

## HELICOBACTER PYLORI AND PROBIOTICS

### To the Editor:

In their excellent review article on *Helicobacter pylori*, Drs. Hardin and Wright discussed new and emerging therapies that have potential in the treatment and prevention of *H. pylori* infection.<sup>1</sup> An additional area of emerging research which deserves mention is that of probiotic therapy, generally defined as using viable bacteria to improve the intestinal microbial balance of the host.<sup>2</sup> Although the research in this area is far from robust, recent investigations suggest that the administration of certain strains of lactic acid bacteria can be helpful in the eradication of *H. pylori*.

Several in vitro,<sup>3-5</sup> animal,<sup>6-8</sup> and human<sup>9-12</sup> studies have shown that various lactobacillus strains have an anti-*H. pylori* effect. The suppressive effect of probiotics on *H. pylori* may result from production of lactic acid and other directly antimicrobial compounds, as well as from elicitation of an immune response by the host.<sup>4</sup> The *H. pylori* eradication appears to be strain specific; research shows that not all strains of lactic acid bacteria can lead to eradication in vivo.<sup>13</sup>

Perhaps the most exciting and clinically relevant area of research related to probiotics and *H. pylori* involves the combination of lactic acid bacteria and standard triple therapy. Patients undergoing triple therapy report lower incidence of diarrhea, nausea, and taste disturbance when given *Lactobacillus casei* subspecies *rhamnosus* strain (*Lactobacillus* GG) in both open-label<sup>14</sup> and placebo-controlled trials.<sup>15</sup> These findings have important implications for physicians, given the growing global concern related to antibiotic resistance. While probiotics are not a substitute for the well-established antimicrobial intervention in *H. pylori* eradication, it appears their coadministration with traditional agents can increase compliance by reducing adverse effects. The administration of lactic acid bacteria may be a means to reduce antibiotic resistance.<sup>16</sup>

Although probiotic therapy has the potential to play an adjuvant role in the treatment of *H. pylori* infection,<sup>17</sup> its role has yet to be fully established. Most of the pertinent research has been published very recently, and it is clear that further investigations are required. In the meantime, in the context of a concise review of *H. pylori*, physicians in the hospital setting should be made aware of this emerging area of research.

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## References

1. Hardin FJ, Wright RA. *Helicobacter pylori*: review and update. *Hosp Physician* 2002;38(5):23-31.
2. Fuller R. Probiotics in man and animals. *J Appl Bacteriol* 1989;66:365-78.
3. Midolo PD, Lambert JR, Hull R, et al. In vitro inhibition of *Helicobacter pylori* NCTC 11637 by organic acids and lactic acid bacteria. *J Appl Bacteriol* 1995;79:475-9.
4. Mukai T, Asasaka T, Sato E, et al. Inhibition of binding of *Helicobacter pylori* to the glycolipid receptors by probiotic *Lactobacillus reuteri*. *FEMS Immunol Med Microbiol* 2002;32:105-10.
5. Lorca GL, Wadstrom T, Valdez GF, Ljungh A. *Lactobacillus acidophilus* autolysins inhibit *Helicobacter pylori* in vitro. *Curr Microbiol* 2001;42:39-44.
6. Kabir AM, Aiba Y, Takagi A, et al. Prevention of *Helicobacter pylori* infection by lactobacilli in a gnotobiotic murine model. *Gut* 1997;41:49-55.
7. Aiba Y, Suzuki N, Kabir AM, et al. Lactic acid-mediated suppression of *Helicobacter pylori* by the oral administration of *Lactobacillus salivarius* as a probiotic in a gnotobiotic murine model. *Am J Gastroenterol* 1998;93:2097-101.
8. Coconnier MH, Lievin V, Hemery E, Servin AL. Antagonistic activity against *Helicobacter pylori* infection in vitro and in vivo by the human *Lactobacillus acidophilus* strain LB. *Appl Environ Microbiol* 1998;64:4573-80.
9. Sakamoto I, Igarashi M, Kimura K, et al. Suppressive effect of *Lactobacillus gasseri* OLL 2716 (LG21) on *Helicobacter pylori* infection in humans. *J Antimicrob Chemother* 2001;47:709-10.
10. Felley CP, Cortesey-Theulaz I, Rivero JL, et al. Favourable effect of an acidified milk (LC-1) on *Helicobacter pylori* gastritis in man. *Eur J Gastroenterol Hepatol* 2001;13:25-9.
11. Canducci F, Armuzzi A, Cremonini F, et al. A lyophilized and inactivated culture of *Lactobacillus acidophilus* increases *Helicobacter pylori* eradication rates. *Aliment Pharmacol Ther* 2000;14:1625-9.
12. Michetti P, Dorta G, Wiesel PH, et al. Effect of whey-based culture supernatant of *Lactobacillus acidophilus* (*johnsonii*) La1 on *Helicobacter pylori* infection in humans. *Digestion* 1999;60:203-9.
13. Wendakoon CN, Thomson AB, Ozimek L. Lack of therapeutic effect of a specially designed yogurt for the eradication of *Helicobacter pylori* infection. *Digestion* 2002;65:16-20.
14. Armuzzi A, Cremonini F, Ojetti V, et al. Effect of *Lactobacillus* GG supplementation on antibiotic-associated gastrointestinal side effects during *Helicobacter pylori* eradication therapy: a pilot study. *Digestion* 2001;63:1-7.
15. Armuzzi A, Cremonini F, Bartolozzi F, et al. The effect of oral administration of *Lactobacillus* GG on antibiotic-associated side-effects during *Helicobacter pylori* eradication therapy. *Aliment Pharmacol Ther* 2001;15:163-9.
16. Daw MA, Drah AM. Antibiotic resistance: prospects for a

new millennium. J Chemother 2001;13:587-94.

17. Alsahli M, Michetti P. Lactobacilli for the management of *Helicobacter pylori* [published erratum appears in Nutrition 200;17:700]. Nutrition 2001;17:268-9.

*In reply:*

We appreciate the comments and work of Dr. Logan and others pursuing adjuncts and alternatives in the treatment of *H. pylori* infection. Unfortunately, *H. pylori* is a complex and adaptive organism with mechanisms in place to resist our efforts at eradication. However,

there are no placebo-controlled human clinical trials in place to validate routine use of lactobacillus or other probiotics in treating *H. pylori* infection. As such, probiotics cannot yet be recommended as part of a therapeutic regimen, although investigation into these agents seems promising.

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