

Phytochemical and Biological Studies of *Plumeria rubra L. var. acutifolia* Cultivated in Egypt

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ABBREVIATIONS

ALP	Alkaline phosphatase
ALT	Alanine transaminase.
AST	Aspartate transaminase
b. Wt.	Body Weight.
¹³C-NMR.	¹³ C Magnetic Resonance.
CC.	Column Chromatography.
Co	Company
d	doublet

<i>dd</i>	Doublet of doublet
DL.	Day Light.
DMSO-d₆	Dimethylsulfoxide- d ₆
EI-MS	Electron Impact Mass Spectrometry
FA.	Fatty Acids.
FAB-MS	Fast Atomic Bombardment Mass Spectrometry
FAME	Fatty acid methyl esters.
Fig.	Figure.
Fr.	fraction
g	Gram
g/ Kg	Gram per kilogram
g/ ml	Gram per milliliter
GC/MS.	Gas Chromatography / Mass Spectrometry.
GLC.	Gas Liquid Chromatography.
GSH	Glutathione
HIV	Human immunodeficiency virus
Hrs	Hours
Hz	Hertz
<i>J value</i>	Coupling constant
Kg	Kilogram
L	liter
LD₅₀.	Median lethal dose
m	multiplet
m.p.	Melting Point.
Mol. Wt.	Molecular Weight.
MS.	Mass Spectrum.
No.	Number.
PC.	Paper Chromatography.
ppm	Part per million
R_f	Retardation factor
RRt.	Relative Retention Time.
Rt.	Retention Time.
<i>s</i>	singlet
S.	System.
SE.	Standard Error.
<i>t</i>	Triplet
TFA.	Total Fatty Acids.
TIC.	Total Ion Chromatogram.
TLC.	Thin Layer Chromatography.
USM.	Unsaponifiable Matter.

UV
VLC
δ

Ultraviolet
Vacuum liquid chromatography.
Chemical shift by delta value

Introduction

Family Apocynaceae comprises trees, shrubs or sometimes herbs, usually with milky sap. The juice of *Acokanthera* species such as *A. venenata* and the milky juice of the Namibian *Pachypodium* have been used as venom for arrow tips by the Bushmen.

Several genera are grown as ornamental plants, including *Nerium* (oleander), *Vinca* (periwinkle), *Allamanda* (golden trumpet), *Plumeria* (frangipani).

Some are sources of important drugs, such as cardiac glycosides. These include the *Acokanthera*, *Apocynum*, *Cerbera*, *Nerium*, *Thevetia* and *Strophantus*. Also, *Rauvolfia cafra* is the Quinine tree; quinine is used for its anti-malarial activity. *Rauvolfia serpentina*, or Indian Snakeroot, yields the alkaloids reserpine and rescinnamine, which are useful tools in the treatment of high blood pressure and even some forms of psychosis. The edible flower of *Fernaldia pandurata* (common name: loroco) is a popular part of El Salvadorian and Guatemalan cooking.

Plumeria (common name Frangipani) is a small genus of 4-6 species native to tropical and subtropical America. The genus consists of mainly deciduous shrubs and trees (Riffle; Lee, R. 1998).

Plumeria rubra L. is commonly cultivated as an ornamental plant. The flower oil is widely used in cosmetic preparations. It is reported to possess purgative, diuretic, abortifacient and antituberculous properties as well as a remedy for rheumatism, gonorrhea, syphilis, venereal sores and leprosy (Akhtar, N. and Abdul Malik. 1993)

The genus, originally spelled *Plumiera*, is named in honor of the 18th century French botanist Charles Plumier, who traveled to the New World documenting many plant and animal species. The common name

"Frangipani" comes from an Italian noble family, a 17th century marquess of which invented a *plumeria*-scented perfume.

There are different common names for *Plumeria* depending on the location as: "Kembang Kamboja" in Indonesia, "Temple Tree" or "Champa" in India, "Araliya" in Sri Lanka, "Champa" in Laos, and "Dead man's fingers" in Australia. Many English speakers also simply use the generic name "*Plumeria*".

Plumeria flowers are most fragrant at night in order to lure *Sphinx moths* to pollinate them. The flowers have no nectar, and simply dupe their pollinators. The flowers are pollinated as the moths transfer pollen from flower to flower in their fruitless search for nectar.