Will green tea help you lose weight?

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Evidence has shown that green tea extract may be an effective herbal remedy useful for weight control and helping to regulate glucose in type 2 diabetes. In order to ascertain whether green tea truly has this potential, Jae-Hyung Park and his colleagues from the Keimyung University School of Medicine in the Republic of Korea conducted a study, now published in the Springer journal *Naunyn-Schmedeberg's Archives of Pharmacology*.

The active constituents of green tea, which have been shown to inhibit intestinal glucose and lipid uptake, are a certain type of flavonoid called gallated catechins. The authors had previously suggested that the amount of gallated catechins necessary to reduce blood glucose concentrations can be achieved from a daily dose of green tea. However, the amount of green tea needed to decrease lipid uptake from the gut is higher and has been shown to have adverse effects in humans. Once in the bloodstream, gallated catechins can actually increase insulin resistance, which is a negative consequence especially in obese and diabetic patients.

For their study, the researchers tested the effects of green tea extract on body weight and glucose intolerance in both diabetic mice and normal mice fed a high-fat diet. To prevent a high dose of gallated catechins from reaching the bloodstream, the authors also used a non-toxic resin, polyethylene glycol, to bind the gallated catechins in the gut to prevent their absorption. They then looked at the effects on the mice of eating green tea extract alone, and eating green tea extract plus polyethylene glycol. They compared these against the effects of two other therapeutic drugs routinely prescribed for type 2 diabetes.

Results showed that green tea extract in isolation did not give any improvements in body weight and glucose intolerance. However, when green tea extract was given with polyethylene glycol, there was a significant reduction in body weight gain, insulin resistance and glucose intolerance in both normal mice on a high fat diet and diabetic mice. The polyethylene glycol had the effect of prolonging the amount of time the gallated catechins remained in the intestines, thereby limiting glucose absorption for a longer period.

Interestingly, the effects of the green tea extract in both the intestines and in the circulation were measurable at doses which could be achieved by drinking green tea on a daily basis. In addition, the effects of green tea extract w ere comparable to those found when taking two of the drugs which are currently recommended for non-insulin dependent diabetes.

The authors conclude that "dietary green tea extract and polyethylene glycol alleviated body weight gain and insulin resistance in diabetic and high-fat mice, thus ameliorating glucose intolerance. Therefore the green tea extract and polyethylene glycol complex may be a preventative and therapeutic tool for obesity and obesity-related type 2 diabetes without too much concern about side effects."

More information: Park, Jae-Hyung et al. (2013). Green tea extract with polyethylene glycol-3350 reduces body weight and improves glucose tolerance in db/db and high-fat diet mice. Naunyn-Schmiedeberg's Archives of Pharmacology. DOI 10.1007/s00210-013-0869-9

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