

# The association of garlic with *Helicobacter pylori* infection and gastric cancer risk: A systematic review and meta-analysis

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## Abstract

**Background:** Garlic may be protective against *Helicobacter pylori* infection and gastric cancer development. We conducted this study to quantitatively update evidence on garlic intake and gastric cancer with the inclusion of most recent cohort studies and qualitatively summarize epidemiological studies of garlic consumption and *Helicobacter pylori* infection.

**Materials and methods:** PubMed, Embase, MEDLINE, and Cochrane Library were searched on April 2018. We conducted a meta-analysis to determine whether garlic intake reduced gastric cancer risk using random-effect models and a systematic review to summarize evidence on the association between garlic consumption and *Helicobacter pylori* infection. Risk of bias was assessed using tools of Cochrane risk of bias and Robins-I for randomized and nonrandomized studies, respectively.

**Results:** Meta-analysis of 18 studies (142 921 subjects) demonstrated high garlic consumption (as comparing the highest category to the lowest) was associated with a reduced gastric cancer risk (OR = 0.51, 95% CI = 0.44-0.57). This association became nonsignificant if only derived from the prospective studies (OR = 0.95, 95% CI = 0.66-1.24). Thirteen studies (4889 participants) were included in the systematic review for garlic consumption and *Helicobacter pylori* infection; ten of which found no significant results. The majority of these studies were poor in quality given the small sample size and high risk of bias.

**Conclusions:** Pooled evidence, mainly from case-control studies, suggested a significant inverse association of garlic intake with gastric cancer risk. Given the limitations of included studies, current epidemiological evidence is not sufficient to reach any definite conclusion regarding the association of garlic with *Helicobacter pylori* infection.

**Keywords:** *Helicobacter pylori*; garlic; gastric cancer; prevention.