

ความเป็นพิษต่อเซลล์มะเร็งของเปลือกต้นเปล้าใหญ่ *Croton oblongifolius* Roxb.

จากอำเภอเมือง จังหวัดสกลนคร



นางสาว วิรงศ์รอง เทพรักษา

ศูนย์วิทยทรัพยากร

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต  
สาขาเทคโนโลยีทางชีวภาพ หลักสูตรเทคโนโลยีทางชีวภาพ

คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2544

ISBN 974-17-0314-7

ลิขสิทธิ์ของ จุฬาลงกรณ์มหาวิทยาลัย

CYTOTOXICITY AGAINST CANCER CELL LINES OF STEM BARK OF *Croton  
oblongifolius* Roxb. FROM AMPHOE MUANG, SAKOLNAKORN PROVINCE



Miss Wirongrorng Teprugsa

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

Program of Biotechnology

Faculty of Science

Chulalongkorn University

Academic Year 2001

ISBN 974-17-0314-7

**Thesis Title**            **CYTOTOXICITY AGAINST CANCER CELL LINES OF  
STEM BARK OF *Croton oblongifolius* Roxb. FROM  
AMPHOE MUANG, SAKOLNAKORN PROVINCE**

**By**                                 Miss Wirongrorng Teprugsra


**Field of Study**            Biotechnology

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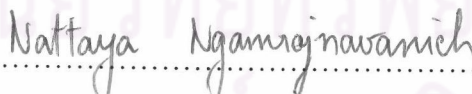
Accepted by the Faculty of Science, Chulalongkorn University in Partial Fulfillment  
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วิงศ์รอง เทพรักษา : ความเป็นพิษต่อเซลล์มะเร็งของเปลือกต้นเปลือกใหญ่ *Croton oblongifolius* Roxb. จากอำเภอเมือง จังหวัดสกลนคร (CYTOTOXICITY AGAINST CANCER CELL LINES OF STEM BARK OF *Croton oblongifolius* Roxb. FROM AMPHOE MUANG, SAKOLNAKORN PROVINCE) อาจารย์ที่ปรึกษา: รศ.ดร. อมร เพชรสม, อาจารย์ที่ปรึกษาร่วม : ผศ. ดร. นาดยา งามโรจนวิชัย 106 หน้า. ISBN 974-17-0314-7

การศึกษาองค์ประกอบทางเคมีจากเปลือกต้นเปลือกใหญ่ (*Croton oblongifolius*) จากจังหวัดสกลนครสามารถแยกสารบริสุทธิ์ได้ 5 ชนิด จากสิ่งสกัดเฮกเซน การหาสูตรโครงสร้างของสารเหล่านี้อาศัยคุณสมบัติทางกายภาพและเทคนิคทางสเปกโตรสโกปี ซึ่งได้แก่ IR, MS, 1D-NMR และ 2D-NMR สำหรับสารบางชนิด สามารถพิสูจน์สูตรโครงสร้างของสารบริสุทธิ์ทั้ง 5 ชนิดได้ คือ สารประกอบเซมเบรน ไดเทอร์ปีนอยด์ 2 ชนิดคือ crotoembraneic acid (1) และ neocrotoembraneic acid (2) สารประกอบฮาลิแมน ไดเทอร์ปีนอยด์ 1 ชนิดคือ Crotohalimaneic acid (3) สารประกอบเคลอโรเดน ไดเทอร์ปีนอยด์ 1 ชนิดคือ (-)-20-benzyloxyhardwickiic acid (4) และ สารประกอบซินาปีล แอลกอฮอล์ 1 ชนิดคือ 3-(3,5-dimethoxy-4-hydroxy phenyl) propanyl benzoate (5) พร้อมกันนั้นทำการทดสอบฤทธิ์ความเป็นพิษต่อเซลล์มะเร็ง พบว่า Crotohalimaneic acid (3) และ 3-(3,5-dimethoxy-4-hydroxy phenyl) propanyl benzoate (5) มีฤทธิ์ยับยั้งเซลล์มะเร็ง 5 ชนิด ได้แก่ Hep-G2, SW620, Chago, Kato-3 และ BT474 ได้ดี

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

หลักสูตร.....เทคโนโลยีทางชีวภาพ.....ลายมือชื่อนิติ.....วิงศ์รอง เทพรักษา.....  
สาขาวิชา.....เทคโนโลยีทางชีวภาพ.....ลายมือชื่ออาจารย์ที่ปรึกษา.....อมร เพชรสม.....  
ปีการศึกษา.....2544.....ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....นาดยา งามโรจนวิชัย.....

