

Antibacterial activities of almond skins on *cagA*-positive and-negative clinical isolates of *Helicobacter pylori*.

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Abstract:

Helicobacter pylori is known to be a gastric pathogen of humans. Eradication regimens for *H. pylori* infection have some side effects, compliance problems, relapses, and antibiotic resistance. Therefore, the need for alternative therapies for *H. pylori* infections is of special interest. We have previously shown that polyphenols from almond skins are active against a range of food-borne pathogens. The aim of this study was to evaluate the antibacterial effects of natural almond skins before and after simulated human digestion and the pure flavonoid compounds epicatechin, naringenin and protocatechuic acid against *H. pylori*. *H. pylori* strains were isolated from gastric biopsy samples following standard microbiology procedures. Also, *cagA* and *vacA* genes were identified using PCR. Susceptibility studies on 34 strains of *H. pylori*, including two reference strains (ATCC 43504, ATCC 49503), were performed by the standard agar dilution method. Natural almond skin was the most effective compound against *H. pylori* (MIC range, 64 to 128 µg/ml), followed by natural skin post gastric digestion (MIC range, 128 to 512 µg/ml), and natural almond skin post gastric plus duodenal digestion (MIC range, 256 to 512 µg/ml). Amongst the pure flavonoid compounds, protocatechuic acid showed the greatest activity (MIC range, 128 to 512 µg/ml) against *H. pylori* strains. Polyphenols from almond skins were effective in vitro against *H. pylori*, irrespective of genotype status and could therefore be used in combination with antibiotics as a novel strategy for antibiotic resistance.