

องค์ประกอบทางเคมีของเปลือกต้นเปลือกใหญ่จากอำเภอเขาแก้ว จังหวัดเลย



นางสาว ลักษณ์หญิง เพิ่มปัญญา

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CHEMICAL CONSTITUENTS OF THE STEM BARK OF
CROTON ROXBURGHII FROM NAHAEW DISTRICT, LOEI PROVINCE



Miss Lukying Permpanya

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Pharmacy

Department of Pharmacognosy

Faculty of Pharmaceutical Sciences

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ลักษณะหญิง เพิ่มปัญญา: องค์ประกอบทางเคมีของเปลือกต้นเปล้าใหญ่จาก
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จากการศึกษาองค์ประกอบทางเคมีของเปลือกต้นเปล้าใหญ่ (*Croton roxburghii* N.P. Balakr.) จากอำเภอนาแห้ว จังหวัดเลย สามารถสกัดแยกสารบริสุทธิ์ จากสิ่งสกัด
เฮกเซนได้สองชนิด ซึ่งเป็นสารใหม่ในกลุ่ม แล็บเดนไดเทอโรปีน คือ (5S, 8S, 9S, 10R,
13S)-8, 13 - epoxyabda - 1, 14-diene-3-one (1) และ (5S, 8S, 9S, 10R, 12S, 13S)-8, 13
-epoxy-12-hydroxyabda-1, 14-diene-3-one (2) การพิสูจน์เอกลักษณ์และสูตรโครงสร้าง
สร้างทางเคมีของสารทั้งสอง กระทำโดยการวิเคราะห์ข้อมูลทางสเปกโตรสโคปี จาก
UV, IR, MS, 1-D NMR, 2-D NMR, CD และ X-ray และ สารประกอบที่แยกได้ทั้งสอง
เมื่อนำมาทดสอบการยับยั้งเซลล์มะเร็งเต้านม (BT 474), ตับ (HEP-G2), ลำไส้ (SW
620), ปอด (CHAGO) และ กระเพาะอาหาร (KATO-3) พบว่าสารทั้งสอง มีฤทธิ์อ่อน
ในการยับยั้งเซลล์มะเร็งทั้งหมดที่ทดสอบ.

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##4476606433 PHARMACOGNOSY

KEYWORD: *CROTON ROXBURGHII*/ DITERPENE/ LABDANE.

LUKYING PERMPANYA: CHEMICAL CONSTITUENTS OF THE
STEM BARK OF *CROTON ROXBURGHII* FROM NAHAEW
DISTRICT, LOEI PROVINCE.

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In the investigation of chemical constituents of the stem bark of *Croton roxburghii* N.P. Balakr., two new labdane diterpenes, (5*S*, 8*S*, 9*S*, 10*R*, 13*S*)-8, 13-epoxylabda-1, 14-diene-3-one (1) and (5*S*, 8*S*, 9*S*, 10*R*, 12*S*, 13*S*)- 8, 13-epoxy-12-hydroxylabda-1, 14-diene-3-one (2) were isolated from crude hexane extract. The structures of these compounds were established by analysis of their spectroscopic data (UV, IR, MS, 1-D NMR, 2-D NMR, CD and X-ray diffraction analysis). Each compound was tested for cytotoxicity against various human tumor cell lines: BT 474 (breast cancer), HEP-G2 (hepatoma), SW 620 (colon cancer), CHAGO (lung cancer), KATO-3 (gastric cancer). Both compounds showed weak cytotoxic activity against all cancer cell lines tested.

Department of.. Pharmacognosy..

Field of study.. Pharmacognosy..

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LIST OF ABBREVIATIONS

br	=	Broad (for NMR spectral data)
c	=	Concentration
°C	=	Degree Celcius
CDCl ₃	=	Deuterated chloroform
CHCl ₃	=	Chloroform
cm	=	Centimeter
cm ⁻¹	=	Reciprocal centimeter (unit of wave number)
¹³ C -NMR	=	Carbon-13-Nuclear Magnetic Resonance
d	=	Doublet (for NMR spectral data)
dd	=	Doublet of doublets (for NMR spectral data)
dia.	=	Diameter
2D	=	Two Dimensional
DEPT	=	Distortionless Enhancement by Polarization Transfer
EIMS	=	Electron Impact Mass Spectroscopy
EtOAc	=	Ethyl Acetate
g	=	Gram
¹ H- ¹ H COSY	=	Homonuclear (Proton-Proton) Correlation Spectroscopy
HMBC	=	¹ H -detected Heteronuclear Multiple Bond Coherence
HMQC	=	¹ H -detected Heteronuclear Multiple Quantum Coherence
¹ H-NMR	=	Proton Nuclear Magnetic Resonance

LIST OF ABBREVIATIONS (Cont.)

Hz	=	Hertz
IR	=	Infrared Spectroscopy
<i>J</i>	=	Coupling constant
KBr	=	Potassium bromide
kg	=	Kilogram
L	=	Liter
m	=	Multiplet (for NMR spectral data)
mg	=	Milligram
ml	=	Milliliter
mm	=	Millimeter
MeOH	=	Methanol
MS	=	Mass Spectroscopy
<i>m/z</i>	=	mass-to-charge ratio
M^+	=	Molecular ion
NMR	=	Nuclear Magnetic Resonance
NOESY	=	Nuclear Overhauser Enhancement Spectroscopy
No.	=	Number
ppm	=	part per million
q	=	Quartet (for NMR spectral data)
s	=	Singlet (for NMR spectral data)
t	=	Triplet (for NMR spectral data)

LIST OF ABBREVIATIONS (Cont.)

TLC	=	Thin Layer Chromatography
UV	=	Ultraviolet Spectroscopy
ν_{\max}	=	Wave number at maximum absorption
λ_{\max}	=	Wavelength at maximum absorption
δ	=	Chemical Shift
ϵ	=	Molar absorption
$[\alpha]_D^{20}$	=	Specific Rotation at 20 °C and Sodium D line (589 nm)



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