THE IMPACT OF CAPSICUM OLEORESIN-LOADED MICROPARTICLES ON THE LIPID METABOLISM, GLUCOSE LEVEL AND SATIETY HORMONES IN MICE

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Capsicum oleoresin is a food flavoring agent and source of capsaicin, compound responsible for health benefits. In this work, the effect of Capsicum oleoresin (CO) microparticles on glucose tolerance, lipid metabolism and leptin levels were investigated in diet-induced obese mice. Emulsions were formulated with gum arabic and modified malt as emulsifying agents. Two formulas containing 15% solids were prepared with 5% CO and 95% emulsifier (F1), and the second formula (F2) containing 2.5% corn oil plus 2.5% of CO and 95% emulsifier (F2). Rotor-stator homogenized these formulas (5000 rpm/10 min), and they were atomized in the spray dryer. Ultra-Performance Liquid Chromatography determined the capsaicin content for all formulations. Mice were divided into two groups: lean control (norm caloric AIN diet, n=10) and fat (HF diet: hypercaloric, n=30), which were subdivided into three subgroups, as follows: HF control diet (n=10), diet F1: HF + 20% CO oleoresin microparticles (n=10) and diet F2: HF + 20% CO microparticles with corn oil (n=10). As a result, animal groups received a high-fat diet containing 0.0044% (F1) and 0.0028% (F2) of capsaicin daily. The animals in the group treated with the microparticles showed lower glucose levels compared to the group fed only with HF control. Mice fed with HF containing CO microparticles showed cholesterol blood levels like lean group and lower (<100 mg/dl) than animals fed with high-fat diet (150 mg/dl). The liver's total lipids, cholesterol, and triglycerides were also lower for the groups treated with the microparticles. Leptin levels for mice fed with high-fat diet plus CO microparticles showed an average of 2-5 ng/ml, whereas dosed values above group 10 ng/dl characterize leptin resistance in the high-fat control group. Capsicum microparticles evidenced a protective effect against dyslipidemia compared to the fat control group, which makes it a potential ingredient to induce satiety and obesity control.