Abstract

Simmondsia chinensis (Link) C.K. Schneid from family (Simmondsiaceae) known as Jojoba, originally derived from the Sonoran desert, Mojave and Baja deserts of Arizona, California (USA), and Mexico. It is presently distributed over many desert area. In Jordan it is cultivated in the farms of Jordan University of Science & Technology since 1986 and recently in Al-Ghoor area. Various parts of S. chinensis have been traditionally used in ethnomedicine for a number of disorders, including skin disorders, restoring hair, wound healing, tumors and many other uses. The purpose of this study was to examine the effect of the total extracts of S. chinensis leaves (male & female), tests, seeds and oil on the growth of various cancer cell lines in addition to antioxidant and antimicrobial activities of these extracts.

Jojoba plant parts (leaves (male & female), tests and seeds) subjected for extraction by different polarity of solvents (hexane, methanol and ethanol) in addition to cold press in extraction. Furthermore, the active compounds were isolated by preparative TLC, followed by identification for simmondsin and three of its derivatives namely Simmondsin-3’-ferulate, 4, 5-Dimethylsimmondsin and 4-Dimethylsimmondsin-2’-ferulate, in addition to phenolic compounds, phytosterols, tocopherols and fatty acids, by various methods of chromatography (TLC, HPLC, GC and GC-MS) and chemical reagents. The biological activity evaluation was carried to estimate the antitumor activity. The acute cytotoxic effect of the extracts on human cancer cell lines using human melanoma (MV 3), breast (MCF 7), and colorectal (HCT 116) tumor cell lines, was determined using MTT assays. The evaluation of antioxidant activity of extracts was done by DPPH free radical scavenging method comparing to ascorbic acid activity. Antibacterial and antifungal activities were done using two methods; the agar well diffusion and disc diffusion methods, against (Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Klebsiella pneumonia and Candida albicans).

Plant extracts induced variable degrees of cytotoxicity against cancer cell lines due to their active constituents which were observed in different parts of the plant, in addition they induced antioxidant activity as well. On other hand they do not exhibit antimicrobial activity. This is a pioneer results regarding to S. chinensis which cultivated in Jordan under different environmental conditions.

Detailed view of the monograph

Title: Biological activity of Jojoba (Simmondsia chinensis) cultivated in Jordan

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