

การพัฒนาสูตรตำรับยาเม็ดสารสกัดกวาวเครือแดง

นายเพชรพงศ์ เพชร

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาเภสัชศาสตรมหาบัณฑิต

สาขาวิชาเภสัชอุตสาหกรรม ภาควิชาเภสัชอุตสาหกรรม

คณะเภสัชศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2549

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

**FORMULATION DEVELOPMENT OF *BUTEA SUPERBA* EXTRACT TABLETS**

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**A Thesis Submitted in Partial Fullfillment of the Requirements  
for the Degree of Master of Science in Pharmacy Program in Industrial Pharmacy**

**Department of Manufacturing Pharmacy**

**Faculty of Pharmaceutical Sciences**

**Chulalongkorn University**

**Academic Year 2006**

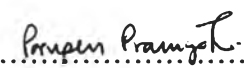
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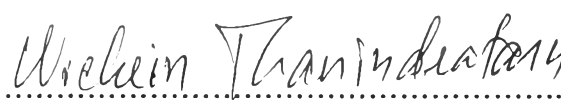
Thesis Title                      FORMULATION DEVELOPMENT OF *BUTEA*  
*SUPERBA* EXTRACT TABLETS  
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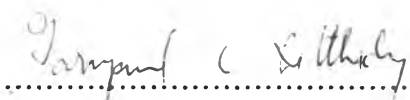
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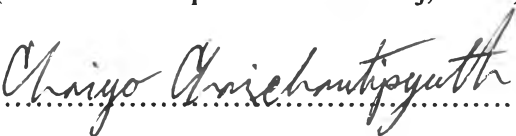
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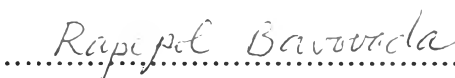
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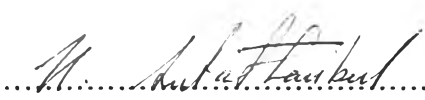
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(FORMULATION DEVELOPMENT OF BUTEA SUPERBA EXTRACT  
TABLETS) อ. ที่ปรึกษา: ศาสตราจารย์ ดร.กาญจน์พิมพ์ล ฤทธิเดช, อ. ที่ปรึกษา  
ร่วม: รองศาสตราจารย์ ดร.ชัยโย ชัยชาญทิพยยุทธ, 112 หน้า.

การพัฒนาสูตรตำรับยาเม็ดสารสกัดกวาวเครือแดง โดยมี Medicarpin (เมดิคาร์ปิน) มาใช้เป็นสารบ่งคุณภาพในวิธีการควบคุมคุณภาพในการพัฒนาสูตรตำรับยาเม็ดสารสกัดกวาวเครือแดง โดยยาเม็ดสารสกัด 2 สูตรตำรับ ประกอบด้วย 1) สารสกัดกวาวเครือแดงใน 50%เอทานอล, แป้งมันสำปะหลัง, แป้งข้าวโพด, อาโวเชล พีเอช 102, แอคโคซอล, แอโรซิล, และ สเตริยริค เอชิต 2) สารสกัดกวาวเครือแดงใน 95%เอทานอล, แป้งมันสำปะหลัง, แอคโคซอล, แอโรซิล, และ สเตริยริค เอชิต ซึ่งทั้ง 2 สูตรตำรับให้แกรนูลที่มีการยึดเกาะและการไหลที่ดี มีกลิ่นหอม และสามารถนำไปตอกอัดเป็นเม็ดได้ เมื่อประเมินคุณภาพของสูตรยาเม็ดที่ได้รับการคัดเลือกทางเคมีฟิสิกส์ พบว่าความแข็ง, ความกรอบน, ความแปรปรวนของน้ำหนักเม็ดยา, การแตกตัวของเม็ดยา, ความสม่ำเสมอของปริมาณสารสำคัญ และการละลายตัวของเม็ดยา มีคุณสมบัติเข้าตามเกณฑ์ของเภสัชตำรับของอเมริกา ฉบับที่ 29 นอกจากนี้ในสูตรตำรับ ยาเม็ดสารสกัดกวาวเครือแดงใน 50%เอทานอล ที่ผ่านการเก็บใน โดแก้วรักษาความชื้นเป็นเวลา 1 ปี 10เดือน พบว่ามีการเปลี่ยนแปลงน้อยมาก โดยเฉพาะปริมาณของปริมาณเมดิคาร์ปิน

ภาควิชา ..... เกษตรศาสตร์ ..... ลายมือชื่อนิติศ ..... พันธพงศ์ ..... พชรรี .....  
สาขาวิชา ..... เกษตรศาสตร์ ..... ลายมือชื่ออาจารย์ที่ปรึกษา ..... พันธพงศ์ ..... พชรรี .....  
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## MAJOR INDUSTRIAL PHARMACY

KEY WORDS: *BUTEA SUPERBA* ROXB. / *BUTEA SUPERBA* EXTRACT TABLETS / FLAVONOID / MEDICARPIN

PETCHPONG PETCHAREE: FORMULATION DEVELOPMENT OF *BUTEA SUPERBA* EXTRACT TABLETS. THESIS ADVISOR: PROFESSOR GARNPIMOL C. RITTHIDEJ, Ph.D., THESIS COADVISOR: ASSOCIATE PROFESSOR CHAIYO CHAICHANTIPYUTH, Ph.D., 112 pp.

