

Abstract

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Title of diploma thesis: The effect of green tea polyphenols on antioxidant enzymes in mice *in vivo*

Antioxidant enzymes belong to compounds with proven effects on human organism. Their main purpose is to defend cells against oxidative stress. In order to support this process, we are taking substances called antioxidants either in regular diet or as dietary supplements. Recently there are a lot of companies on the market, offering the supplement, promising weight loss or defence against cancer.

Green tea contains many natural substances, such as polyphenolic compounds which include catechins, which have proven effects on our bodies, but the specific way they act on selected antioxidant enzymes is still matter of study.

The aim of this work was to determine the effect of green tea polyphenols on antioxidant enzymes in mice. We studied 8 groups (4 normal, obese 4) wherein the two groups were left as a control which means without administration of Polyphenon. Three groups were given a Polyphenon enriched diet and for various period of time (28 days, 3 days) and at different concentrations (0.1%, 0.01%). Activity was studied in liver cytosol and small intestine cytosol.

The results show that administration of polyphenon in concentrations of 0.1% for 28 days increased the activity of catalase and NAD(P)H:quinoneoxidoreductase 1 in normal mice and glutathione S- transferase, glutathione reductase, peroxidase and superoxid dismutase in obese. Polyphenon served at lower concentrations for 28 days increased the activity of glutathione S- transferase, thioredoxine reductase and NAD(P)H:quinoneoxidoreductase 1. Increased activity after polyphenon administration for only 3 days, increased activity was found for enzymes superoxid dismutase, NAD(P)H:quinoneoxidoreductase 1, glutathione reductase, glutathione S- transferase, catalase and thioredoxine reductase in normal mice and for glutathione S- transferase in obese mice. Other values were either reduced or did not show statistically significant differences