

Helicobacter pylori antibiotic resistance: Can herbal medicine be an alternative for the treatment?

Sir,

We read with interest the article by Khademi *et al.*, in which they well discussed the high antibiotic resistance rate of *Helicobacter pylori*, geographical variation in the resistance, and the molecular mechanisms of antibiotic resistance.^[1]

Prevalence of *H. pylori* infection is about 50% in the world. This pathogen is responsible for peptic ulcer disease, chronic gastritis, and gastric cancer. Unfortunately, the efficacy of the standard triple and quadruple therapy for eradication of *H. pylori* infection is seriously challenged because of the antimicrobial resistance problem.^[2] Therefore, it is needed to choose new alternatives with high efficiency and less side effects. In this regard, medicinal herbs can be one of the desirable options due to their positive effects in the treatment of gastric ulcers.^[3]

During the last years, researchers have performed a number of experimental studies on various plants to evaluate their antiulcer and anti-*H. pylori* activities and to discover the bioactive compounds although most of them were done *in vitro*. For instance, it was revealed that flavonoids (especially, quercetin) have antisecretory, anti-inflammatory, antioxidant, and antihistaminic effects, and also, the role of these polyphenolic composites against *H. pylori* has been discussed.^[4] Besides, other phenolic compounds such as quinones (cytoprotective) and phenolic glycosides (antisecretory) were reported as gastroprotective factors. Likewise, terpenoids as antiulcer compositions with cytoprotective activity enhance the production of mucus in the stomach. Furthermore, saponins have antisecretory mechanisms of action.^[5] In addition to these, it is demonstrated that plants including *Aloe vera*, ginger, licorice, chamomile, and turmeric can have a significant effect on treatment of peptic ulcer disease through their cytoprotective and anti-*H. pylori* activities.^[4,5]

Antibiotic resistance of *H. pylori* is presently a remarkable issue. According to the mentioned results, this hypothesis is considered that the antiulcer and gastroprotective properties of several medicinal herbs potentially have positive effects on treatment of

H. pylori and its complication in humans. Therefore, it is proposed that more experimental and clinical studies be conducted on different medicinal plants to design new and effective natural drugs against *H. pylori* infection, considering the geographic and genotypic resistance patterns of this pathogen.

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Conflicts of interest

The authors have no conflicts of interest.

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