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Antitrypanosomal and Antileishmanial Activity of Chalcones and Flavanones from *Polygonum salicifolium*

Ahmed Mohammed Zheoat

Al-Manara College for Medical Sciences, IRAQ

Abstract

Trypanosomiasis and leishmaniasis are a group of neglected parasitic diseases caused by several species of parasites belonging to the family Trypansomatida. The present study investigated the antitrypanosomal and antileishmanial activity of chalcones and flavanones from Polygonum salicifolium, which grows in the wetlands of Iraq. The phytochemical evaluation of the plant yielded two chalcones, 2′,4′-dimethoxy-6′-hydroxychalcone and 2′,5′-dimethoxy-4′,6′-dihydroxychalcone, and two flavanones, 5,7-dimethoxyflavanone and 5,8-dimethoxy-7-hydroxyflavanone. The chalcones showed a good antitrypanosomal and antileishmanial activity while the flavanones were inactive. The EC50 values for 2′,4′-dimethoxy-6′-hydroxychalcone against Trypanosoma brucei brucei (0.5 µg/mL), T. congolense (2.5 µg/mL), and Leishmania mexicana (5.2 µg/mL) indicated it was the most active of the compounds. None of the compounds displayed any toxicity against a human cell line, even at 100 µg/mL, or cross-resistance with first line clinical trypanocides, such as diamidines and melaminophenyl arsenicals. Taken together, our study provides significant data in relation to the activity of chalcones and flavanones from P. salicifolium against both parasites in vitro. Further future research is suggested in order to investigate the mode of action of the extracted chalcones against the parasites.

Biography

Ahmed Mohammed Zheoat was born in Iraq, in 1973. He received his master's degree in Pharmacology in 2012 from University of Baghdad/ College of Pharmacy and obtained his PhD degree in Pharmacology in 2019 from University of Strathclyde, UK. Since 2020 he is a doctor (lecturer) at Al-Manara College for Medical Sciences, Iraq. He is first author of 4 publications. His research activity is focused on the isolation, identification, and biological evaluation of natural products from plants

Publications

- Hibiscus acid from Hibiscus sabdariffa (Malvaceae) has a vasorelaxant effect on the rat aorta
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- Mechanism of the vasorelaxant effect of hibiscus acid from Hibiscus sabdariffa on the rat aorta
- Crystal structures of hibiscus acid and hibiscus acid dimethyl ester isolated from Hibiscus sabdariffa (Malvaceae)
- Protective effect of ginger extract against cisplatin-induced hepatotoxicity and cardiotoxicity in rats

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