ANTITUMOR AND ANTIOXIDANT ACTIVITIES OF *Solandra grandiflora* AND *Cassia alata*

By

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B.Sc. Agric. Sci. (Agricultural Biochemistry), Fac. Agric., Cairo Univ., 2009

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APPROVAL SHEET

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ABSTRACT

This study aims to investigate the major constituents of *Solandra grandiflora* Sw. and *Cassia alata* (L.) Roxb. leaves. In addition to, evaluate the antitumor and antioxidant activities of the crude methanol extract and its fractions.

Phytochemical screening of the crude methanolic extract, determination of total phenolics and total flavonoids of *S. grandiflora* and *C. alata* leaves were investigated. Hexane fraction of each plant was saponified into unsap. and sap. (Fatty acids), then analyzed by GC/MS.

Fatty acids composition of *S. grandiflora* leaves comprised a much higher proportion of linolenic, palmitic, linoleic and stearic acids. *C. alata* leaves were found to comprise a much higher proportion of palmitic, α-linolenic, linoleic and stearic acids.

Crude fractions of each plant was fractionated by silica gel and sephadex LH-20 column chromatography and further purified by preparative HPTLC and paper chromatography. Each separated pure compound was identified by ^{1}H-NMR, Mass spectrum and UV.

Emodin, aloe-emodin, rhein, kaempferol-3-*O*-gentiobioside, aloe-emodin-8-*O*-*β*-D-glucopyranoside, kaempferol, quercetin, rhein-8-O-*β*-D-glucopyranoside and emodin-8-*O*-*β*-D-glucopyranoside were isolated and identified from *C. alata* leaves. In addition, scopoletin and aesculin were isolated and identified from *S. grandiflora* leaves.

The methanolic extract and its fractions of *S. grandiflora* and *C. alata* leaves were tested as anti-proleferation on HepG2 (hepatocellular carcinoma cells), Caco2 (colon adenocarcinoma cells) and MDA-MB-231 (triple negative breast cancer cells). Both plants exhibited cytotoxic activity against tested cells especially chloroform fraction of *S. grandiflora* with IC_{50} 11.1 and 16 µg/ml for HepG2 and Caco2 cells, respectively. In addition, the antioxidant activity was estimated and the ethyl acetate fraction of *C. alata* only showed strong DPPH scavenging activity with EC_{50} 22.1 µg/ml.

Key words: *Solandra grandiflora*, *Cassia alata*, Antitumor, Antioxidant and secondary metabolites

DEDICATION

I dedicate this work to whom my heartfelt thanks; to my parents for their endless love, support and encouragement, as well as to my brothers, sisters, wife and children for all their love and support throughout my life.

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