Mastic gum has no effect on *Helicobacter pylori* load in vivo

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**Objective:** To determine whether mastic gum suppresses or eradicates *Helicobacter pylori* infection in humans.

**Patients and methods:** Nine patients with *H. pylori* infection, and without gastroduodenal ulceration, were recruited from day-case endoscopy lists and treated with mastic 1 g four times daily for 14 days. \(^{13}\)C[Urea breath tests (UBTs) were carried out immediately before, on day 15 and 5 weeks after treatment with mastic.

**Results:** Mastic had no effect on *H. pylori* status in any of the eight completed patients; all remained *H. pylori* positive by UBT with no change in \(\delta\) scores [pre-treatment mean \(\pm\) S.E.M. 19.1 \(\pm\) 3.7‰, day 15 (post-treatment) 18.7 \(\pm\) 3.8‰, \(P = 0.8,\) paired \(t\)-test].

**Conclusion:** Despite reported anti-*H. pylori* action in vitro, this preliminary study shows that mastic has no effect on *H. pylori* in humans.

Keywords: peptic ulcers, natural treatments, dyspepsia

**Introduction**

*Helicobacter pylori* infection is the main cause of peptic ulceration and gastric MALT (mucosa-associated lymphoid tissue) lymphoma and is a major risk factor for development of gastric adenocarcinoma.\(^1\) Mastic gum is a resinous exudate obtained from the stem and the main leaves of *Pistacia lentiscus*. It is widely used in Middle Eastern and Mediterranean countries as a chewing gum and food additive. We previously reported that mastic is bactericidal against *H. pylori in vitro*,\(^2\) and this has been independently confirmed.\(^3\) Since then, mastic has been marketed heavily in the UK, other European countries and the USA as a natural treatment for *H. pylori* infection and peptic ulceration. It is widely available in capsule form in health food shops and over the internet. We now report that mastic has no clinically significant effect against *H. pylori* in humans.

**Materials and methods**

To examine whether mastic gum was effective against *H. pylori in vivo*, we carried out a simple screening study in human volunteer subjects using \(^{13}\)C[Urea breath tests (UBTs). Even single doses of antibiotics reduce *H. pylori* load in the stomach sufficiently to render a UBT temporarily negative. Based on published UBT data,\(^4\) we calculated that we required eight completed subjects to detect a modest reduction in bacterial load with mastic (reduction in UBT value of 2‰) at \(P < 0.05\) (two-sided) with 90% power. Thus we recruited nine *H. pylori* positive patients (by Clotest rapid urease test, Ballard Medical Products, Draper, UT, USA) from our routine day-case endoscopy lists. No patient had current or previous gastroduodenal ulceration, or had taken antibiotics, bismuth compounds or proton pump inhibitors for 6 weeks before the trial. The study was approved by the University Hospital Nottingham Ethics Committee. Patients were treated with mastic capsules 1 g four times daily for 14 days. A \(^{13}\)C[UBT (INFAI, York, UK) was carried out before, on day 15 and 5 weeks after treatment with mastic.

**Results and discussion**

Eight of the nine patients completed the trial protocol (one withdrew after 5 days of treatment due to nausea and bloating). All eight patients remained *H. pylori* positive by UBT immediately after finishing mastic treatment, with unchanged UBT values (Figure 1; pretreatment mean \(\pm\) S.E.M. 19.1 \(\pm\) 3.7‰, post-treatment 18.7 \(\pm\) 3.8‰, \(P = 0.8,\) paired \(t\)-test). Eight patients attended for UBT 5 weeks after treatment finished; all remained *H. pylori* positive, again with unchanged UBT values (Figure 1, 18.2 \(\pm\) 3.6‰, \(P = 0.5\) versus pre-treatment levels). Other than the patient who withdrew, two patients reported mild adverse symptoms: one complained of fatigue and the second of constipation and bloating.

This preliminary study shows that high dose mastic gum has no clinically significant effect against *H. pylori in vivo*. Two studies from Iraq have suggested that mastic may be effective for ulcer treatment, but one was uncontrolled\(^5\) and the other seriously flawed.
Mastic gum and *H. pylori* in vivo

Figure 1. δ Urea breath test values for each of the eight completed volunteer patients before, immediately after and 5 weeks after 2 week treatment with mastic 1 g four times daily. *H. pylori* negative patients have δ UBT values of less than 3.5‰. Treatment with mastic had no effect on UBT values implying no significant effect on *H. pylori* load. In comparison, even single doses of antibiotics reduce bacterial load sufficiently to render urea breath tests temporarily negative.

Conflicts of interest

Professor Ala’Aldeen has spoken at a conference funded by the growers of mastic on the Greek island of Chios. Professor Atherton has participated in clinical trials funded by Eisai, manufacturers of the proton pump inhibitor rabeprazole.

References


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