

Effects of Pterostilbene in Brown Adipose Tissue from Obese Rats

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Abstract : Introduction: In recent years great attention has been paid by scientific community to phenolic compounds as active biomolecules naturally present in foodstuffs due to their beneficial effects on health. Pterostilbene is a resveratrol dimethylether derivative which shows higher biodisponibility. Objective. To analyze the effects of two doses of pterostilbene on several markers of thermogenic capacity in a model of genetic obesity, which shows reduced thermogenesis. Methods: The experiment was conducted with thirty Zucker (fa/fa) rats that were distributed in 3 experimental groups, the control group and two groups orally administered with pterostilbene at 15 and 30 mg/kg body weight/day for 6 weeks. Gene expression of Ucp1, Pgc-1 α , Cpt1b, Ppara α , Nfr1, Tfam and Cox-2 were assessed by RT-PCR, protein expression of UCP1 and GLUT4 by western blot and enzyme activity of carnitine palmitoyl transferase 1b and citrate synthase by spectrophotometry in interscapular brown adipose tissue (iBAT). Statistical analysis was performed by using one way ANOVA and Newman-Keuls as post-hoc test. Results: Pterostilbene did not change gene expression of Pgc-1 α . However, significant increases were found in the expression of Ucp1, Ppara α , Nfr-1 and Cox-2. Protein expression of UCP1 and GLUT4 was increased in animals treated with pterostilbene, as well as the activities of CPT-1b and CS. These effects were observed with both doses of pterostilbene, without differences between them. Conclusions: These results show that pterostilbene increases thermogenic and oxidative capacity of brown adipose tissue in obese rats. Whether these effects effectively contribute to the anti-obesity properties of these compound needs further research. Acknowledgments: MINECO-FEDER (AGL2015-65719-R), Basque Government (IT-572-13), University of the Basque Country (ELDUNANOTEK UFI11/32), Institut of Health Carlos III (CIBERObn). Iñaki Milton is a fellowship from the Basque Government.

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