ISOLATION AND IDENTIFICATION OF GALANGIN AND OTHER COMPOUNDS FROM *ALPINIA GALANGA* LINNAEUS WILLD AND *ALPINIA OFFICINARUM* HANCE

Nuttaporn Samart

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

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การแยกและการพิสูจน์เอกลักษณ์ของกาแลนกินและสารอื่นจากข่าใหญ่ (*Alpinia galanga* Linnaeus Willd) และข่าเล็ก (*Alpinia officinarum* Hance)

นางสาวณัฐฐาพร สามารถ

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Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for a Master's Degree.

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NUTTAPORN SAMART : ISOLATION AND IDENTIFICATION OF GALANGIN AND OTHER COMPOUNDS FROM *ALPINIA GALANGA* LINNAEUS WILLD AND *ALPINIA OFFICINARUM* HANCE.

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Alpinia Galanga Linnaues Willd and *Alpinia officinarum* Hance, a Thai medicinal plant of family Zingiberaceae, is well-known plant used in Thai traditional medicine as an antibacterial and antiulcer. Moreover it has insecticidal properties. The crude extract of *Alpinia Galanga* Linnaues Willd was preliminary tested and this test did not indicate any traces of the investigated compound (galangin). The chloroform crude extract of *Alpinia officinarum* Hance was purified by column chromatography and preparative thin-layer chromatography to give three pure compounds. Structural elucidation of the isolated compounds was carried out on the basis of spectral analyses, including UV, IR, MS, ^{1}H-NMR and ^{13}C-NMR, as well as comparison with reported values. Two of these were identified as flavonol of flavonoids. They were 3,5,7-trihydroxy flavone (galangin) and 3,5,7-trihydroxy-4'-methoxy flavone (kaempferide). The other was 5,7-dihydroxy-4'-methoxy-3-*O*-*β*-D-glucopyranoside flavone (kaempferide-3-*O*-*β*-D-glucoside), which had not been previously reported in this species.

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CONTENTS

Page

CONTENTS (Continued)

Page

CONTENTS (Continued)

Page

CONTENTS (Continued)

Page

LIST OF TABLES

Table **Page**

LIST OF FIGURES

LIST OF SCHEMES

Scheme **Page**

LIST OF ABBREVIATIONS

^{o}C	degree Celcius
$CDCl_3$	chloroform-d_1
cm	centimeter
cm^{-1}	wave number unit
d	doublet
dd	doublet of doublets
g	gram
g/kg	gram per kilogram
HPLC	high performance liquid chromatography
Hz	Hertz
IR	infrared spectroscopy
J	coupling constant in Hertz
m	multiplet
mg/mL	milligram per milliliter
mL	milliliter
MRSA	Methicillin-resistant *Staphylococcus aureus*
MSSA	Methicillin-susceptible *Staphylococcus aureus*
MS	mass spectrophotometry
nm	nanometer
NMR	nuclear magnetic resonance spectroscopy

LIST OF ABBREVIATIONS (Continued)

ppm	parts per million
PTLC	preparative thin-layer chromatography
q	quartet
s	singlet
t	triplet
TLC	thin-layer chromatography
UV	ultraviolet radiation
UV-Vis	ultraviolet-visible radiation
δ	chemical shift in ppm
λ_{max}	maximum absorption wavelength
μg	microgram
μg/mL	microgram per milliliter
ν_{max}	maximum absorption wavenumber