

Phytochemical evaluation and screening the antiproliferative and Antimicrobial activities of the crude extracts (water, ethanol and Chloroform) of *Verbascum transjordanicum* (family Scrophulariaceae)

Study by

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Abstract

Many *Verbascum* species (Scrophulariaceae) are commonly employed in traditional medicine of different countries. In the present study, aerial parts and flowers of *V. transjordanicum*, grown in Jordan, were investigated -for the first time- phytochemically and biologically for their antiproliferative and antimicrobial effects. The aim was to determine chromatographically the classes of secondary metabolites and to evaluate the antiproliferative and antimicrobial activities of the water, 70% ethanol, and chloroform extracts. Antiproliferative activities were determined using different cancer cell lines (HCT- 116, MCF-7, T47D, HeLa, MDA-MB-231 and A549) and the cytotoxic activities were compared to normal fibroblast cell line, and to the positive control Doxorubicin using MTT assay. The antimicrobial activity of the different extracts of the aerial parts and of the flowers were tested on two Gram positive (*Staphylococcus aureus* and *Bacillus subtilis*) and two Gram negative (*Pseudomonas aeruginosa* and *Escherichia coli*) bacterial species and the yeast *Candida albicans* using micro-titer broth dilution method., Also, preliminary qualitative phytochemical screening was made to test the presence of the secondary metabolites in the flowers and aerial parts of different extracts. Results indicated the presence of flavonoids and phenolic plant acids in these extracts. The flavonoids luteolin, quercetin, vitexin, rutin and isoorientin were identified by TLC. Best anticancer activity was observed with ethanol extract of the flowers on T47D and MCF-7 cell lines with IC₅₀'s 0.03 and 0.035 mg/mL, respectively. Best antimicrobial activity was obtained with the ethanol extract of the aerial parts on *S. aureus* with MIC of 25 mg/mL.