

# THE EFFECT OF GARLIC SUPPLEMENTATION ON C-REACTIVE PROTEIN IN OVERWEIGHT AND OBESE PEOPLE: META-ANALYSIS

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## ABSTRACT

**Background:** Recent studies suggest that obesity triggers systemic chronic inflammation by activation of innate immune system in adipose tissue. This condition leading to a continuous release of C-Reactive Protein (CRP) and increases the risk of cardiovascular events. Garlic is one of the plants that has been widely studied for its anti-inflammatory activity. This study aimed to determine the effect of garlic supplementation on CRP levels in overweight and obese people.

**Subjects and Methods:** This was a systematic review and meta-analysis. The searching of articles through Google Scholar, Pubmed, Science Direct, and Elsevier databases. The articles were filtered using PICO model, including: (1) Population= overweight or obese people, (2) intervention= garlic supplementation, (3) comparison= placebo, and (4) outcome= CRP. Keywords entered were "garlic" or "age garlic extract" AND "CRP" or "hs-CRP" or "inflammation" AND "obese" or "overweight" or "metabolic syndrome" AND "RCT". The inclusion criteria were articles in Indonesian or English with accessible full text, randomized controlled trial, overweight and obese category based on body mass index, and garlic as a single supplementation. Data analysis using Review Manager 5.3.

**Results:** 10 articles were eligible and analyzed for meta-analysis. Garlic dosage varies between 400-3600 mg/day. The treatment duration was between 2 weeks to 3 months. The result showed that the administration of garlic was not significant in reducing CRP levels in obese and overweight populations (SMD= -0.06; 95% CI=-0.59 to 0.47; p= 0.820; I<sup>2</sup>=89%). Subgroup analysis of 7 studies with comorbid diseases subjects found a borderline statistically significant decrease in CRP levels (SMD= -0.37; 95% CI=-0.77 to 0.04; p=0.070; I<sup>2</sup>=76%). Likewise, the results of the subgroup analysis in 2 studies with healthy obese subjects showed an insignificant decrease (SMD= -0.09; 95% CI=-0.85 to 0.67; p=0.810; I<sup>2</sup>=56%).

**Conclusion:** Garlic supplementation in overall overweight and obese people has no effect on CRP levels.

**Keywords:** garlic supplementation, C-Reactive Protein, overweight, obesity

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