Cytotoxic activity of Helianthemum Lippii

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Abstracts: Cancer is one of the most prominent human diseases which have stimulated scientific and commercial interest in the discovery of new anticancer agents from natural sources. The current study investigates the cytotoxic activity of ethanolic extracts of Helianthemum lippii used locally for the treatment of cancer using the MTT assay on the HeLa cell line. *Helianthemum lippii* showed activity comparable to the reference compound Cisplatin. The results justify the use of *Helianthemum lippii* in traditional treatment of cancer.

***Keywords**:* Medicinal plants; Cytotoxicity; Cancer; Helianthemum lippii

Introduction

Cancer is a leading cause of death all over the world and represents a major public health burden. Natural plant products have been historically used for the treatment of various diseases. The earnest search for plant-derived anticancer agents began in the 1950s with the discovery and development of the vinca alkaloids–vinblastine and vincristine (1, 2), and with the isolation of the cytotoxic podophyllotoxins. A good number of the current day commercially approved anticancer drugs as well as the natural product-derived compounds in various stages of clinical development as anticancer agents originate from plants (3-6). Natural products still serve as an excellent source for the discovery and development of modern drugs for cancer treatment. The present work study the cytotoxic effect of *Helianthemum lippii* on cervix adenocarcinoma. *Helianthemum lippii (H.L.)* is a plant which available and used traditionally by local people as anti-microbial treatment in Libya. It belongs to *Cistaceae* family which is known to be a gastro protective family. The present study was designed to evaluate the antitumour activity of this plant (whole plant).

Materials and methods

Plant Collection: The whole aerial part of *Helianthemum lippii* (L.) Dum. Cours. (*H.lippii*) family *Cistaceae* was collected from Al-gabel Al-gharbi (Gharian), Libya during the Spring

season. It was identified and authenticated by the Department of Botany Faculty of Sciences Tripoli University, Tripoli, Libya.

Preparation of extract: The plant material was dried on shade, and reduced to coarse powder in a mechanical grinder (peruzzo-Italy); the powdered plant materials were successively extracted with different organic solvents using maceration method of extraction. 1000 gm of plant powder were extracted using petroleum ether, chloroform and methanol (72 hrs for each solvent) respectively. The three crude extracts were then dried by using rotary evaporator and stored in - 20 °C.

Preliminary phytochemical screening: The phytochemical screening of the methanolic extract of *H.lippii* (MEHL) was performed by the standard methods (7, 8).

Cytotoxicity assay: The cytotoxic effect of plant extracts on HeLa (cervix adenocarcinoma) cell line was determined using a modification (9) of the MTT assay (10). Briefly, cells were seeded into 96-well culture plates (Nunc) at 6 000 cells/well in RPMI1640: 10% fetal bovine serum (FBS) and left for 24 hours. *H.lippii* extract or cisplatin (positive control) were added and the cells incubated for a further 48 hrs after which the medium was replaced with 200 µL MTT (Sigma) (0.5 mg/ml in RPMI 1640:10% FBS). After further 4 hr incubation at 37°C, the MTT was removed and the purple formazan product dissolved in DMSO and absorbance measured at 540 nm on a multiwell scanning spectrophotometer (Multiscan MS, Labsystems). All incubation steps were carried out in a 37°C humidified incubator with 5% CO2.

Preliminary phytochemical screening: The preliminary phytochemical tests revealed that, the main active constituents of MHL are polyphenols includes; flavonoids, tannins, glycolsides, simple phenolics, free reducing sugers and saponines, while free anthraquinones, steroids, terpenoids and alkaloids were absent.

Statistical analysis

The results of this study were analyzed by using one way ANOVA followed by Post hoc Tests using 13.00 version of SPSS computer software.

Results and Discussion

The cytotoxicity of Cisplatin at 10 and 100 µM caused 51.25 ± 4.25% and 97.25 ± 1.20% (SEM, n=4) inhibition, respectively. In consideration of the cytotoxicity of *H.lippii* was 1 mg/mL and 2 mg/mL caused 45 ± 2.10% and 70 ± 2.31% (SEM, n=4) inhibition, respectively. of *H.lippii* showed antitumor activity. To the best of our knowledge, there is no previous reported work on antitumor activity of of H.lippii.This study points to the

probable antimicrobial antitumor potentials of alcohol extracts of *H.lippii* leaves. There is a need for further investigation of this plant in order to identify and isolate its active anticancer principle(s). The results of the study will also need to be confirmed using *in vivo* models.

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