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Antiobesity effects of yerba maté extract (Ilex paraguariensis) in high-fat diet-induced obese mice.

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Because the potential of yerba maté (Ilex paraguariensis) has been suggested in the management of obesity, the aim of the present study was to evaluate the effects of yerba maté extract on weight loss, obesity-related biochemical parameters, and the regulation of adipose tissue gene expression in high-fat diet-induced obesity in mice. Thirty animals were randomly assigned to three groups. The mice were introduced to standard or high-fat diets. After 12 weeks on a high-fat diet, mice were randomly assigned according to the treatment (water or yerba maté extract 1.0 g/kg). After treatment intervention, plasma concentrations of total cholesterol, high-density lipoprotein cholesterol, triglyceride, low-density lipoprotein (LDL) cholesterol, and glucose were evaluated. Adipose tissue was examined to determine the mRNA levels of several genes such as tumor necrosis factor-alpha (TNF-alpha), leptin, interleukin-6 (IL-6), C-C motif chemokine ligand-2 (CCL2), CCL receptor-2 (CCR2), angiotensinogen, plasminogen activator inhibitor-1 (PAI-1), adiponectin, resistin, peroxisome proliferator-activated receptor-gamma(2) (PPAR-gamma(2)), uncoupling protein-1 (UCP1), and PPAR-gamma coactivator-1 alpha (PGC-1 alpha). The F4/80 levels were determined by immunoblotting. We found that obese mice treated with yerba maté exhibited marked attenuation of weight gain, adiposity, a decrease in epididymal fat-pad weight, and restoration of the serum levels of cholesterol, triglycerides, LDL cholesterol, and glucose. The gene and protein expression levels were directly regulated by the high-fat diet. After treatment with yerba maté extract, we observed a recovery of the expression levels. In conclusion, our data show that yerba maté extract has potent antiobesity activity in vivo. Additionally, we observed that the treatment had a modulatory effect on the expression of several genes related to obesity.

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