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Green tea for weight loss and weight maintenance in overweight or obese adults.Jurgens TM¹, Whelan AM, Killian L, Doucette S, Kirk S, Foy E.

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Abstract

BACKGROUND: Preparations of green tea are used as aids in weight loss and weight maintenance. Catechins and caffeine, both contained in green tea, are each believed to have a role in increasing energy metabolism, which may lead to weight loss. A number of randomised controlled trials (RCTs) evaluating the role of green tea in weight loss have been published; however, the efficacy of green tea preparations in weight loss remains unclear.

OBJECTIVES: To assess the efficacy and safety of green tea preparations for weight loss and weight maintenance in overweight or obese adults.

SEARCH METHODS: We searched the following databases from inception to specified date as well as reference lists of relevant articles: The Cochrane Library (Issue 12, 2011), MEDLINE (December 2011), EMBASE (December 2011), CINAHL (January 2012), AMED (January 2012), Biological Abstracts (January 2012), IBIDS (August 2010), Obesity+ (January 2012), IPA (January 2012) and Web of Science (December 2011). Current Controlled Trials with links to other databases of ongoing trials was also searched.

SELECTION CRITERIA: RCTs of at least 12 weeks' duration comparing green tea preparations to a control in overweight or obese adults.

DATA COLLECTION AND ANALYSIS: Three authors independently extracted data, assessed studies for risk of bias and quality, with differences resolved by consensus. Heterogeneity of included studies was assessed visually using forest plots and quantified using the I(2) statistic. We synthesised data using meta-analysis and descriptive analysis as appropriate; subgroup and sensitivity analyses were conducted. Adverse effects reported in studies were recorded.

MAIN RESULTS: Due to the level of heterogeneity among studies, studies were divided into two groups; those conducted in Japan and those conducted outside Japan. Study length ranged between 12 and 13 weeks. Meta-analysis of six studies conducted outside Japan showed a mean difference (MD) in weight loss of -0.04 kg (95% CI -0.5 to 0.4; P = 0.88; I(2) = 18%; 532 participants). The eight studies conducted in Japan were not similar enough to allow pooling of results and MD in weight loss ranged from -0.2 kg to -3.5 kg (1030 participants) in favour of green tea preparations. Meta-analysis of studies measuring change in body mass index (BMI) conducted outside Japan showed a MD in BMI of -0.2 kg/m(2) (95% CI -0.5 to 0.1; P = 0.21; I(2) = 38%; 222 participants). Differences among the eight studies conducted in Japan did not allow pooling of results and showed a reduction in BMI ranging from no effect to -1.3 kg/m(2) (1030 participants), in favour of green tea preparations over control. Meta-analysis of five studies conducted outside Japan and measuring waist circumference reported a MD of -0.2 cm (95% CI -1.4 to 0.9; P = 0.70; I(2) = 58%; 404 participants). Differences among the eight studies conducted in Japan did not allow pooling of results and showed effects on waist circumference ranging from a gain of 1 cm to a loss of 3.3 cm (1030 participants). Meta-analysis for three

weight loss studies, conducted outside Japan, with waist-to-hip ratio data (144 participants) yielded no significant change (MD 0; 95% CI -0.02 to 0.01). Analysis of two studies conducted to determine if green tea could help to maintain weight after a period of weight loss (184 participants) showed a change in weight loss of 0.6 to -1.6 kg, a change in BMI from 0.2 to -0.5 kg/m² and a change in waist circumference from 0.3 to -1.7 cm. In the eight studies that recorded adverse events, four reported adverse events that were mild to moderate, with the exception of two (green tea preparations group) that required hospitalisation (reported as not associated with the intervention). Nine studies reported on compliance/adherence, one study assessed attitude towards eating as part of the health-related quality of life outcome. No studies reported on patient satisfaction, morbidity or cost.

AUTHORS' CONCLUSIONS: Green tea preparations appear to induce a **small, statistically non-significant weight loss in overweight or obese adults**. Because the amount of weight loss is small, it is not likely to be clinically important. Green tea had no significant effect on the maintenance of weight loss. Of those studies recording information on adverse events, only two identified an adverse event requiring hospitalisation. The remaining adverse events were judged to be mild to moderate.

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