

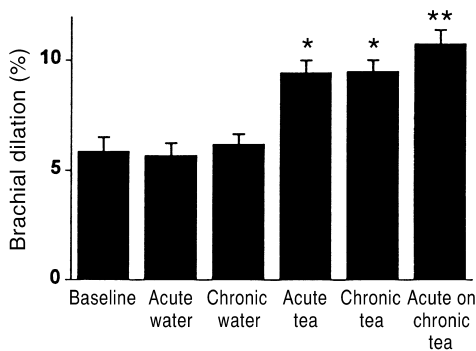
## Short and long term black tea consumption reverses endothelial dysfunction in patients with coronary artery disease

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Epidemiological studies suggest that tea consumption decreases cardiovascular risk, but the mechanisms of benefit remain undefined. Endothelial dysfunction has been associated with coronary artery disease (1). Some antioxidants have been shown to reverse endothelial dysfunction (2) and tea contains antioxidant flavonoids.

To test the hypothesis that tea consumption will reverse endothelial dysfunction, we randomized 66 patients with proven coronary artery disease to consume black tea and water in a cross over design. Short-term effects were examined two hours after consumption of 450 mL of tea or water. Long term effects were examined after consumption of 900 mL tea or water daily for four weeks. Vasomotor function of the brachial artery was examined at baseline and after each intervention with vascular ultrasound. Fifty patients completed the protocol and had technically suitable ultrasound measurements. Both short and long term tea consumption improved endothelial-dependent flow-mediated dilation of the brachial artery, whereas consumption of water had no effect ( $P < 0.0001$  by repeated-measures ANOVA). Tea consumption had no effect on endothelium-independent nitroglycerin-induced dilation. An equivalent oral dose of caffeine (200 mg) had no short-term effect on flow-mediated dilation. Plasma flavonoids increased after short- and long-term tea consumption.



In 50 patients with coronary artery disease, beverage consumption significantly affected flow-mediated dilation ( $P < 0.001$ ). Post hoc analysis demonstrated that flow-mediated dilation was higher after short and long term tea consumption versus baseline and water consumption ( $*P < 0.001$ ). Furthermore, short on long term tea ingestion resulted in additional improvement ( $**P = 0.02$ ).

In conclusion, acute and chronic tea consumption reverses endothelial vasomotor dysfunction in patients with coronary artery disease. This finding may partly explain the association between tea intake and decreased cardiovascular disease events.

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