

ความเป็นพิษต่อเซลล์มะเร็งของสารประกอบไดเทอร์ปีนของเปลือกต้นเปล้าใหญ่

Croton oblongifolius Roxb. จังหวัดฉะเชิงเทรา



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CYTOTOXICITY TO CANCER CELL LINES OF DITERPENOID COMPOUNDS FROM STEM
BARKS OF *Croton oblongifolius* Roxb. FROM CHACHOENGSAO PROVINCE

Miss Patchara Bunyamanee

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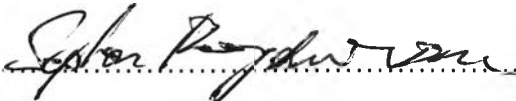
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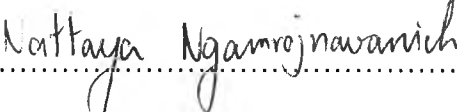
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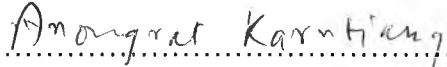
Thesis Committee


..... Chairman
(Associate Professor Sophon Roengsumran, Ph.D.)


..... Thesis Advisor
(Associate Professor Amorn Petsom, Ph.D.)


..... Thesis Co-advisor
(Nattaya Ngamrojnavanich, Ph.D.)


..... Member
(Associate Professor Chaiyo Chaichantipyuth, M.Sc. in Pharm.)


..... Member
(Associate Professor Anongrat Karntiang, Ph.D.)

พัชรา บุญญามณี : ความเป็นพิษต่อเซลล์มะเร็งของสารประกอบไดเทอร์ปีนของเปลือกต้นเปล้าใหญ่ *Croton oblongifolius* Roxb. จังหวัดฉะเชิงเทรา (CYTOTOXICITY TO CANCER CELL LINES OF DITERPENOID COMPOUNDS FROM STEM BARKS OF *Croton oblongifolius* Roxb. FROM CHACHOENGSARO PROVINCE)

อาจารย์ที่ปรึกษา : รศ.ดร. อมร เพชรสม

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การสกัดเปลือกต้นเปล้าใหญ่ (*Croton oblongifolius* Roxb.) จากจังหวัดฉะเชิงเทรา ด้วยเฮกเซนและเอธิลอะซิเตต สามารถแยกของผสมสเตอรอยด์ได้ 1 ชนิดและสารบริสุทธิ์อีก 6 ชนิด การหาสูตรโครงสร้างของสารเหล่านี้อาศัยคุณสมบัติทางกายภาพและเทคนิคทางสเปกโตรสโกปี สารเหล่านี้คือ ของผสมของ stigmasterol, β -sitosterol และ campesterol (5), สารประกอบคลอโรเดนไดเทอร์ปีนอยด์ 2 ชนิดคือ (-)-hardwickiic acid (2) และ (-)-20-benzyloxyhardwickiic acid (7) และสารประกอบแลบเดนไดเทอร์ปีนอยด์ 4 ชนิดคือ labda-7,12(E),14-triene-17-oic acid (1), 2-acetoxy-labda-8(17),12(E),14-triene-3-ol (3), 3-acetoxy-labda-8(17),12(E),14-triene-2-ol (4) และ labda-8(17),12(E),14-triene-2,3-diol (6) และนำสารที่แยกได้มาทดสอบการยับยั้งเซลล์มะเร็ง Hep-G2 (ตับ), SW 620 (ลำไส้ใหญ่), Chago (ปอด), Kato-3 (กระเพาะอาหาร) และ BT 474 (เต้านม) พบว่าสารประกอบ 3 และ 6 มีฤทธิ์ยับยั้งเซลล์มะเร็งทั้ง 5 ชนิด สารประกอบ 4 มีฤทธิ์ยับยั้งเซลล์มะเร็งตับและมะเร็งกระเพาะอาหารได้ในระดับปานกลาง และเป็นครั้งแรกในการรายงานผลการทดสอบการยับยั้งเซลล์มะเร็งของ (-)-hardwickiic acid (2)

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PATCHARA BUNYAMANEE : CYTOTOXICITY TO CANCER CELL LINES OF DITERPENOID COMPOUNDS FROM STEM BARKS OF *Croton oblongifolius* Roxb. FROM CHACHOENGSAO PROVINCE.

