

ฤทธิ์ของอินโดลอัลคาลอยด์จากต้นแคโรลีเห่ลี่ยม

ใน

การลดการเกร็งตัวของกล้ามเนื้อเรียบ



นางสาวเกศินี สร้อยสุวรรณ

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาเภสัชศาสตรมหาบัณฑิต

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ANTISPASMODIC ACTIVITY OF INDOLE ALKALOIDS

FROM *UNCARIA SALACCENSIS*

Miss Gesinee Sroysuwan

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for the Degree of Master of Science in Pharmacy

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By Miss Gesinee Sroysuan
Department Physiology
Thesis Advisor Associate Professor Prasan Dhumma-Upakorn, Ph.D.
Co-Advisor Associate Professor Pavich Tongroach, Ph.D.



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.....*S. Bunnag*.....Dean of Graduate School
(Associate Professor Supradit Bunnag, Ph.D.)

Thesis Committee

.....*S. Jaidee*.....Chairman
(Assistant Professor Sumlee Jaidee)

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.....*Pavich Tongroach*.....Member
(Associate Professor Pavich Tongroach, Ph.D.)

.....*Dhavadee Ponglux*.....Member
(Associate Professor Dhavadee Ponglux, Ph.D.)

หัวข้อวิทยานิพนธ์	ฤทธิ์ของอินโดลอัลคาลอยด์จากต้นเครือสีเหลืองในการลดการเกร็งตัวของกล้ามเนื้อเรียบ
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บทคัดย่อ

อินโดลอัลคาลอยด์ ซึ่งสกัดจากต้นเครือสีเหลือง (*Uncaria salaccensis*) มี 19-epi-3-isoajmalicine (I-1), 3-isoajmalicine (I-2), uncarine B (O-1) และ mitraphylline (O-2) ได้ทำการศึกษาฤทธิ์ของอัลคาลอยด์เหล่านี้ต่อลำไส้ของกระต่าย และหนูตะเภาที่แยกออกมาเพื่อศึกษาถึงฤทธิ์ในการลดการเกร็งตัวของกล้ามเนื้อเรียบและฤทธิ์ในการยับยั้งการหดตัวของหลอดเลือดที่เกิดจาก 5-hydroxytryptamine (5-HT) จากนั้นได้ทำการศึกษาต่อในเส้นเลือดเอออร์ตาที่แยกออกมา พบว่า อัลคาลอยด์ทุกตัวมีฤทธิ์ลดการหดตัวของลำไส้กระต่ายและความตึงขณะพักของลำไส้หนูตะเภา ในลำไส้ของหนูตะเภาที่แยกออกมา I-1 ยับยั้งการเกร็งตัวของกล้ามเนื้อเรียบที่เกิดจาก 5-HT ขณะเดียวกันไม่มีผลต่อการเกร็งตัวของหลอดเลือดที่เกิดจาก carbachol, histamine และ barium I-2 ยับยั้งการเกร็งตัวของหลอดเลือดที่เกิดจากทั้ง 5-HT และ carbachol แต่เห็นผลในการยับยั้งการเกร็งตัวของหลอดเลือดที่เกิดจาก 5-HT ได้มากกว่าขณะเดียวกันไม่มีผลต่อการเกร็งตัวของหลอดเลือดที่เกิดจาก histamine และ barium O-1 และ O-2 ในขนาดที่สูงลดการเกร็งตัวของหลอดเลือดที่เกิดจาก carbachol แต่ไม่มีผลต่อสารตัวอื่นๆ ในเส้นเลือดเอออร์ตาที่แยกออกมา ได้ผลเช่นเดียวกันคือเฉพาะ I-1 และ I-2 สามารถลดฤทธิ์ในการเกร็งตัวของ 5-HT จากผลการทดลองนี้ชี้ให้เห็นว่า อัลคาลอยด์ 2 ตัวคือ I-1 และ I-2 มีคุณสมบัติในการเป็น antiserotonergic โดย I-1 มีความจำเพาะมากกว่า I-2 *

Thesis Title Antispasmodic Activity of Indole Alkaloids from
 Uncaria salaccensis

Name Miss Gesinee Sroysuwan

Thesis Advisor Associate Professor Prasan Dhumma-Upakorn, Ph.D.

Co-Advisor Associate Professor Pavich Tongroach, Ph.D.

Department Physiology

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ABSTRACT

Four indole alkaloids characterized as 19-epi-3-isoajmalicine (I-1), 3-isoajmalicine (I-2), uncarine B (O-1) and mitraphylline (O-2) were isolated from a Thai native plant, *Uncaria salaccensis*. The alkaloids were tested on isolated intestine of rabbit and guinea-pig in order to determine the antispasmodic activity and antagonistic effect on 5-hydroxytryptamine (5-HT). Further test was also performed on isolated aortic strip to study the alkaloids' effects on antiserotonergic properties. The four alkaloids reduced spontaneous movements of rabbit jejunum as well as the resting tension of ileum from guinea-pig. In guinea-pig ileum, I-1 preferentially antagonized spasmodic action of 5-hydroxytryptamine (5-HT), while the contractile responses to carbachol, histamine and barium, were unaffected. I-2, however, reduced contracture induced by both 5-HT and carbachol, although antagonism with higher degree of preference was observed with 5-HT. The responses to histamine and barium were unaffected by I-2. O-1 and O-2 at high doses reduced contracture induced by carbachol, while the contractile responses to 5-HT, histamine and barium were unaffected. The 5-HT induced contraction on aortic strips were also reduced especially

by both of I-1 and I-2. The conclusion has been drawn that the two alkaloids, I-1 and I-2, have antiserotonergic properties, with I-1 being more specific and potent than I-2.

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ABBREVIATION



$^{\circ}\text{C}$	degree celcius
EC_{50}	the concentration which produced 50% inhibition of the control
Fig.	figure
g	gram
h	hour
5-HT	5-hydroxytryptamine (serotonin)
l	liter
M	molar
μM	micromole
%max	percent maximum
min	minute
M.W.	molecular weight
NA	noradrenaline
P	probability
S.E.	standard error
s	second
pA_2	negative logarithm of the molar concentration of the antagonist which causes a 2-fold increase of the agonist concentration to obtain the same response
pD_2	negative logarithm of the molar concentration of the antagonists that produces 50% reduction of the maximal effects obtained with an agonist.



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