



## Meta-analysis

## Effect of tomato consumption on inflammatory markers in health and disease status: A systematic review and meta-analysis of clinical trials

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## SUMMARY

**Background and aims:** Inflammation is a major cause of chronic diseases. Several studies have investigated the effects of tomato intake on inflammatory biomarkers; however, the results are equivocal. Therefore, the present study aimed to systematically review and analyses randomized clinical trials (RCTs) assessing the effects of tomato intake on inflammatory biomarkers in adults.

**Methods:** A systematic search was performed in PubMed, Scopus, ISI Web of Science, and Cochrane Library databases to find RCTs related to the effect of tomato intake on inflammatory markers, including C-reactive protein (CRP), interleukin 6 (IL-6), and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), up to November 2021. Meta-analyses were performed using the random-effects model.

**Results:** A total of 465 subjects sourced from seven eligible RCTs (8 treatment arms) were entered into the analysis. Pooled effect size of articles indicated that tomato intake was not significantly effective on GRP (WMD: 0.13 mg/dL, 95% CI: -0.09 to 0.36;  $P = 0.23$ ,  $I^2 = 83.9\%$ ) and IL-6 (Hedges'  $g = -0.12$ ; 95% CI -0.36, 0.13;  $P = 0.34$ ,  $I^2 = 0.0\%$ ) levels compared to the control group. But it can significantly reduce TNF- $\alpha$  (Hedges'  $g = -0.45$ ; 95% CI -0.76, -0.13;  $P = 0.005$ ,  $I^2 = 0.0\%$ ) levels.

**Conclusion:** Generally, the present study showed that tomato intake has no significant effect on serum CRP, and IL-6 concentrations, but can reduce serum TNF- $\alpha$  levels significantly. However, additional well-designed studies that include more diverse populations and longer duration are warranted.

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