

Effects of green tea on insulin secretion, expression of inflammatory cytokines genes in adipose tissue of non-obese type-2 diabetic Goto-Kakizaki rats.

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Previous studies have shown in vivo effects of green tea catechins including epigallocatechin gallate (EGCG) on oxidative stress. However, mechanisms underlying the effects of EGCG on adipose tissue-related metabolic disturbances are not fully understood, and findings are contradictory. Recent studies have shown that the induction of diabetes in animal models leads to oxidative stress in peripheral leukocytes, which was accompanied by enhanced gene expression of inflammatory cytokines. In this study, the author has examined the effect of a diet containing EGCG on the expression of inflammation-related genes in visceral adipose tissue of non-obese type-2 diabetes animal model, Goto-Kakizaki (GK) rats. GK rats at 5 weeks of age were fed a control high-fat diet (45 energy% as fat) or the high-fat diet containing 0.1%, 0.2%, 0.5% EGCG for 34 weeks. Oral glucose tolerance test showed that insulin response following a glucose load was greater in animals fed a diet containing 0.1% EGCG than control, whereas baseline insulin level and an insulin response was rather reduced in animals fed a diet containing 0.5% EGCG. Significantly reduced gene expression of IL-1 β , IL-18, TNF- α , resistin and SODs were found only in rats fed a diet containing 0.1% EGCG, but not in those fed diets containing 0.2% or more EGCG as compared with control. These results suggest that there is an optimum range of dose of EGCG which may suppress the expression of genes involved in inflammation in adipose tissue.