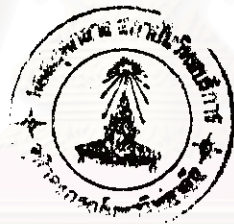


องค์ประกอบทางเคมีของรากสามสิบ
(*Asparagus racemosus* Willd.)

นางสาว นัทธหทัย วิบูลย์พันธุ์



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CHEMICAL CONSTITUENTS OF THE ROOT OF
Asparagus racemosus Willd.



Miss Nathathai Wiboonpun

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for the Degree of Master of Science

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นำรากสามสิบแห้งมาบดแล้วสกัดด้วยเฮกเซน ไดคลอโรมีเทน เอทิลอะซิเตท และ เมทานอล ตามลำดับ เมื่อทำการแยกสิ่งสกัดด้วยคอลัมน์โครมาโทกราฟีพบว่าสามารถแยกสารได้เป็นของผสม 3 ชนิด และสารประกอบ 6 ชนิด ได้แก่ สารใหม่ 2 ชนิด คือ 4,5-dihydroxy-1,7-dimethoxy-8-methyl-9,10-dihydrophenanthrene และ 6-hydroxy-2-(3'-hydroxy-5'-methoxy-2',4'-dimethyl phenyl) benzofuran นอกจากนี้ยังประกอบด้วย ของผสมของไฮโครคาร์บอนไฮโตรเจน (C_{24} - C_{33}), ของผสมของเอสเทอร์ไฮโตรเจน, ของผสมของกรดอินทรีย์ไฮโตรเจน (C_{22} - C_{28} , C_{30}), stigmasterol, Asparagamine A, stigmasteryl-3-O- β -D-glucopyranoside และ 3-O-[α -L-rhamnopyranosyl-(1 \rightarrow 2)-O- β -D-glucopyranosyl] sarsasapogenin. สูตรโครงสร้างของสารใหม่ทั้งสองชนิดนี้สามารถพิสูจน์ทราบได้โดยวิธีทางสเปกโตรสโกปี

นอกจากนี้ยังพบว่า Asparagamine A ซึ่งเป็นองค์ประกอบหลักของรากสามสิบ เป็นสารที่มีฤทธิ์ยับยั้ง ออกซิโทซิน (anti-oxytocin activity) ในหนูขณะตั้งครรภ์ที่ระดับความเข้มข้น 10mg / 0.2ml ต่อตัว

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จุฬาลงกรณ์มหาวิทยาลัย

ภาควิชา เคมี

สาขาวิชา เคมี

ปีการศึกษา 2539

ลายมือชื่อนิสิต *San 25*

ลายมือชื่ออาจารย์ที่ปรึกษา *สันติ ทิพยมัค*

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม *เกษร วิชาโต*



** C725256 : MAJOR CHEMISTRY
KEY WORD: *Asparagus racemosus* /CHEMICAL CONSTITUENT

NATHATHAI WIBOONPUN : CHEMICAL CONSTITUENTS OF THE ROOT OF
Asparagus racemosus Willd. THESIS ADVISOR : DR. SANTI TIP-PYANG
THESIS CO-ADVISOR : ASSO.PROF. GAYSORN VEERACHATO 147 pp. ,
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Dried roots of *Asparagus racemosus* Willd. were extracted with hexane ,
dichloromethane , ethyl acetate and methanol respectively. Fractionation of the crude extracts by
column chromatography led to the isolation of 3 mixtures and 6 compounds. They included two
new compounds : 4,5-dihydroxy-1,7-dimethoxy-8-methyl-9,10-dihydrophenanthrene and 6-hydroxy-2-
(3'-hydroxy-5'-methoxy-2',4'-dimethyl phenyl) benzofuran along with seven known substances , a
mixture of long chain hydrocarbons (C_{24} - C_{33}) , a mixture of long chain esters , a mixture of
long chain acids (C_{22} - C_{28} , C_{30}) , stigmasterol , Asparagamine A , stigmasteryl-3-O- β -D-glucopyranoside
and 3-O-[α -L-rhamnopyranosyl-(1 \rightarrow 2)-O- β -D-glucopyranosyl] sarsasapogenin. The structure of two
new compounds were elucidated by spectroscopic methods.

Asparagamine A, the major component of this plant , was shown to have anti-
oxytocin activity , *in vivo* , in pregnant rats with doses of 10 mg / 0.2 ml / rat .

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ภาควิชา.....เคมี.....
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ลายมือชื่อนิติ.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

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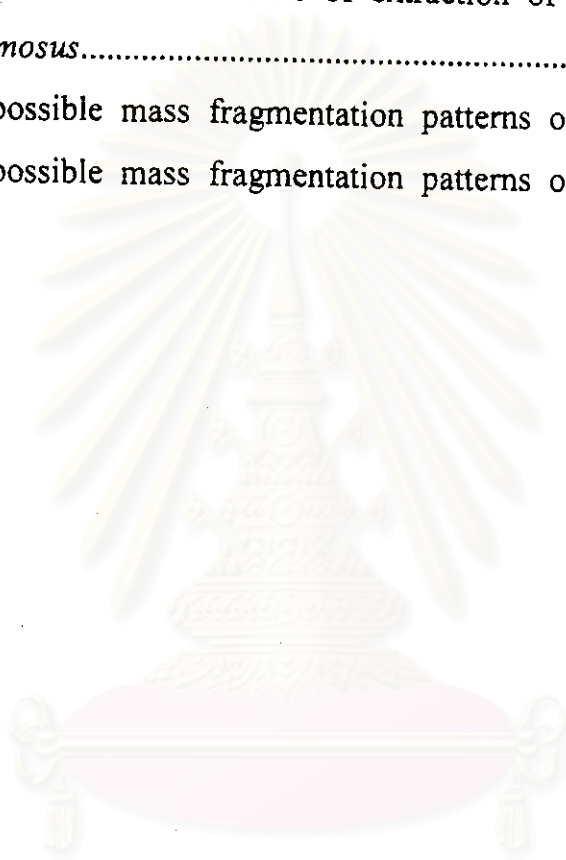
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LIST OF ABBREVIATIONS

°C	degree celsius
cm ⁻¹	wave number
cont.	continue
¹³ C NMR	carbon 13 nuclear magnetic resonance
d	doublet (NMR)
dd	double of doublet (NMR)
DEPT	distortionless enhancement by polarization transfer
EI	electron impact
Fig.	figure
g	gram
GC-MS	gas chromatography - mass spectroscopy
GLC	gas liquid chromatography
¹ H NMR	proton nuclear magnetic resonance
HMBC	heteronuclear multiple bond correlation
HMQC	heteronuclear multiple quantum correlaton
hr.	hour
IR	infrared
IU	international unit
J	coupling constant (NMR)
kg	kilogram
m	multiplet (NMR)
M ⁺	molecular ion
m/z	mass per charge
ml	milliliter
mg	milligram
MW	molecular weight

MW	molecular weight
nm	nanometer
No.	number
NOE	nuclear overhauser effect
ppm.	part per million
ppt.	participate
R _f .	rate of flow in chromatography
s	singlet (NMR)
TLC	thin layer chromatography
UV	ultraviolet spectroscopy
wt by wt	weight by weight
δ	chemical shift
μg	microgram
μl	microlitre



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