

**Lack of effects of tomato products on endothelial function in humans:
Results of a randomised, placebo controlled cross-over study.**

Running Title: Tomato and endothelial function

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Abstract

Epidemiological studies suggest that consumption of tomato products reduces the risk of cardiovascular diseases via antioxidant, hypocholesterolemic, and anti-inflammatory mechanisms. Although experimental data also describe beneficial effects on endothelial function, clinical data in humans are lacking. To test the hypothesis that tomato ingestion ameliorates endothelial function, we randomized healthy non-smoking postmenopausal women to consume a buttered roll with and without tomato puree (70 g) in a crossover design. Endothelial-dependent flow-mediated dilation (FMD) and endothelial-independent nitro-mediated dilation (NMD) of the brachial artery were assessed with high-resolution ultrasound (13 MHz linear array transducer). Acute (24 hours) and long-term (7 days) effects were examined after daily consumption of the described meal. Nineteen volunteers completed the protocol and provided technically suitable ultrasound measurement data. Plasma lycopene levels increased from 0.30 ± 0.04 (baseline) to 0.42 ± 0.04 and to 0.74 ± 0.06 μM after 24 hours and 7 days, respectively, with tomato puree consumption. These data indicated effective absorption of the tomato product. However, both acute and long-term tomato puree consumption had no effects on endothelium-dependent or independent dilation of the brachial artery. In addition, we found no correlation between lycopene plasma levels and FMD. In conclusion, consumption of tomato products associated with a significant increase in plasma lycopene levels had no effects on endothelial function in healthy postmenopausal women.