Study of hypoglycemic and nephroprotective activities of the green dwarf variety coconut water (Cocos nucifera L.) in alloxan-induced diabetic rats

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Ethnopharmacological relevance: Coconut water is a natural nutritious beverage which contains several biologically active compounds that are traditionally used in the treatment of diarrhea and rehydration. Aim of the study: To evaluate the hypoglycemic and nephroprotective activities of coconut water (CW) in alloxan-induced diabetic rats. Materials and Methods: Rats were pre and post-treated by gavage with CW (3 mL/kg), caffeic acid (CA) (10 and 15 mg/kg) and acarbose (50 mg/day) during 16 days. Diabetes was induced on day 7, 8 and 9. Body weight, blood glucose, glycated hemoglobin (HbA1c), total protein, creatinine, urea, total cholesterol (TC), triglycerides (TG), reduced glutathione (GSH), Amadori products, nonprotein thiols (NPSH) and catalase (CAT) activity in plasma and kidney homogenates were evaluated in all groups. Results: Diabetic animals pre and post-treated with CW showed decrease in blood glucose (p<0.05), HbA1c levels (p<0.05) and increase of body weight change (p<0.05) when compared to diabetic rats. Treatment using only CA (15 mg/kg) maintained the blood glucose levels compared to diabetic rats (p<0.001), however, diabetic rats treated with CA showed maintenance of body weight change (p<0.05) and decrease in HbA1c (p<0.05) and urea levels (p<0.05) in plasma as well as Amadori product (p<0.05) in kidney homogenates when compared to diabetic rats. Conclusion: CW has multiple beneficial effects to diabetic rats, significantly decreasing hyperglycemia and the glycosylation of hemoglobin.

Keywords: Antihyperglycemic activity; Caffeic acid; Coconut water; Diabetes; Nephroprotective activity
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