ANTIDIABETIC AND ANTIOXIDANT ACTIVITIES OF CURCUMIN INCORPORATED IN YOGHURT ASSOCIATED OR/NOT WITH INSULIN IN EXPERIMENTAL DIABETES MELLITUS

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Introduction and objectives: Insulin therapy is indicated for the treatment of diabetes mellitus (DM), especially type 1 DM. However, insulin administration can lead to adverse affects, such as hypoglycemia episodes, postprandial hyperglycemia and poor metabolic control. New options for the treatment of DM are necessary. Curcumin, isolated from Curcuma longa rhizomes, has antidiabetic and antioxidant activities. We evaluated the effects of the treatment of diabetic rats with a minor insulin dose in association with the administration of curcumin in yoghurt.

Materials and methods: Male Wistar rats (150±10g) received streptozotocin (40 mg/kg, i.v.) for the DM induction and they were divided into 6 groups (8 rats/group): normal (NYOG) and diabetic rats treated with yoghurt (DYOG); treated with 4U insulin (DI4U); treated with 1U insulin (DI1U); treated with 90mg/kg curcumin/yoghurt (DC90); treated with 90mg/kg curcumin and 1U insulin (DC901U), for 35 days. Body weight, food and water intake, urinary volume and glycemia were determined weekly. After 35 days, it were determined the weights of adipose tissues and skeletal muscles, malondialdehyde (MDA) plasma levels and liver levels of protein carbonyl groups (PCO), catalase (CAT) and superoxide dismutase (SOD).

Results and conclusions: At beginning, diabetic rats had similar glycemia values (470 mg/dL). After 35 days, glycemia of DC90 (525.54±8.78) and DI4U (88.95±10.50) rats were lower than DYOG (615.74±13.69); DC901U rats had glycemia lower (250.62±44.26) than DI1U rats (355.31±45.33). DI4U, DI1U and DC901U rats showed improvement in all physiological parameters when compared with DYOG. MDA levels were reduced in DI4U and DC901U rats (10.28±1.48 and 11.10±1.29, µmoL/mL, respectively), when compared with DYOG (17.50±1.38). PCO was reduced in DI4U (34%), DC90 (9%), DI1U (10%) and DC901U (37%) rats when compared with DYOG. DC901U rats had increased SOD and CAT activities, reaching values close to DI4U and NYOG. The association between curcumin and a minor insulin dose can be an interesting alternative to treat DM.

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