Phytochemical and Biological Studies on Some Plants Belonging to Family Araliaceae

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List of Abbreviations

	Absorbance
)VA	One-way analysis of variance
'	Attached proton test
:C	American type culture collection
	Column chromatography
:l$_3$	Deuterated chloroform
	Centimeter
NMR	Carbon-13 Nuclear Magnetic Resonance
;	Central nervous system
:.	Concentrated
	Doublet
M	Dichloromethane
	Doublet of doublet
	Diluted
SO-*d*$_6$	Deuterated dimethylsulfoxide-d_6
NMR	Two-dimensional nuclear magnetic resonance spectroscopy
SA	Enzyme-Linked Immunosorbent Assay
:MS	Electro-Spray Ionization Mass Spectrometry
Ac	Ethyl acetate
	Equatorial
	Figure
	Gram
ta.	Gentamicin
:- MS	Gas Liquid Chromatography-Mass Spectrometry
	Hours
.	Hydrochloric acid
-COSY	H,H Correlated spectroscopy
BC	Heteronuclear Multiple-Bond Correlation Spectroscopy
NMR	Proton Nuclear Magnetic Resonance

HPLC	High Performance Liquid Chromatography
HSQC	Heteronuclear Single Quantum Coherence
Hz	Hertz
IC_{50}	The half maximal inhibitory concentration
J	Coupling constant
Keto.	Ketoconazole
Kg	Kilogram
KI	Kovats index
L	Liter
LC/MS	Liquid Chromatography-Mass Spectroscopy
m	Multiplet
MeOH	Methanol
mg	Milligram
mg/mL	Milligram per milliliter
MHz	Mega hertz
MIC	Minimum inhibitory concentration
Min	Minute
mL	Milliliter
mm	Millimeter
MTT	3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide
m/z	Mass to charge ratio
NA	No activity
NT	Not tested
p	pentet
PGE	*Polyscias guilfoylei* extract
ppm	Part per million
PTLC	Preparative thin layer chromatography
q	Quartet
R_f	Retardation factor
RI	Retention index

ROS	Reactive oxygen species
RPMI	Roswell Park Memorial Institute (culture medium)
R_t	Retention time
s	Singlet
S.D	Standard deviation
T	Triplet
TLC	Thin Layer Chromatography
TMS	Tetramethylsilane
UV	Ultraviolet
v/v	Volume per volume
µg	Microgram
µg/mL	Microgram per milliliter

Introduction

Throughout ages, people have resorted to nature, mostly to plants as medical and health care sources for treatment and prevention of many diseases. In recent years, there has been a great use of plant based drugs in developing and developed countries. These drugs are derived from different plant parts. Plant derived natural products hold great hope for drug discovery. Nowadays, there is great increase in medicinal plant based industries and development of new drug molecules from natural products (Paarakh, 2010).

Medicinal plants and natural products have been reported to have various pharmacological activities; antimicrobial (Weckesser *et al.*, 2007), antioxidant (Katalinic *et al.*, 2006), hepatoprotective , hypoglycemic (Singab *et al.*, 2005), cytotoxic (Nibret *et al.*, 2010), estrogenic (Ashmawy *et al.*, 2016), anti-hypertensive (Braga *et al.*, 2000). These strong pharmacological activities of plants are contributed to their content of secondary metabolites that's why the medicinal plants are the object of biotechnologists for discovering new medicine (Marczewska *et al.*, 2011).

Family Araliaceae is a large family with 43 genera and 1400 species, which are widely used in traditional medicine and phytotherapy. The family is well known for its different classes of secondary metabolites such as triterpenoids, triterpenoidal saponins, diterpenes, sterols, acetylenic lipids, cerebrosides with anti-inflammatory, anti-proliferative, antidiabetic and anti-parasitic, CNS and CVS activities (A Clement and SH Clement, 2014).

Genus *Polyscias* comprises 116 species that are widely used as ornamental plants in addition to its various medicinal purposes mainly as anti-inflammatory, antitoxin, antibacterial and diuretic (Vo *et al.*, 1998).

Plants of this genus are widely cultivated in southeastern Asia and the tropical islands of the Pacific region. In Asian countries, the leaves are used as a tonic, anti-inflammatory, antitoxin, antibacterial, and are good for digestion. The

root is also used as a diuretic, febrifuge, anti-dysentery, and is employed for neuralgia and rheumatic pains (Huan *et al.*, 1997).

To our knowledge, only few reports are available in the current literature about the chemical constituents and the biological activities of the leaves of *Polyscias guilfoylei*. It was therefore, found interesting to subject the extract of leaves of entitled plant to a biological and phytochemical investigations.

Work strategy

- Collection, identification and authentication of the plant material; *Polyscias guilfoylei and Polyscias balfouriana* cultivated in Egypt.
- Preliminary phytochemical screening for *Polyscias guilfoylei* and *Polyscias balfouriana* leaves then phytochemical investigation of *Polyscias guilfoylei* leaves methanol extract to fractionate and separate different compounds
- Identification of the different isolated compounds using both chemical and spectroscopic methods of analysis including; IR, UV, ^{1}H-NMR and ^{13}C-NMR.
- Evaluation of the biological activities of the methanolic extract of *Polyscias guilfoylei* leaves, different fractions and compounds, including mainly; antibacterial, antifungal, cytotoxic and histamine release inhibition activities.