องค์ประกอบทางเคมีของลำต้นสะค้านหนู

(*Piper aurantiacum* Miq.)

นางสาวมุกอาภา มุกดาทอง

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

ภาควิชาเคมี

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2539

ISBN 974-636-660-2

CHEMICAL CONSTITUENTS OF THE STEM OF *PIPER AURANTIACUM* MIQ.

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A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science

Department of Chemistry

Graduate School

Chulalongkorn University

Academic Year 1996

ISBN 974-636-660-2

Thesis Title	CHEMICAL CONSTITUENTS OF THE STEM OF *Piper aurantiacum* Miq.
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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสีเขียวนี้เพียงแผ่นเดียว

มุกอาภา มุกดาทอง : องค์ประกอบทางเคมีของลำต้นสะค้านหนู *Piper aurantiacum* Miq. (CHEMICAL CONSTITUENTS OF THE STEM OF *Piper aurantiacum* Miq.) อ.ที่ปรึกษา : ผศ. ดร. สมใจ เพ็งปรีชา , 97 หน้า. ISBN 974-636-660-2.

นำเถาสะค้านหนู (*Piper aurantiacum* Miq.) ที่แห้งและบดละเอียด มาสกัดด้วยตัวทำละลายอินทรีย์ชนิดต่างๆ แล้วทำการแยกองค์ประกอบทางเคมี ด้วยวิธีคอลัมน์โครมาโทกราฟี ได้สารประกอบ 5 ชนิด เมื่อนำมาทำให้บริสุทธิ์ และทดสอบสมบัติทางเคมี สมบัติทางกายภาพ ตลอดจนพิสูจน์สูตรโครงสร้าง โดยใช้ข้อมูลทางสเปกโทรสโกปี พบว่าสารประกอบทั้ง 5 ชนิด คือ β-sitosterol ($C_{29}H_{26}O$, จุดหลอมเหลว 137-138°C, ผลึกรูปเข็มสีขาวเป็นมันวาว), methyl-5-(3′,4′-methylenedioxyphenyl)penta-2,4-dienoate (methyl piperate, $C_{13}H_{12}O_4$, จุดหลอมเหลว 142-143°C, ผลึกรูปเข็ม สีเหลือง), endo-1,7,7-trimethylbicyclo[2.2.1]heptan-2-ol-3′,4′-hydroxyphenyl)-2′-propenoate (borneol p-coumarate, $C_{19}H_{24}O_3$, จุดหลอมเหลว 158-159°C, ผลึกใสรูปปริซึมสี่เหลี่ยม), 1,3-benzodioxole-5-carboxylic acid ($C_8H_6O_4$, ของแข็งอสัณฐานสีขาว) และ potassium chloride (KCl, จุดหลอมเหลวสูงกว่า 270°C, ผลึกใสรูปลูกบาศก์)

ภาควิชา เคมี ลายมือชื่อนิสิต .....

สาขาวิชา เคมี ลายมือชื่ออาจารย์ที่ปรึกษา .....

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C725249 : MAJOR CHEMISTRY
KEY WORD: *Piper aurantiacum* Miq. / CHEMICAL CONSTITUENT
MUK-APA MUKDATHONG : CHEMICAL CONSTITUENTS OF THE STEM OF *Piper aurantiacum* Miq. THESIS ADVISOR : ASSIST. PROF. SOMCHAI PENGPRECHA, Ph.D. pp. ISBN 974-636-660-2.

The dried stems of *Piper aurantiacum* Miq. were extracted with organic solvents. The crude extracts were chromatographed on silica gel by using quick column chromatography and 5 compounds were identified. These compounds were confirmed by chemical reactions, physical testing and spectroscopic methods and were assigned as β-sitosterol ($C_{29}H_{26}O$, m.p. 137-138°C, bright white needle-like crystals), methyl-5-(3′,4′-methylenedioxyphenyl)penta-2,4-dienoate (methyl piperate, m.p. 142-143°C, $C_{13}H_{12}O_4$, yellow needle-like crystals), endo-1,7,7-trimethylbicyclo [2.2.1]heptan-2-ol-3′-(4′-hydroxyphenyl)-2′-propenoate (borneol p-coumarate, $C_{19}H_{24}O_3$, m.p. 158-159°C, colourless rectangular crystals), 1,3-benzodioxole-5-carboxylic acid (C_8 H_6O_4, white amorphous solid) and potassium chloride (KCl, m.p. was over 270°C, colourless cubical crystals).

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ปีการศึกษา 2539 ลายมือชื่ออาจารย์ที่ปรึกษาร่วม .....

ACKNOWLEDGEMENT

The auther would like to express her sincere appreciation to her advisor, Assistant Professor Dr.Somchai Pengprecha whose advice, suggestions and encouragement have been invaluable to her. She wishes to thank the members of her thesis committee, Associate Professor Dr.Siri Varothai, Professor Dr.Padet Sidisunthorn, and Associate Professor Dr.Sophon Roengsumran for critical comments and advice. She is also grateful to Dr.Tirayut Vilaivan and Dr.Roderick Bates for valuable discussion and guidence.

She is indebted to the Graduate School and the Department of Chemistry, Faculty of Science, Chulalongkorn University for the teacher assistantship and scholarship. She would like to extend her appreciation to the staff of the Science and Technology Research Equipment Centre, for their services on sample analysis.

Further acknowledgement is extended to her friends for their help and encouragement during her graduate studies. Last but not least, she wishes to express her deepest gratitude to her parents. Without their financial and moral support, she could not have completed this work.

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LIST OF ABBREVIATIONS

br	broad (IR), (NMR)
°C	degree celsius
CC	column chromatography
$CHCl_3$	chloroform
^{13}C-NMR	carbon 13 nuclear magnetic resonance
cm	unit of centimetre
cm^{-1}	unit of wavenumber
cont	continue
δ	chemical shift
d	doublet (NMR)
dd	doublet of doublet (NMR)
DEPT	distortionless enhancement by polarization transfer
EI	electron impact technique in mass spectrometry
EtOAc	ethyl acetate
Fig.	figure
g	gram (s)
^{1}H-NMR	proton nuclear magnetic resonance
HMBC	heteronuclear multiple bond correlation
HMQC	heteronuclear multiple quantum correlation
IR	infrared
J	coupling constant (NMR)
kg	kilogram (s)
m	medium (IR)
m	multiplet (NMR)
M^{+}	molecular ion in mass spectrum

MeOH	methanol
mg	milligram (s)
min	minute (s)
ml	millilitre
m.p.	melting point
M.W.	molecular weight
m/z	mass per charge
ν_{max}	wavelength at maximum absorption
n-BuOH	n-butanol
No.	number
NOE	nuclear overhauser effect
ppm	part per million
q	quartet (NMR)
R_f	rate of flow in cromatography
s	strong (IR)
s	singlet (NMR)
t	triplet (NMR)
TLC	thin layer chromatography
w	weak (IR)
wt. by wt.	weight by weight