THESIS ADVISOR : Associate. Professor. AMORN PETSOM, Ph.D.

THESIS Co-ADVISOR : NATTAYA NGAMROJNAVANICH, Ph.D.

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Extraction of the stem barks of *Croton oblongifolius* Roxb. from Chachoengsao province with hexane and ethyl acetate gave a mixture of steroids and six compounds. The structures of these substances were established on the basis of physical properties and spectroscopic data. They were a mixture of stigmasterol, β -sitosterol and campesterol (5), two clerodane diterpenoids; (-)-hardwickiic acid (2) and (-)-20-benzyloxyhardwickiic acid (7) and four labdane diterpenoids; labda-7,12(*E*),14-triene-17-oic acid (1), 2-acetoxy-labda-8(17),12(*E*),14-triene-3-ol (3), 3-acetoxy-labda-8(17),12(*E*),14-triene-2-ol (4) and labda-8(17),12(*E*),14-triene-2,3-diol (6). They were tested for their cytotoxicity against human tumor cell lines; Hep-G2 (hepatoma), SW 620 (colon), Chago (lung), Kato-3 (gastric) and BT 474 (breast). Compound 3 and 6 showed significant cytotoxicity against all cell lines. Compound 4 exhibited moderate cytotoxicity against Hep-G2 and Kato-3. Moreover, this is the first report of cytotoxicity test of (-)-hardwickiic acid (2).

Department.....Chemistry.....

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Student's signature. Patchara Bunyamane

Advisor's signature. Amorn Petsom

Co-advisor's signature. Nattaya Ngamrojnavanich

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ABBREVIATIONS

b.p.	=	Boiling point
br s	=	Broad singlet (for NMR spectra)
c	=	Concentration
°C	=	Degree Celsius
CDCl ₃	=	Deuterated chloroform
CHCl ₃	=	Chloroform
CH ₂ Cl ₂	=	Dichloromethane
cm	=	Centimeter
¹³ C-NMR	=	Carbon-13 nuclear magnetic resonance
COSY	=	Correlated Spectroscopy
d	=	Doublet (for NMR spectra)
dd	=	Doublet of doublet (for NMR spectra)
ddd	=	Doublet of doublet of doublet (for NMR spectra)
DEPT	=	Distortionless Enhancement by Polarization Transfer
DMSO	=	Dimethyl sulfoxide
δ	=	Chemical Shift
EI MS	=	Electron Impact Mass Spectrum
EtOAc	=	Ethyl acetate
g	=	Gram
¹ H-NMR	=	Proton nuclear magnetic resonance
Hz	=	Hertz
HMBC	=	Heteromolecular Multiple Bond Correlation
HMQC	=	Heteromolecular Multiple Quantum Correlation
IR	=	Infrared spectrum
<i>J</i>	=	Coupling constant

kg	=	Kilogram
L	=	Litre
M ⁺	=	Molecular ion
mg	=	Milligram
MHz	=	Megahertz
ml	=	Millilitre
mm	=	Millimetre
m.p.	=	Melting point
MeOH	=	Methanol
M	=	Molar
<i>m/z</i>	=	Mass to charge ratio
M.W.	=	Molecular weight
MS	=	Mass spectrometry
No.	=	Number
NMR	=	Nuclear Magnetic Resonance
NOESY	=	Nuclear Overhauser Enhancement Spectroscopy
ppm	=	Part per million
q	=	Quartet (for NMR spectra)
s	=	Singlet (for NMR spectra)
t	=	Triplet (for NMR spectra)
TLC	=	Thin layer Chromatography
wt	=	Weight
R _f	=	Retention factor in chromatography