Ginkgo biloba extract supplementation decreases energy intake in high fat diet obese rats but does not modify tissue fatty acid composition

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INTRODUCTION:

Obesity is a complex disease of multifactorial aetiology, positively associated with metabolic disorders including hyperinsulinaemia, dyslipidaemia and others. Fatty acids are involved in cell signalling, homeostasis and membrane composition; however, chronic high saturated fat intake enlarges fat mass and disturbs tissue fatty acid composition. Supplementation with plant-derived polyphenols may provide therapeutic application for the amelioration of metabolic disorders. Antioxidant, anti-inflammatory, vasodilatory and anti-oedematogenic properties have been attributed to Ginkgo biloba extract (GbE). It has been described that GbE supplementation improves insulin sensitivity in adipose tissue of diet-induced obese rats. However, current understanding of the biochemical pathways modulated by GbE remains limited.

METHODS:

The Committee on Animal Research Ethics, Federal University of São Paulo (Application 271359) authorised this study. Male rats were fed from 2 to 4-months-old with a high fat diet (HFD) enriched with 28% lard and thereafter supplemented for 14 days with 500 mg/kg of GbE (HFD+GbE) or saline (HFD). Rats were euthanized and epididymal, retroperitoneal and mesenteric adipose tissues were removed. Total lipids were extracted using Chloroform/Methanol, methylated and analysed by Gas Chromatography with Flame Ionization Detector (GC-FID).

RESULTS:

GbE supplementation decreased both food and energy intake comparing to HFD (8.8%, p=0.01). However, no differences were observed in body weight gain and adipose tissue mass. No significant alterations on tissue fatty acid composition were observed.

CONCLUSION:

Supplementation with plant-derived polyphenols may provide therapeutic application for obesity, important for patients with weak adherence to lower calorie diets and positive lifestyle interventions. The current study suggests that GbE supplementation for two weeks reduces food and energy intake via signalling pathways not associated with adipose tissue fatty acid composition. Future studies are needed to further elucidate the effects of GbE supplementation for longer periods of time and its impact on the central nervous system.

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