ANTIHYPERTHYEMIC, ANTIHYPERLIPIDEMIC AND ANTIOXIDANT EFFECTS OF CURCUMIN AND/OR LYCOPENE INCORPORATED IN YOGHURT IN DIABETIC RATS

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Introduction and objectives: The association among hyperglycemia, dislipidemia and oxidative stress accounts for the long-term complications related to diabetes mellitus (DM). Therefore, it is important the study of compounds, alone or associated, that have beneficial effects against these disorders. The chronic treatment of diabetic rats with curcumin and/or lycopene-enriched yoghurt was evaluated, as well as their effects on physiological and biochemical parameters altered in DM. Materials and methods: Male Wistar rats (150±10g) received streptozotocin (40 mg/kg, i.v.) for the induction of experimental DM and were divided into 6 groups (10 rats/group): normal (NYOG) and diabetic rats treated with vehicle, yoghurt (DYOG); treated with 4U insulin (DINS); treated with 90mg/kg curcumin/yoghurt (DC); treated with 45mg/kg lycopene/yoghurt (DL); treated with 90mg/kg curcumin and 45mg/kg lycopene/yoghurt (DCL), for 50 days. Body weight, fasting plasma levels of glucose, total cholesterol, HDL-cholesterol and triacylglycerols were determined at every 10 days. After 50 days, the plasma levels of malondialdehyde (MDA) and oxidized-LDL (Ox-LDL) were measured, as well as liver levels of MDA, protein carbonyl groups (PCO), reduced glutathione (GSH), catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px). Results and conclusions: In the beginning of the experiment, diabetic animals showed similar glycemia values (480mg/dL); after 50 days, DINS, DC, DL and DCL rats showed a decrease in the glycemia levels. The treatments of diabetic rats with curcumin and/or lycopene reduced the plasma levels of total cholesterol (DC=77.38±2.34; DL=71.14±3.73; DCL= 75.00±4.55, mg/dL) when compared with DYOG (89.14±2.21 mg/dL); the same was observed for plasma triacylglycerols. The treatments with curcumin and/or lycopene decreased the levels of biomarkers of oxidative damage (MDA, PCO, Ox-LDL) and increased the antioxidant defenses (GSH, CAT, SOD, GSH-Px), when compared with DYOG. Curcumin and/or lycopene administered in yoghurt improved carbohydrate and lipid metabolism, and showed beneficial effects against impairments caused by oxidative stress in DM; however, no additive effects were observed.

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