

องค์ประกอบทางเคมีและฤทธิ์ทางชีวภาพของเปลือกต้นเปล้าใหญ่
(*Croton oblongifolius* Roxb.) จาก อำเภอปราณบุรี จังหวัดประจวบคีรีขันธ์



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**CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITY
FROM THE STEM BARKS OF *Croton oblongifolius* Roxb.
FROM AMPHOE PRANBURI, PRACHUABKHIRIKHAN PROVINCE**

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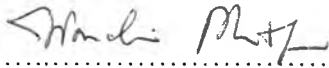
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สมิทธีชัย สียงนอก : องค์ประกอบทางเคมีและฤทธิ์ทางชีวภาพของเปลือกต้นเปล้าใหญ่ (*Croton Oblongifolius* Roxb.) จาก อำเภอปราณบุรี จังหวัดประจวบคีรีขันธ์ (CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITY FROM THE STEM BARKS OF *Croton oblongifolius* Roxb. FROM AMPHOE PRANBURI, PRACHUABKHIRIKHAN PROVINCE) อาจารย์ที่ปรึกษา : รศ.ดร.โสภณ เริงสำราญ; 73 หน้า. ISBN 974-13-0978-3

ได้สกัดแยกสารประกอบคลอโรเดนไดเทอริปีนอยด์คือ hardwickii acid (1), อะบีเทนไดเทอริปีนอยด์คือ abieta-7,13-dien-3-one (2) และ สารประกอบไคลแทนเทนไดเทอริปีนอยด์อีกหนึ่งชนิดคือ cleistantha-4, 13(17), 15-triene-3-oic acid (3) จากเปลือกต้นเปล้าใหญ่ที่ได้ทำมาจากอำเภอ ปราณบุรี จังหวัดประจวบคีรีขันธ์ ได้ทำการพิสูจน์โครงสร้างของสารเหล่านี้ โดยอาศัยข้อมูลทางสเปกโตรสโกปี ซึ่งได้แก่ IR, MS, 1D และ 2D NMR เทคนิคคือ DEPT, COSY, NOESY, HMBC, HMQC และโดยการสังเคราะห์อนุพันธ์ทางเคมีของสารประกอบเหล่านี้ พร้อมกันนั้นได้ทำการทดสอบฤทธิ์ทางชีวภาพของสารประกอบทั้งหมดทั้งจากธรรมชาติและจากการสังเคราะห์ โดยทดสอบกับเซลล์มะเร็ง 6 ชนิดได้แก่ HS 27 (ไฟโบรบลาสต์), KATO (มะเร็งกระเพาะอาหาร), BT 474 (มะเร็งเต้านม), CHAGO (มะเร็งปอด), SW 620 (มะเร็งลำไส้ใหญ่) และ HEP-G2 (มะเร็งตับ) ซึ่งพบว่าสาร 3 มีฤทธิ์ในการยับยั้งเซลล์มะเร็งทั้งหกชนิดซึ่ง มีค่า %survival น้อยกว่าผลการทดสอบกับ doxorubicin.

ภาควิชาเคมี.....
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ลายมือชื่ออาจารย์ที่ปรึกษา.....
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SMITHTICHAI SRIYANGNOK : CHEMICAL CONSTITUENTS AND
BIOLOGICAL ACTIVITY FROM THE STEM BARKS OF *Croton
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One clerodane, hardwickiic acid (1), abietane diterpenoid compound, abieta-7,13-dien-3-one (2), and one cleistanthane diterpenoid compound, cleistantha-4, 13 (17), 15-triene-3-oic acid (3), were isolated from the stem barks of *Croton oblongifolius* Roxb., which was collected from Amphoe Pranburi, Prachuabkhirikhan Province. The structure of these compounds were established by spectroscopic data including IR, MS, 1D and 2D NMR techniques (DEPT, COSY, NOESY, HMBC and HMQC) and chemical transformation. All of the isolated compounds and their dirivative, were subjected to biological activity test against a panel of six cell lines including HS 27 (fibroblast), KATO (gastric), BT 474 (breast), CHAGO (lung), SW 620 (colon) and HEP-G2 (hepatoma). It was showed that compound 2 exhibited cytotoxic activity against all cancer cell with %survival values less than doxorubicin test.

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Field of study.....Chemistry.....

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ABBREVIATIONS

b.p.	=	Boiling point
br s	=	Broad singlet (for NMR spectra)
c	=	Concentration
$^{\circ}\text{C}$	=	Degree Celcius
CDCl_3	=	Deuterated chloroform
CHCl_3	=	Chloroform
CH_2Cl_2	=	Dichloromethane
cm	=	Centimeter
$^{13}\text{C-NMR}$	=	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
$^1\text{H-NMR}$	=	Proton nuclear magnetic resonance
Hz	=	Hertz
HMBC	=	Heteronuclear Multiple Bond Correlation
HMQC	=	Heteronuclear Multiple Quantum Correlation
IR	=	Infrared spectrum
J	=	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
m/z	=	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