GREEN TEA EXTRACT INDUCES THERMOGENIC CHANGES AND RELIEVES THE REDOX STATE BY MODULATING PARAMETERS RELATED TO ENDOPLASMIC RETICULUM STRESS

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Introduction: There is a lack of information on how green tea (GT) extract modulates endoplasmic reticulum stress (ER stress), especially in adipose tissue. Objectives: The aim of this study was to evaluate the effect of supplementation with GT on insulin resistance (IR), inflammation and ER stress in the adipose tissue of mice induced to obesity by a cafeteria diet (Ethic Committee nº 135/2013). Materials and Methods: Male C57Bl/6 mice (3 months) were divided into 4 groups: Control (chow diet), GT (chow diet), Obese and Obese+GT. The mice were fed with cafeteria diet for 4 weeks. After this period, the animals received gavage with GT (500 mg/Kg of BW) over 12 weeks (5 days/week). After 16 weeks of experimentation, the mice were killed and AT was properly stored. Results: The treatment with GT decreased fat depots, improved insulin sensitivity (GTT and ITT) and increased GLUT4 expression which were modified by the cafeteria diet. In addition, GT increased the expression of thermogenic genes (PRDM16 and UCP-1), and modulated energy expenditure acutely, regardless the type of diet. Obese mice treated with GT decreased inflammatory response as assessed by expression of MCP-1, F4/80 and AP-1 and GSH/GSSG content. GT induced the transcription factor Foxp3 and GATA3 and increased GSH content. ER stress was induced by obese condition and GT was able to enhance BIP and reduce the expression of CHOP and PDI. Conclusions: GT extract promoted a positive effect in the IR, inflammation and ER stress axis induced by obesity and may represent a good strategy to improve health.

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