Ain Shams University
Faculty of Education
Home Economics Dept.

Anti – Cancer activity of some edible legumes

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Thesis

Submitted in Partial Fulfilment of The Requirements for Doctor of Philosophy Degree

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The Researcher : **Amal Gamil Sedki Estafanos**

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AN ABSTRACT OF THE THESIS OF
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TITLE: ANTI-CANCER ACTIVITY OF SOME EDIBLE LEGUMES

This study aims to investigate the anti-cancer activity of nine legume seeds : chickpea, cowpea, faba bean, fenugreek, green pea, lentil, mung bean, soybean and white kidney bean. 300 gm of each legume were subjected to hydro-alcoholic extraction followed by a sequence of successive extractions using organic solvents. 500 gm from each legume were also used for extracting glycans. All extracts were tested for their cytotoxic activity on breast carcinoma cell line (MCF-7) *in vitro*. Samples showed a high cytotoxic activity on MCF-7 cells were studied for their cytotoxic activities on various cancer and normal cell lines *in vitro*. Also, polyphenols, saponins and alkaloids of fenugreek were studied for their cytotoxic activities on various cancer and normal cell lines and their effects on cisplatin's cytotoxic activity on MCF-7 cells *in vitro*. Results revealed that the cytotoxic activity of fenugreek is due to compounds that are polar and get adsorbed on the surface of charcoal. Also, saponins of fenugreek increased the cisplatin's cytotoxic activity on MCF-7 cells. This may be due to saponins increase the permeability of the cell membrane thus promoting the penetration of cisplatin into the cell.

Chemical and phytochemical studies have been done on the studied legumes and their extracts. Also, their abilities on reducing nitrite were studied. Results revealed that tannins have a significant reducing effect, whereas glycans have a weak to moderate effect. Concerning fenugreek seeds, it was shown that fenugreek has an ability on reducing nitrite due to several components (alkaloids, tannins, saponins and glycans).

Keywords :

Legumes; Chickpea, Cowpea, Faba bean, Fenugreek, Green pea, Lentil, Mung bean, Soybean, White kidney bean; Hydro-alcoholic extract; Successive extraction; Cancer and normal cell lines; *In vitro* cytotoxic activity; Cisplatin; Chemical composition; phytochemical composition; glycans; polyphenols; saponins; alkaloids; Nitrite.

To my family,

especially my parents,

for their love,

encouragement,

and support at all times.

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You mean the world to me.

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Amal Gamil

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