## 4272398023 : MAJOR BIOTECHNOLOGY

KEYWORD : CYTOTOXICITY, *Croton oblongifolius* ROXB., CANCER CELL LINES. Wirongroing Teprugsas : CYTOTOXICITY AGAINST CANCER CELL LINES OF STEM BARK OF *Croton oblongifolius* Roxb. FRGM AMPHOE MUANG, SAKOLNAKORN PROVINCE THESIS ADVISOR : ASSOC. PROF. AMORN PETSOM, Ph.D. THESIS COADVISOR : ASSIST. PROF. NATTAYA NGAMROJNAVANICH, Ph.D. 106 pp. ISBN 974-17-0314-7

The chemical investigation of the stem bark of *Croton oblongifolius* Roxb. from Sakolnakorn province gave five compounds from hexane crude extract. The structure of these compounds were established on the basis of physical properties and spectroscopic data including IR, MS, 1D-NMR and 2D-NMR techniques. Two cembrane diterpenoids; crotocebraneic acid (1) and neocrotocebraneic acid (2), one halimane diterpenoid; crotohalimaneic acid (3), one clerodane diterpenoid; (-)-20-benzyloxyhardwickiic acid (4) and one sinapyl alcohol; 3-(3,5-dimethoxy-4-hydroxy phenyl) propanyl benzoate (5) were identified. All of the compounds were tested for cytotoxicity against human cancer cell lines. crotohalimaneic acid (3) and 3-(3,5-dimethoxy-4-hydroxy phenyl) propanyl benzoate (5) have high activity against 5 cancer cell lines; Hep-G2 (hepatoma), SW620 (colon), Chago (lung), Kato-3 (gastric) and BT474 (breast).



Program.....Biotechnology.....Student's signature..... Wirongroing Teprugsas  
Field of study.. Biotechnology ....Advisor's signature..... Amorn Petsom  
Academic Year.....2001.....Co-advisor's signature..... Nattaya Ngamrojnavanich

## ACKNOWLEDGEMENT

The author wishes to express her deepest appreciation to her advisor, Associated Professor Amorn Petsom, Ph.D., and co-advisor, Dr. Nattaya Ngamrojnavanich, for their encouraging guidance, supervision and beneficial suggestions throughout the course of this research. The author is grateful for the suggestion and guidance given by Associated Professor Sophon Roengsumran, Ph.D., Dr. Surachai Pornpakakul and Dr. Polkit Sangvanich during the research work. She would also like to thank for the valuable comments from Associated Professor Chaiyo Chaichantipyuth.

Gratitude is also extended to the Department of Chemistry, Faculty of Science and the Graduate School, Chulalongkorn University for research facility and the program of Biotechnology for financial support. Thank you to Mrs. Songchan Phutong, Institute of Biotechnology and Genetic Engineering for cytotoxicity test and Mr. Bumrung Rinta, Chemistry Program, Faculty of Science and Technology, Rajabhat Sakolnakorn for plant collection.



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## ABBRAVIATIONS

b.p.	= Boiling point'
br	= Broad ( for NMR spectrum)
<i>c</i>	= Concentration
°C	= Degree Celcius
CDCl <sub>3</sub>	= Deuterated chloroform
CHCl <sub>3</sub>	= Chloroform
cm	= Centimeter
<sup>13</sup> C-NMR	= Carbon-13 Nuclear Magnetic Resonance
COSY	= Correlated Spectroscopy
d	= Doublet (for NMR spectrum)
dd	= Doublet of doublet (for NMR spectrum)
ddd	= Doublet of doublet of doublet (for NMR spectrum)
DEPT	= Distortionless Enhancement by Polarization Transfer
DMSO	= Dimethylsulfoxide
δ	= Chemical shift
EI MS	= Electron Impact Mass Spectrum
EtOAc	= Ethyl acetate
g	= Gram
<sup>1</sup> H-NMR	= Proton Nuclear Magnetic Resonance
Hz	= Hertz
HMBC	= Heteromolecular Multiple Bond Correlation
HMQC	= Heteromolecular Multiple Quantum Correlation
IR	= Infrared
<i>J</i>	= Coupling constant
kg	= Kilogram
L	= Liter
M <sup>+</sup>	= Molecular ion
mg	= Milligram
MHz	= Megahertz
ml	= Milliliter
mm	= Millimeter
MeOH	= Methanol

m.p.	= Melting point
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 spectrum)
s	= Singlet (for NMR spectrum)
t	= Triplet (for NMR spectrum)
TLC	= Thin Layer Chromatography
wt	= Weight
$R_f$	= Retention factor in chromatography



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