

สารด้านการกินของแมลงจากรากโศดทะนงแดง

Trigonostemon reidioides Craib

นาย ชีรวุฒิ หวังอำนาจพร



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INSECT ANTIFEEDANTS FROM THE ROOTS OF
Trigonostemon reidioides Craib



Mr. THEERAWUT WANG-AMNAUYPORN

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

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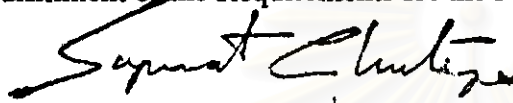
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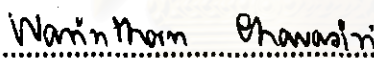
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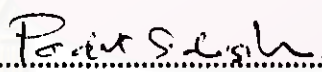
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ผลการทดสอบฤทธิ์ต้านการกินของแมลงงับรากของสิ่งสกัดเฮกเซนและไดคลอโรมีเทนจากรากโลกตะนงแดง กับหนอนผีเสื้อกินใบสิ่งขนาดใหญ่, *Galleria mellonella* ปรากฏว่า มีฤทธิ์ต้านการกินในระดับสูง เมื่อนำสิ่งสกัดทั้งสองมาแยกด้วยคอลัมน์โครมาโตกราฟี สามารถแยกสารได้ 9 ชนิด โดยอาศัยสมบัติทางกายภาพและหลักฐานทางสเปกโทรสโกปี พิสูจน์ทราบได้ว่าสารทั้ง 9 ชนิด คือ ของผสมของสเตอรอยด์เอสเทอร์, ของผสมของกรดไขมันอิ่มตัว, ของผสมของสเตอรอยด์ (β -sitosterol, stigmasterol และ campesterol), acetyl aleuritic acid, 5 α -stigmastane-3,6-dione, Trigonostemone, 5-hydroxy-6,7-dimethoxy coumarin, ของผสมเอไมด์ไขมันอิ่มตัว และ ของผสมสเตอรอยด์ไกลโคไซด์ จากสารทั้งหมดที่แยกได้พบว่า acetyl aleuritic acid และของผสมสเตอรอยด์ เป็นสารหลักที่มีฤทธิ์ต้านการกินของแมลงในระดับสูง นอกจากนี้สามารถแยกสารจากสิ่งสกัดเอทิล แอซีเตตได้อีก 2 ชนิด สูตรโครงสร้างของสารทั้งสองพิสูจน์ทราบได้ว่าเป็น 5-hydroxy-6,7-dimethoxy coumarin กับ 5,7-dihydroxy-6-methoxy coumarin สารชนิดหลังพบว่าเป็นคูมารินที่พบในธรรมชาติชนิดใหม่

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ภาควิชา ๑๐๓
สาขาวิชา ๑๐๓
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The preliminary results of insect antifeedant activity tests of crude hexane and dichloromethane extracts from the roots of *Trigonostemon reidioides* Craib. revealed that they displayed high activity. The separation of both crude extracts by column chromatography led to the isolation of 9 substances. By means of physical properties and spectroscopic data, they were characterized as a mixture of steroidal esters, a mixture of long chain acids, a mixture of steroids, acetyl aleuritic acid, Trigonostemone, 5 α -stigmastane-3,6-dione, 5-hydroxy-6,7-dimethoxy coumarin, a mixture of long chain amides, and a mixture of steroidal glycosides. From all separated substances, acetyl aleuritic acids and a mixture of steroids are two active principles that showed highly active insect antifeedant activity. Furthermore, other two compounds were also isolated from ethyl acetate crude extract. Their structures were identified as 5-hydroxy-6,7-dimethoxy coumarin and 5,7-dihydroxy-6-methoxy coumarin. The latter was found to be a new naturally occurring coumarin.

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สาขาวิชา..... (๒๐๖)
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ลายมือชื่ออาจารย์ที่ปรึกษาร่วม..... -



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List of Abbreviations

br	broad
°C	degree celcius
cm ⁻¹	unit of wavelength
d	doublet (NMR)
DMSO	dimethylsulfoxide
g	gram (s)
GLC	gas liquid chromatography
J	coupling constant
kg	kilogram (s)
wt	weight
NMR	nuclear magnetic resonance
IR	infrared
L	liter (s)
m	multiplet (NMR)
mg	milligram (s)
mL	milliliter (s)
m.p.	melting point
ppm	part per million
s	singlet (NMR)
t	triplet (NMR)
δ	chemical shift
MeOH	methanol
EtOAc	ethyl acetate
R _f	retardation factor