การศึกษาทางพฤกษเคมีของเปลือกต้นยางเหลือง

นางสาวอารีรัตน์ ซื่อดี

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PHYTOCHEMICAL STUDY OF *POLYALTHIA JUCUNDA* STEM BARK

Miss Areerat Suedee

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for the Degree of Master of Science in Pharmacy Program in Pharmaceutical Botany

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จากการศึกษาองค์ประกอบทางเคมีของเปลือกต้นยางเหลือง [(*POLYALTHIA JUCUNDA* (PIERRE) FINET & GAGNEP.)] สามารถสกัดแยกสารในกลุ่มเทอร์พีนอยด์ 2 ชนิดคือ 4,5-dihydroblumenol A, 24-methylenelanosta-7,9(11)-dien-3β,15α-diol และสารในกลุ่ม ฟีนิลโพรพานอยด์อีก 1 ชนิด คือ 4-hydroxy-4,7-dimethyl-α-tetralone การพิสูจน์เอกลักษณ์ของสารเหล่านี้ ทำโดยการวิเคราะห์ข้อมูลทางสเปกโทรสโกปี จาก MS, 1-D และ 2-D NMR ร่วมกับการเปรียบเทียบค่าที่ได้มีรายงานไว้แล้ว และได้ทำการทดสอบฤทธิ์ต้านเซลล์มะเร็งในหลอดทดลองของสารบริสุทธิ์พบว่า 24-methylenelanost-7,9(11)-dien-3β,15α-diol แสดงฤทธิ์ยับยั้งเซลล์มะเร็ง 4 ชนิด คือ [ER (+) MCF-7, ER (-) MAD-MB231, SF-268 และ NCI-H460] ได้สูงกว่าเซลล์ปกติ (MRC-5)

ภาควิชา เภสัชพฤกษศาสตร์ ลายมือชื่อนิสิต.....
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In the investigation of chemical constituents of the stem bark of *Polyalthia jucunda* (Pierre) Finet & Gagnep., 4,5-dihydroblumenol A (a norsesquiterpene), 24-methylenelanosta-7,9(11)-dien-3β,15α-diol (a triterpene) and a phenylpropanoid, 4-hydroxy-4,7-dimethyl-α-tetralone were isolated. Identification of these compounds was accomplished by analysis of their spectroscopy data: MS, 1-D and 2-D NMR, as well as comparison with reported values. All the compounds were evaluated for their effects on growth of four human tumor cell lines [ER (+) MCF-7, ER (-) MAD-MB-231, SF-268 and NCI-H460] as well as of a non-tumor cell line (MRC-5). Only 24-methylenelanosta-7,9(11)-dien-3β,15α-diol exhibited a dose-dependent growth inhibitory effect against both tumor and non-tumor cell lines but with less, effect on the latter.

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LIST OF ABBREVIATIONS

°C	=	Degree Celsius
CC	=	Column Chromatography
$CDCl_3$	=	Deuterated Chloroform
CH_2Cl_2	=	Dichloromethane
cpm	=	Count per minute
cm	=	Centimeter
^{13}C NMR	=	Carbon-13 Nuclear Magnetic Resonance
COSY	=	Correlated Spectroscopy
δ	=	Chemical Shift
d	=	Doublet (for NMR spectra)
dd	=	Doublet of Doublets (for NMR spectra)
ddd	=	Doublet of Doublets of Doublets (for NMR spectra)
DEPT	=	Distortionless Enhancement by Polarization Transfer
EIMS	=	Electron Impact Mass Spectrum
FABMS	=	Fast Atom Bombardment Mass Spectroscopy
g	=	Gram
GI_{50}	=	Effective Concentration at 50% Inhibition of Cell Growth
µg	=	Microgram
µM	=	Micromolar
hr.	=	Hour
hept	=	Heptet (for NMR spectra)
^1H NMR	=	Proton Nuclear Magnetic Resonance
HMBC	=	^1H-detected Heteronuclear Multiple Bond Coherence
HSQC	=	^1H-detected Heteronuclear Single Quantum Coherence
Hz	=	Hertz
J	=	Coupling Constant
kg	=	Kilogram
L	=	Liter
^1H NMR	=	Proton Nuclear Magnetic Resonance
HMBC	=	^1H-detected Heteronuclear Multiple Bond Coherence
HSQC	=	^1H-detected Heteronuclear Single Quantum Coherence

LIST OF ABBREVIATIONS (continued)

Hz	=	Hertz
J	=	Coupling Constant
kg	=	Kilogram
L	=	Liter
µl	=	Microliter
m	=	Multiplet (for NMR spectra)
m	=	Meter
M^+	=	Molecular Ion
MeOH	=	Methanol
mg	=	Milligram
MHz	=	Megahertz
min	=	Minute
ml	=	Milliliter
mm	=	Millimeter
mM	=	Millimolar
m/z	=	Mass to charge ratio
MS	=	Mass Spectrometry
nm	=	Nanometer
nM	=	Nanomolar
NMR	=	Nuclear Magnetic Resonance
NOESY	=	Nuclear Overhauser Effect Correlation Spectroscopy
pet. ether	=	Petroleum Ether
ppm	=	Part per million
s	=	Singlet (for NMR spectra)
SEM	=	Standard Error of the Mean
t	=	Triplet (for NMR spectra)
TLC	=	Thin Layer Chromatography
U/ml	=	Unit per milliliter