



Phytochemical and Biological Studies on Certain *Centaurea* Species Belonging to Family Asteraceae

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List of Abbreviations

A431	Human epidermoid carcinoma cell
A-549	Human lung carcinoma
ABTS	2, 2'-azino-bis-3-ethylbenzothiazoline-6-sulfonic acid
AChE	Acetylcholinesterase
ALP	Alkaline phosphatase
ALT (SGPT)	Alanine aminotransferase
AST (SGOT)	Aspartate aminotransferase
B16-F10	Mouse melanoma cell line
BHK	Normal fibroblast cell line
BT-549	Cultured breast cancer cell
C6	Rat brain tumor cells
CaCo-2	Colon cancer cell
CAM	Chorioallantoic membrane
CC	Column chromatography
CCDC	Cambridge crystallographic data center
CCl ₄	Carbon tetrachloride
CD	Circular dichroism
CD ₃ OD	Deuterated methanol
MeOD, methanol- <i>d</i> ₄	Deuterated methanol
CDCl ₃	Deuterated chloroform
CH ₂ Cl ₂ (DCM)	Methylene chloride
CHCl ₃	Chloroform
CI	Chemical ionization
CIMS	Chemical ionization-mass spectroscopy
CO ₂	Carbon dioxide
COSY	Correlation Spectroscopy
COX	Cyclooxygenase enzyme
d	Doublet
DAD/ESI-TOF-MS	Diode array/electrospray ionization-time of flight mass spectrometry
DEPT	Distortionless enhancement by polarization transfer
DFS	Double focus magnetic sector
DPPH	2,2-diphenyl-1-picrylhydrazyl
ED	Effective dose
EDTA	Ethylenediamine tetraacetic acid
EIMS	Electron impact mass spectroscopy
ELISA	Enzyme-linked immunosorbent assay

EtOAc	Ethyl acetate
FABMS	Fast atom bombardment mass spectroscopy
GC-FID	Gas chromatography-flame ionization detector
GC-MS	Gas chromatography-mass spectroscopy
GLC	Gas liquid chromatography
GSH	Glutathione
H ₂ SO ₄	Sulphuric acid
H460	Human lung carcinoma cell line
HCT116	Human colon carcinoma cell line
HELA	Human cervix carcinoma cell line
HEP2	Human larynx carcinoma cell line
HEPG2	Human liver carcinoma cell line
HL-60	Human leukemia cell line
HMBC	Heteronuclear multiple bond correlation
HPLC	High performance liquid chromatography
HREI-MS	High-resolution electron impact mass spectrometry
Hs683	Human glioma cell line
HSQC	Heteronuclear single quantum correlation
HT-29	Human colon carcinoma cell line
Hz	Hertz
IASP	The international association for the study of Pain
IC	Inhibitory concentration
ID	Internal diameter
IR	Infra-red
J	Coupling constant
KAU	King armstrong unit
KB	Epidermal carcinoma of the mouth
L	Length
LC/MS	Liquid chromatography-mass spectroscopy
LD	Lethal dose
LLC-PK11	Pig kidney epithelial cells
LSIMS	Liquid secondary ionization mass spectrometry
m	Multiplet
m.p.	Melting point
m/z	Mass per charge ratio
MCF7	Breast carcinoma cell line
MeOH	Methanol
MHz	Mega hertz
MIC	Minimum inhibitory concentration

MS	Mass spectroscopy
MS/MS	Tandem mass
MTT	3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide
NF-kB	Nuclear factor-kappaB
NOESY	Nuclear overhauser effect spectroscopy
P-388	Murine lymphocytic leukemia
PANC-1	Human pancreatic cancer cell
PC12	Pheochromocytoma cell line 12
PC3	Human prostate cancer cell
RC ₅₀	Amount required for 50% reduction of DPPH after 30min
R _f	Retardation factor
s	Singlet
S.E	Standard error
SD	Standard deviation
SEM	Standard error of the mean
SF268	Human glioma and astrocytoma cell
SK-MEL	Human malignant melanoma cell
SOD	Superoxide dismutase
SPSS	Statistical package for the social sciences
T24	Human bladder cancer cell
TLC	Thin layer chromatography
TUNEL	Terminal deoxynucleotidyl transferase biotin-dUTP nick end labeling
U373	Human glioblastoma astrocytoma
U937	Human leukemia cell line
U/L	Unit per liter
UPLC	Ultra-performance liquid chromatography
V/V	Volume per volume
(CH ₃) ₂ CO	Acetone
[M] ⁺	Molecular ion
¹³ C NMR	Carbon-13 nuclear magnetic resonance
1D	One dimension
¹ H NMR	Proton nuclear magnetic resonance
2D	Two dimensions