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Potential applications of thyroid hormone derivatives in Obesity and Type 2 Diabetes: Focus on 3,5-Diiodothyronine (3,5-T2) in psammomys obesus (fat sand rat) Model**Bouazza Asma***University Of Science And Technology Houari Boumediene*

3,5-Diiodothyronine (3,5-T2) has been shown to exert pleiotropic beneficial effects. In this study we investigated whether 3,5-T2 prevent several energy metabolism disorders related to type 2 diabetes mellitus (T2DM) in gerbils diabetes-prone *P. obesus*. 157 male gerbils were randomly to Natural Diet (ND-controlled) or a HED (High-Energy Diet) divided in: HED- controlled, HED-3,5- T2 and HED- Placebo groups. 3,5-T2 has been tested at 25 µg dose and was administered under subcutaneous pellet implant during 10 weeks. Isolated hepatocytes were shortly incubated with 3,5-T2 at 10⁻⁶ M and 10⁻⁹ M dose in the presence energetic substrates. 3,5-T2 treatment reduce visceral adipose tissue, prevent the insulin resistance, attenuated hyperglycemia, dyslipidemia, and reversed liver steatosis in diabetes *P. obesus*. 3,5-T2 decreased gluconeogenesis, increased ketogenesis and enhanced respiration capacity. 3,5-T2 potentiates redox and phosphate potential both in cytosol and mitochondrial compartment. The use of 3,5-T2 as a natural therapeutic means to regulate cellular energy metabolism. We suggest that 3,5-T2 may help improve the deleterious course of obesity and T2DM, but cannot replace medical treatment.

Biography

Bouazza Asma is a Ph.D. Student at the University Of Science And Technology Houari Boumediene. her Clinical Interests are Reactive Oxygen Species, Free Radicals, Oxidative Stress Biomarkers, Lipid Peroxidation, Antioxidant Activity, Free Radical Scavengers, Biomarkers, Apoptosis, Oxidative Stress, and Nutraceuticals.