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Chemical and biological study of Manilkara zapota (L.) Van Royen leaves (Sapotaceae) cultivated in Egypt

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ABSTRACT

Background Manilkara zapota (L.) Van Royen is an evergreen tree, native to the tropical Americas and introduced to Egypt as a fruiting tree in 2002. No previous study was reported on the plant cultivated in Egypt. Materials and Methods In this study, the leaves of the plant cultivated in Egypt were subjected to phytochemical and biological investigations. The lipoidal matter was analyzed by GLC. Five compounds were isolated from the petroleum ether and ethyl acetate fractions of the alcoholic extract of the leaves by chromatographic fractionation on silica gel and sephadex, the structures of these compounds were identified using IR, UV, MS, 1H-NMR and 13C-NMR. The LD50 of the alcoholic and aqueous extracts of the leaves was determined and their antihyperglycemic, hypocholesterolemic and antioxidant activities were tested by enzymatic colorimetric methods using specific kits. Results Unsaturated fatty acids represent 32.32 % of the total fatty acids, oleic acid (13.95%), linoleidic acid (10.18 %) and linoleic acid (5.96 %) were the major ones. The isolated compounds were identified as lupeol acetate, oleanolic acid, apigenin-7-O-a-L-rhamnoside, myricetin-3-O-a-L-rhamnoside and caffeic acid. This is the first report about isolation of these compounds from Manilkara zapota except myricetin-3-O-a-L-rhamnoside, which was previously isolated from the plant growing abroad. The LD50 recorded 80 g/Kg b. wt. for both the tested extracts, so they could be considered to be safe. They exhibited antihyperglycemic, hypocholesterolemic and antioxidant activities. Conclusion The observed biological activities were attributed to the different chemical constituents present in the plant mainly its phenolic constituents.

KEYWORDS

Antihyperglycemic . hypocholesterolemic . antioxidant . flavonoids . Manilkara zapota (L.) Van Royen . triterpenes

REFERENCES