farnsworth and Bunyapraphatsara, 1992). The antioxidant curcumin showed inhibition effect on NF-kappa B activation and also IL-8 induction by *Helicobacter pylori* (Munzenmaier *et al.*, 1997). This will explain the anti *H. pylori* effect of turmeric and then the treatment of peptic ulcer.

Prucksunand *et al.* (2000) explained that turmeric had local anesthetic action. After eating turmeric, gastrin hormone secretion from the antrum of the stomach may be inhibited. Turmeric may possess local membrane anesthetizing activity at antrum of stomach then inhibits gastrin.

CONCLUSION

This study demonstrates that consumption of turmeric 2 g day⁻¹ for 4 and 8 weeks may be beneficial for people with peptic ulcer.

ACKNOWLEDGEMENTS

This research was supported by the Deanship of research and Graduate studies, Zarqa University, Zarqa, Jordan.

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