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## Green and black tea for the primary prevention of cardiovascular disease.

Hartley L<sup>1</sup>, Flowers N, Holmes J, Clarke A, Stranges S, Hooper L, Rees K.

### + Author information

#### Abstract

**BACKGROUND:** There is increasing evidence that both green and black tea are beneficial for cardiovascular disease (CVD) prevention.

**OBJECTIVES:** To determine the effects of green and black tea on the primary prevention of CVD.

**SEARCH METHODS:** We searched the following databases on 12 October 2012 without language restrictions: CENTRAL in The Cochrane Library, MEDLINE (OVID), EMBASE (OVID) and Web of Science (Thomson Reuters). We also searched trial registers, screened reference lists and contacted authors for additional information where necessary.

**SELECTION CRITERIA:** Randomised controlled trials (RCTs) lasting at least three months involving healthy adults or those at high risk of CVD. Trials investigated the intake of green tea, black tea or tea extracts. The comparison group was no intervention, placebo or minimal intervention. The outcomes of interest were CVD clinical events and major CVD risk factors. Any trials involving multifactorial lifestyle interventions or focusing on weight loss were excluded to avoid confounding.

**DATA COLLECTION AND ANALYSIS:** Two review authors independently selected trials for inclusion, abstracted data and assessed the risk of bias. Trials of green tea were analysed separately from trials of black tea.

**MAIN RESULTS:** We identified 11 RCTs with a total of 821 participants, two trials awaiting classification and one ongoing trial. Seven trials examined a green tea intervention and four examined a black tea intervention. Dosage and form of both green and black tea differed between trials. The ongoing trial is examining the effects of green tea powder capsules. No studies reported cardiovascular events. Black tea was found to produce statistically significant reductions in low-density lipoprotein (LDL) cholesterol (mean difference (MD) -0.43 mmol/L, 95% confidence interval (CI) -0.56 to -0.31) and blood pressure (systolic blood pressure (SBP): MD -1.85 mmHg, 95% CI -3.21 to -0.48. Diastolic blood pressure (DBP): MD -1.27 mmHg, 95% CI -3.06 to 0.53) over six months, stable to sensitivity analysis, but only a small number of trials contributed to each analysis and studies were at risk of bias. Green tea was also found to produce statistically significant reductions in total cholesterol (MD -0.62 mmol/L, 95% CI -0.77 to -0.46), LDL cholesterol (MD -0.64 mmol/L, 95% CI -0.77 to -0.52) and blood pressure (SBP: MD -3.18 mmHg, 95% CI -5.25 to -1.11; DBP: MD -3.42, 95% CI -4.54 to -2.30), but only a small number of studies contributed to each analysis, and results were not stable to sensitivity analysis. When both tea types were analysed together they showed favourable effects on LDL cholesterol (MD -0.48 mmol/L, 95% CI -0.61 to -0.35) and blood pressure (SBP: MD -2.25 mmHg, 95% CI -3.39 to -1.11; DBP: MD -2.81 mmHg, 95% CI -3.77 to -1.86). Adverse events were measured in five trials and included a diagnosis of prostate cancer, hospitalisation for influenza, appendicitis and retinal detachment but these are unlikely to be directly attributable to the intervention.

**AUTHORS' CONCLUSIONS:** There are very few long-term studies to date examining green or black tea for the primary prevention of CVD. The limited evidence suggests that tea has favourable effects on CVD risk factors, but due to the small number of trials contributing to each analysis the results should be treated with some caution and further high quality trials with longer-term follow-up are needed to confirm this.

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