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FILE: ■ Cranberry (*Vaccinium macrocarpum*) Juice
■ *Lactobacillus johnsonii*
■ *Helicobacter pylori* Colonization
■ Probiotics

HC 060184-365

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RE: Efficacy of Cranberry Juice Alone or in Combination with *Lactobacillus johnsonii* in inhibiting the Colonization of *Helicobacter pylori* in the Gastric Mucosa of Children

Gotteland M, Andrews M, Toledo M, et al. Modulation of *Helicobacter pylori* colonization with cranberry juice and *Lactobacillus johnsonii* La1 in children. *Nutrition*. 2008;24:421–426.

Helicobacter pylori is a pathogen that colonizes the gastric mucosa of humans, especially in areas where hygiene is poor. An epidemiologic survey conducted in Chile over 10 years found that approximately 35% of children aged 4 years and approximately 60% of adolescents with a low socioeconomic status were colonized with *H. pylori*. This pathogen is known to cause stomach ulcers and is a risk factor for stomach cancer. The high prevalence of this pathogen and its associated diseases in the Chilean population and the high cost and varying efficacies of treatments used to eliminate *H. pylori* are important reasons for seeking alternative therapies to combat this pathogen.

Probiotics have recently been proposed as a possible therapy for the management of *H. pylori* colonization because of their ability to produce bacteriocins, which have been shown to inhibit the growth of *H. pylori* and to prevent it from adhering to gastric epithelial cells. The probiotic strain *Lactobacillus johnsonii* La1 is able to survive in the gastrointestinal tract and has been shown to modulate colonic microbiota and to stimulate the local and systemic immune system. Extracts of cranberry (*Vaccinium macrocarpum*) have been shown to have similar *H. pylori*-inhibitory activities, likely because of their high content of proanthocyanidins. Given that probiotics and cranberry extracts inhibit *H. pylori* via different mechanisms, the authors conducted this study to determine whether the daily intake of cranberry juice and *Lactobacillus johnsonii* La1 would have a synergistic effect against *H. pylori*.

Asymptomatic boys and girls aged 6-16 years from a low socioeconomic area of Santiago, Chile, were recruited to participate in this study, which was conducted from August to October 2006 in 3 schools. To be eligible to participate in this double-blind, randomized, controlled study, the children had to test positive for *H. pylori* with a ¹³C-urea breath test, have no gastrointestinal disease, and have no recent history of antibiotic, antacid, or prokinetic drug use. Two hundred ninety-five positive children were randomly allocated to receive, for 3 weeks excluding weekends, 1 of 4 treatments once daily at school in the morning: cranberry juice + La1 (CB/La1), placebo juice + La1 (La1), cranberry juice + heat-killed La1 (CB), or placebo juice + heat-killed La1 (control). The daily serving of cranberry juice (Cran Chile, Lanco, Chile) was 200 mL and that of La1 (Chamyto, Nestlé Chile SA, Santiago, Chile) was 80 mL. A second ¹³C-urea breath test was conducted at the end of the 3-week study period to identify *H. pylori*. A third ¹³C-urea breath test was conducted after a 1-month washout in those children who tested negative for *H. pylori* with the second test.

Twenty-four children did not complete the study. The results of the second ¹³C-urea breath test showed that *H. pylori* was suppressed in 22.9% (16 of 70) of the CB/La1 group, 16.9% (11 of 65) of the CB group, 14.9% (10 of 67) of the La1 group, and 1.5% (1 of 69) of the control group. Although the percentage of bacteria suppression was higher in the CB/La1 group than in the CB and La1 groups, the differences between these groups were not statistically significant. Prior agar diffusion assay results demonstrated that cranberry juice is not bacteriostatic for *L. johnsonii* La1. However, the proportion of children testing negative for *H. pylori* in the control group was significantly lower than the proportion in the CB/La1, CB, and La1 groups. The third ¹³C-urea breath test was conducted in only 19 of the 38 children who tested negative for *H. pylori* with the second test. Only 4 children remained negative for *H. pylori* after the 1-month washout: 2 in the La1 group and 2 in the CB/La1 group. Because of the small number of subjects, it was not possible to analyze the significance of the results obtained after the third test.

H. pylori was suppressed in significantly more children in the 3 cranberry and/or La1 groups than in the control group at 3 weeks; however, the finding that most of the children who tested negative for the bacteria at 3 weeks tested positive for the bacteria after the 1-month washout indicates that the bacteria were not actually eradicated but rather were temporarily inhibited and were able to recolonize the gastric mucosa after La1 and cranberry juice were no longer being consumed. The authors conclude that the "results suggest that regular intake of cranberry juice or La1 may be useful in the management of asymptomatic children colonized with *H. pylori*; however, no synergistic inhibitory effects on *H. pylori* colonization were observed when both foodstuffs were simultaneously consumed."

—Brenda Milot, ELS

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