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Aqueous extracts of Citrus sinensis have anti hyperglycemic effects that challenge glibenclamide, an anti-diabetic drug

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Managing type 2 diabetes mellitus and its complications in Africa and all over the world remains a big challenge. Hyperglycemia associated with insulin-resistance is the main pathogenic mechanism that leads to structural alterations. It can cause all of the diabetes-related complications, with the formation of advanced glycation end products. Despite all the therapies used since the past decade, in Africa and Asia T2DM patients are desperately using herbal medicines because of cost and side effects. The present study aimed at determining the anti-hyperglycemic effects of leaves and bark aqueous extracts of Citrus sinensis on normal Wistar rats. Citrus sinensis was harvested from Yaoundé; bark and leaves were isolated, dried and blended into powders. Maceration of each powder in water was done for 48 h to obtain aqueous extracts: Citrus sinensis leaves and Citrus sinensis bark. The anti-hyperglycemic activity was evaluated in vivo through oral glucose tolerance test. Twenty Wistar male rats, of 150-180 g were used. After an overnight fasting, their glycaemia were measured (T0). They were distributed into four groups receiving: Positive Control [water only], Test 1 [400 mg/kg Citrus sinensis leaves], Test 2 [400 mg/kg bw Citrus sinensis bark] and Reference [4 mg/kg bw glibenclamide] as anti-diabetic drug. Thirty minutes later, an overload of 2 g/kg bw of glucose was administered to all the groups. Blood glucose was measured through tail pricks at: 30, 60, 90, 120 minutes using a glucometer. Results showed that Citrus sinensis leaves and Citrus sinensis bark were able to reduce glucose load within two hours more efficiently than PC and interestingly than glibenclamide (Figure 1). Calculated AUC (mg.min.dL-1) were 4015, 873.8, 786.6, 1163 respectively for PC, C.s leaves, Citrus sinensis bark and glibenclamide confirm the efficacy of extracts. Aqueous extracts of C. sinensis are capable to reduce postprandial glycaemia, challenging glibenclamide as diabetic drug. The extracts could thus be further explored for their potency in the treatment of T2DM.

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