



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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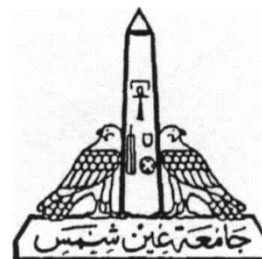


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MONA MAGHRABY



**Phytochemical and Biological Studies on Certain Plants Belonging to
Family Fabaceae**

A Thesis Submitted

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for the Degree of Philosophy in Pharmaceutical Sciences

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Abstract

Phytochemical and Biological Studies on Certain Plants Belonging to Family Fabaceae

The gastroprotective activity of the dichloromethane soluble fraction of *Adenanthera pavonina* leaves methanol extract (APD) was investigated against ethanol-induced gastric ulceration in rats. APD markedly increased the mucin content, PGE₂ production compared with the ulcer control group. APD (50 and 100 mg/kg) pretreatment markedly increased GSH and catalase levels when compared with the ulcer group. Furthermore, APD significantly decreased the elevated MDA tissue levels, which was induced by ethanol administration. The results demonstrated that APD exhibited potent anti-inflammatory activity as the level of TNF- α returned to its normal value in the group pretreated with 100 mg/kg of APD and this effect was higher than omeprazol. The gastroprotective activity was further confirmed by markedly reduction of NF κ B, COX-2 and iNOS immunoexpression in groups pretreated with APD.

Phytochemical investigation of dichloromethane fraction of *Adenanthera pavonina* leaf resulted in isolation of coumesterol dimethyl ether (1), formononetin (2), biochanin A (3), genistein (4), kaempferol (5), apigenin (6) and daidzein (7). Our results suggested that the dichloromethane soluble fraction of *Adenanthera pavonina* leaves methanol extract could be developed as a gastroprotective dietary supplement or functional food due to different isoflavone compounds.

GC–MS analysis revealed the presence of 21 components representing 97.9% of the oil content of *A. pavonina* leaves and 14 components representing 98.7% of the oil content of fruits. This result summarized the chemical profiles of *A. pavonina* leaves and fruits essential oils growing in Egypt for the first time. The leaves essential oils of *A. pavonina* demonstrated different composition compared with the oils from the fruits.

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LIST OF ABBREVIATIONS

α	alpha
δ value	chemical shift (ppm)
μg	microgram
μM	micromole
ANOVA	analysis of variance
APB	Butanol soluble fraction of <i>Adenanthera pavonina</i> leaves methanol extract.
APD	Dichloromethane soluble fraction of <i>Adenanthera pavonina</i> leaves methanol extract
APH	Hexane soluble fraction of <i>Adenanthera pavonina</i> leaves methanol extract
APLT	<i>Adenanthera pavonina</i> leaves total methanol extract
APT	Attached proton test
ATCC	American Type Culture Collection
bw	body weight
CC	column chromatography
CD_3OD	deuterated methanol- d_4
CH_2Cl_2	dichloromethane
CHCl_3	chloroform
cm	centimeter
CNS	central nervous system
COX-2	cyclooxygenase enzyme -2
d	doublet
DCM	dichloromethane
Dil	dilute
$\text{DMSO-}d_6$	deuterated dimethylsulfoxide- d_6
DPPH	2,2-diphenyl-1-picrylhydrazyl radical
ELISA	enzyme linked immunosorbent assay
ESI	electrospray ionization
EtOAc	ethyl acetate
EtOH	ethanol
g	Gram
GSH	glutathione
h	hour
HCT116	human colorectal carcinoma cell lines
HEPES	N-2-hydroxyethylpiperazine-N-2'-ethanesulfonic acid
HNE	Human neutrophil elastase
HPLC	high performance liquid chromatography
HSP	heat shock protein
Hz	Hertz

i.p	intraperitoneal
IC₅₀	inhibitory concentration by 50%
ID	internal diameter
INF	interferon
iNOS	inducible nitric oxide synthase
J value	coupling constant
kg	kilogram
l	liter
LPS	lipopolysaccharide
m	meter
m/z	mass to charge ratio
MDA	malondialdehyde
MeOH	methanol
mg	milligram
MHz	mega Hertz
MIC	minimum inhibitory concentration
min	minute
ml	milliliter
mM	millimole
mm	millimeter
MS	mass spectrometry
MTT	microculture tetrazolium assay
NF-κB	nuclear factor kappa B
nm	nanometer
NMR	nuclear magnetic resonance
NO	nitric oxide
PC	paper chromatography
PDA	photodiode array
Pet. ether	petroleum ether
PGE₂	prostaglandin E ₂
PNPG5	P-Nitrophenyl- α -D-maltopentaoside
ppm	part per million
ROS	reactive oxygen species
rpm	rotation per minute
s	singlet
TLC	thin layer chromatography
TMS	tetramethylsilane
TNF-α	tumor necrosis factor alpha
t_R	retention time
UV	ultraviolet
VLC	vacuum liquid chromatography