Chemical and pharmacological evaluation of the non-flowering aerial parts of Acacia modesta Wall. cultivated in Egypt

Mariam Abd Elhameid ,Eman Mohamed Salah , Reham R. Ibrahim and Hesham S.M. Soliman

Abstract

Background: Acacia modesta Wall. (A. modesta), often recognized as Phulai, is belonging to family Fabaceae and sub-family Mimosaceae. A. modesta has many beneficial uses. Leaves, wood, flowers, and gum of A. modesta have been used frequently for multiple therapeutic purposes.
Results: The chemical investigation of butanol fraction of A. modesta non-flowering aerial parts yielded Vitexin-2″-βD-glucopyranoside and Apigenin-6,8-di-C-β-D-glucopyranoside in a flavone mixture as well as (β-D-glucopyranosyl (1-3)-β-D-glucopyranosyl)-3-β-hydroxy-11-oxo-olean-12-en-28-oic acid) an oleanane-type triterpenoidal saponin.
Metabolite profiling via ultra-performance liquid chromatography-electrospray ionization-mass spectrometry (UPLCESI-MS) of the ethyl acetate fraction resulted in recognizing of eighteen compounds tentatively compared with previously published data. Quantitative measurement of the overall value of flavonoids of A. modesta was found to be 2.824 μg/100 μg ± 0.01 calculated as quercetin. The acute toxicity study of the ethanol extract proved that the plant under investigation is safe and nontoxic to the male albino mice used. The anti-hyperglycemic activity of the ethanol extract performed on type 2 diabetic rats proved that the most potent dosage was 200 mg/kg b. wt. after 4 and 4 weeks of treatment respectively compared to metformin. Furthermore, evaluation of the hepato-protective activity of the ethanol extract of the plant under investigation showed that the most potent extract was with a dose level of 200 mg/kg b. wt. after 3 and 10 days of continuous treatment compared to silymarin.
Conclusion: It can be concluded that A. modesta Wall. cultivated in Egypt could be used as a promising antidiabetic agent and a hepato-protective agent against hepatocellular damage induced by hepatotoxins.

Future Journal of Pharmaceutical Sciences 2020, December