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STEROIDS FROM TYPHA ELEPHANTINA AND TRITERPENOIDS
FROM RANDIA SIAMENSIS



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ศูนย์วิทยทรัพยากร
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บทคัดย่อ

จากการตรวจสอบสิ่งสกัดในชั้นปีไตรเทียมเออร์ของผลกกช้าง (*Typha elephantina* Roxb.) พบสารที่มีสูตรโครงสร้างเป็น long-chain hydrocarbon 2 ชนิดคือ pentacosane และ 1-triacontanol นอกจากนี้ได้พบสารที่มีสูตรโครงสร้างเป็น phytosterol 2 ชนิด คือ β -sitosterol และ β -sitosteryl-3-O- β -D-glucopyranoside ซึ่งสารประกอบที่แยกได้ทั้งหมดนี้ยังไม่มียารายงานว่าได้พบในพืชชนิดนี้มาก่อน ได้ศึกษาคุณสมบัติทางกายภาพและทางเคมีของสารเหล่านี้ด้วย

ส่วนที่สกัดได้ในชั้นเอทานอลของผลคัตเค่า (*Randia siamensis* Craib) ซึ่งทดสอบแล้วพบว่ามีพิษต่อปลาสูง ได้นำมาแยกและทำให้บริสุทธิ์ พบสารประกอบที่มีสูตรโครงสร้างเป็น ursene-type sapogenin คือ ursolic acid กับสารที่มีสูตรโครงสร้างเป็น oleanene-type saponin 3 ชนิด คือ pseudoginsenoside-RP₁ (3-O- β -GlcUA-(2-1)- β -Xyl of oleanolic acid), pseudoginsenoside-RT₁ (3-O- β -GlcUA-(2-1)- β -Xyl of glucosyl oleanolate) และสารใหม่อีกชนิดหนึ่งชื่อ siamenside มีสูตรโครงสร้างเป็น 3-O- β -GlcUA-(2-1)- β -Xyl-(2-1)- α -Rha of glucosyl oleanolate การพบ pseudoginsenoside-RP₁ และ RT₁ ครั้งนี้นับเป็นครั้งที่ 2 ที่เคยพบในธรรมชาติ

ได้พิสูจน์สูตรโครงสร้างโดยใช้ proton-nmr, ¹³C-nmr spectroscopy ที่มีกำลังขยายสูง และปฏิกิริยาทางเคมีควบคู่กัน พร้อมทั้งบรรยายการกำหนดสูตรโครงสร้างอย่างละเอียด

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FROM RANDIA SIAMENSIS

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ABSTRACT

Examination of the petroleum ether extract of *Typha elephantina* Roxb. fruits revealed the presence of two long-chain hydrocarbons, pentacosane and 1-triacontanol. The phytosterols, β -sitosterol and β -sitosteryl-3-O- β -D-glucopyranoside were also isolated from the same species in moderate yield. All of the isolated compounds have never been reported as being present in this species before. Physical and chemical properties of these compounds were studied.

Another investigation was made on the ethanolic extract from *Randia siamensis* Craib fruits which exhibits potent ichthyotoxic activities. Attempts of fractionation and purification of this fraction afforded ursene-type saponin ursolic acid, oleanene-type saponin pseudoginsenoside- RP_1 (3-O- β -GlcUA-(2-1)- β -Xyl of oleanolic acid), pseudoginsenoside- RT_1 (3-O- β -GlcUA-(2-1)- β -Xyl of Glucosyl oleanolate) and a novel saponin named siamenoside (3-O- β -GlcUA-(2-1)- β -Xyl-(2-1)- α -Rha of Glucosyl oleanolate). This is the second report of pseudoginsenoside- RP_1 and RT_1 from natural source.

Structure elucidations have been established through high field proton-nmr, ^{13}C -nmr spectroscopy and chemical correlation. A detailed discussion on the elucidation of chemical structures is included.



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ABBREVIATIONS



Ara	=	Arabinose
°C	=	degree Celsius
CA	=	Adenocarcinoma 755
CC	=	Column Chromatography
¹³ C-NMR	=	Carbon-13 Nuclear Magnetic Resonance
C.I.	=	Chemical Ionization
CIMS.	=	Chemical Ionization Mass Spectrum
Co-TLC	=	Concurrent Thin Layer Chromatography
D	=	relative configuration in comparison with D-glyceraldehyde
d	=	doublet
E.I.	=	Electron Impact.
EIMS	=	Electron Impact Mass Spectrum
FID	=	Flame Ionization Detector
Gal	=	Galactose
Glc	=	Glucose
GLC	=	Gas Liquid Chromatography
GlcUA	=	Glucuronic Acid
hRf	=	Rate of flow in Chromatography multiplied by 100
¹ H-NMR	=	Proton Nuclear Magnetic Resonance
HPLC	=	High Performance Liquid Chromatography
IR	=	Infrared
J	=	coupling constant

L	=	relative configuration in comparison with L-glyceraldehyde
LL	=	Lewis Lung Carcinoma
m	=	multiplet
M ⁺	=	Molecular ion
Man	=	Mannose
MHz	=	Mega Hertz
ml	=	millilitre
min.	=	minute
mixed m.p.	=	mixed melting point
m.p.	=	melting point
MW	=	Molecular Weight
m/z	=	mass to charge ratio
ppm	=	parts per million
Rha	=	Rhamnose
s	=	singlet
t	=	triplet
TLC	=	Thin Layer Chromatography
μl	=	microlitre
WA	=	Walker Carcinosarcoma 256 (subcutaneous)
WM	=	Walker Carcinosarcoma 256 (intermuscular)
Xyl	=	Xylose
λ _{max}	=	The wave length at maximum absorption