Medicarpin were used as active marker to quality control in formulation development of *Butea superba* extract tablets. The investigated 2 formulations of *Butea superba* extract tables were 1) *Butea superba* extract in 50% ethanol, tapioca starch, corn starch, Avicel<sup>®</sup> PH102, Ac-di-sol<sup>®</sup>, stearic acid and Aerosil<sup>®</sup>. 2) *Butea superba* extract in 95% ethanol, tapioca starch, Ac-di-sol<sup>®</sup>, stearic acid and Aerosil<sup>®</sup>. Both formulations showed a good agglomerated granules, flowability, odour, and had excellent compressibility for tableting. The physicochemical properties of selected formulation of *Butea superba* extract tablets such as hardness, friability, weight variation, disintegration, dissolution, content uniformity and active ingredient content were conformed to the specification of USP29. In addition the stability study of 50% ethanol *Butea superba* extract tablets stored in desiccator under ambient condition for 1 year and 10 months showed that the property of tablets were unchanged especially the content of medicarpin.

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Field of study.....	Industrial Pharmacy.....	Advisor's signature.....	Garnpimol C. Ritthidej
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## ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to my thesis advisor, Professor Garnpimol C. Ritthidej, Ph.D. for her excellent meaningful advices, invaluable guidance and encouragement throughout my investigation. Her patience, kindness and understanding are also deeply appreciated.

I am also indebted to Associate Professor Chaiyo Chaichantipyuth, Ph.D., for his meaningful comment, treatment, invaluable guidance and encouragement throughout my thesis.

I wish to express appreciation to Associate Professor Rapepol Bavovada, Ph.D. for his grateful advises, invaluable guidance and interest in my investigation.

I would like to acknowledge the thesis committee as Assistant Professor Wichein Thanindratam, M.Sc. in Pharm., Associate Professor Rapepol Bavovada, Ph.D. and Narueporn Sutanthavibul, Ph.D. for their valuable suggestion and comment.

I am also thankful to all teachers and staffs at the Faculty of Pharmaceutical Sciences, Chulalongkorn University, especially the staff of Department of the Manufacturing Pharmacy, Pharmaceutical Botany, Pharmacognosy, Pharmacology, Pharmaceutical Chemistry and Central laboratory for their assistant and support.

I wish to express my thanks to all my friends in and out the laboratory whose names have not been mentioned for their help and encouragement during experiment.

I wish to express appreciation for finance support of the research grant from Graduate school of Chulalongkorn University.

Finally, I would like to thank my father, my mother, my grandmother, my sister and my cousin for their endless love, kindness, understanding, continuous support, careful, encouragement and cheerfulness throughout my graduate study.

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## LIST OF ABBREVIATIONS

BS	=	<i>Butea superba</i>
°C	=	Degree Celsius
CC	=	Column Chromatography
CDCl <sub>3</sub>	=	Deuterated Chloroform
CH <sub>2</sub> Cl <sub>2</sub>	=	Dichloromethane
cm	=	Centimeter
<sup>13</sup> C NMR	=	Carbon-13 Nuclear Magnetic Resonance
COSY	=	Correlated Spectroscopy
δ	=	Chemical Shift
<i>d</i>	=	Doublet (for NMR spectra)
<i>dd</i>	=	Doublet of Doublets (for NMR spectra)
<i>ddd</i>	=	Doublet of Doublets of Doublets (for NMR spectra)
DEPT	=	Distortionless Enhancement by Polarization Transfer
EIMS	=	Electron Impact Mass Spectrum
EtOAc	=	Ethyl acetate
g	=	Gram
μg	=	Microgram
hr.	=	Hour
<i>hept</i>	=	Heptet (for NMR spectra)
<sup>1</sup> H NMR	=	Proton Nuclear Magnetic Resonance
HMBC	=	<sup>1</sup> H-detected Heteronuclear Multiple Bond Coherence
Hz	=	Hertz
<i>J</i>	=	Coupling Constant
kg	=	Kilogram
L	=	Liter
<i>m</i>	=	Multiplet (for NMR spectra)
m	=	Meter
M <sup>+</sup>	=	Molecular Ion
MeOH	=	Methanol
mg	=	Milligram

MHz	=	Megahertz
min	=	Minute
ml	=	Milliliter
mm	=	Millimeter
<i>m/z</i>	=	Mass to charge ratio
MS	=	Mass Spectrometry
nm	=	Nanometer
NMR	=	Nuclear Magnetic Resonance
<i>s</i>	=	Singlet (for NMR spectra)
<i>t</i>	=	Triplet (for NMR spectra)
TLC	=	Thin Layer Chromatography
%w/w	=	Percentage weight by weight