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## **APPENDICES**

## **Appendix A**

**Preparation of *C. comosa* rhizome, chemical identification, and  
preparation of *C. comosa* suspension**



### **Preparation of *Curcuma comosa* rhizome**

*C. comosa* rhizome was kindly provided by Professor Dr. Apichart Suksamrarn, Faculty of Sciences, Ramkhamhaeng University, Thailand. In brief, dried rhizome of *C. comosa* was collected from Nakornpathom province. A voucher specimen (BKF No. 97298) was deposited at the Forest Herbarium, Royal Forest Department, Ministry of Agriculture and Cooperatives, Bangkok. *C. comosa* rhizomes were sliced and dried at 50 – 60 °C. The dried rhizomes were pulverized before giving to the animals.

### **Chemical identification**

*C. comosa* was characterized by Apichart Suksamrarn et al. (unpublished data). The major constituent in *C. comosa* powder were two diarylheptanoids: 1,7-diphenyl-(6*E*)-6-hepten-3-ol and 1,7-diphenyl-(4*E*,6*E*)-4,6-heptadien-3-ol.

### **Preparation of *C. comosa* suspension**

*C. comosa* suspension for animal administration were prepared daily by dissolving 400 mg of *C. comosa* powder with 1 ml of deionized water to make a concentration of 400 mg/ml of *C. comosa* suspension and mixed before feeding to experimental animals.

## **Appendix B**

### **Preparation of simvastatin**

**Preparation of simvastatin**

Vascor<sup>®</sup> (containing 10 mg simvastatin per tablet manufactured by Biolab Co., Ltd., Samutprakarn, Thailand) was purchased from an accredited drugstore, Bangkok, Thailand. The expired date of drug was checked. Each tablet of simvastatin was divided in half before giving to the animals.

## **Appendix C**

### **Experimental diets**

## Food

1. Standard food for rabbits was purchased from Charoen Pokphand Foods Public Company Limited, Thailand. The composition of the standard food was as following:

Raw protein	17.00%
Raw fiber	17.00%
Raw ash	7.00%
Raw fat	2.5%
Methionine	0.35%
Lysine	0.95%
Calcium	0.85%
Phosphate	0.55%
Sodium	0.30%
Magnesium	0.25%
Vitamin A	30.00 IU/kg
Vitamin D3	1.00 IU/kg
Vitamin E	100.00 IU/kg

2. High-cholesterol diet was the standard food combined with 1.0% cholesterol or 0.5% cholesterol by Charoen Pokphand Foods Public Company Limited, Bangkok, Thailand.

## **Appendix D**

**Experimental animals treatment and samples collection**

### **Experimental animals**

Twelve male New Zealand White (NZW) rabbits of body weight between 1.5 – 2.0 kg were obtained from the National Laboratory Animal Center, Mahidol University, Salaya, Nakornpathom, Thailand. The animals were housed one per cage at the Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand and acclimatized for two weeks before being entered into an experiment. All animals were kept in a controlled humidity room at a constant temperature of  $25 \pm 2$  °C and maintained on 12-hour alternate light-dark cycle. They were allowed to freely access to food and drinking water.

### **Animal treatment**

Twelve NZW rabbits were randomly divided into three treatment groups of 4 rabbits each as following:

1. Group 1: NZW rabbits were given orally with 1.0% cholesterol diet for 1 month. After 1 month, the animals were continually given 0.5% cholesterol diet for 3 months
2. Group 2: NZW rabbits were given orally with 1.0% cholesterol diet for 1 month. After 1 month, the animals were continually given 0.5% cholesterol diet and simvastatin at the dosage of 5 mg/day for 3 months
3. Group 3: NZW rabbits were given orally with 1.0% cholesterol diet for 1 month. After 1 month, the animals were continually given 0.5% cholesterol diet and *C. comosa* at the dosage of 400 mg/kg/day for 3 months

### **Samples collection**

At the end of the treatment, animals were fasted for 12 hours before anesthetized with sodium pentobarbital by intravenous at the dosage of 100 mg/kg before collecting blood. Tissue samples were immediately removed from the body of rabbits, rinsed with PBS buffer pH 7.4 for 3 times, and then stored at -80 °C until analysis of cytokine expression.

### **Appendix E**

- Study Protocol Approval by Ethic Committee of the Faculty of Medicine, Srinakharinwirot University, Bangkok, Thailand
- Study Protocol Approval by Ethic Committee of the Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok, Thailand , 2008





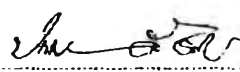
62 หมู่ 7 อำเภอองครักษ์  
จังหวัดนครนายก 26120  
โทร.0-3739-5085 ต่อ 10513

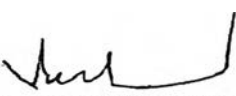
**ใบอนุญาตให้ใช้สัตว์**  
ในงานวิจัย งานทดสอบ งานผลิตชีววัตถุ และงานสอน

เลขที่หนังสือรับรอง 10/2550



ชื่อโครงการวิจัย	การศึกษามูลของสารสกัดว่านชันมฤคต่อการยับยั้งโรคหลอดเลือดแดงแข็งตัวในกระต่าย
	Inhibition of atherosclerosis development in rabbits by crude extracts of <i>Curcuma Comosa Roxb.</i>
ชื่อหัวหน้าโครงการ / หน่วยงานที่สังกัด	ผศ. ดร. ลัดดาวัลย์ นีวทองงาม / ภาควิชาเภสัชวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ
รหัสโครงการ	10/2550
สถานที่ทำการวิจัย	คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ
เอกสารรับรอง	- แบบเสนอโครงการวิจัยเพื่อขอรับการพิจารณา - แบบฟอร์มขอใบอนุญาตใช้สัตว์
รับรองโดย	คณะกรรมการรับนิคมอบและดูแลการใช้สัตว์ทดลอง
วันที่รับรอง	8 พฤศจิกายน 2550
วันหมดอายุ	7 พฤศจิกายน 2551

ใบอนุญาตนี้ให้ไว้เพื่อแสดงว่าคณะกรรมการรับนิคมอบและดูแลการใช้สัตว์ทดลอง คณะแพทยศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ ซึ่งมีหน้าที่กำกับดูแลการใช้สัตว์ ในงานวิจัย งานทดสอบ งานผลิตชีววัตถุ และงานสอนให้เป็นไปตามจรรยาบรรณการใช้สัตว์ของสภาวิจัยแห่งชาติ

ลงนาม   
.....  
(ผู้ช่วยศาสตราจารย์ ดร. ปัทมา ลีวนิช)  
ประธานคณะกรรมการ ฯ

ลงนาม   
.....  
(ศาสตราจารย์ นายแพทย์สมเกียรติ วิมลศิริวิบูล)  
คณบดีคณะแพทยศาสตร์

### Chulalongkorn University Animal Care and Use Committee

<b>Certificate of Project Approval</b>	<input checked="" type="checkbox"/> Original <input type="checkbox"/> Renew
<b>Animal Use Protocol No. 08-33-002</b>	<b>Approval No. 08-33-002</b>
<b>Protocol Title</b>	
Effects of <i>Curcuma comosa</i> rhizome on paraoxonase activity and oxidative stress in rabbits fed with high-cholesterol diet	
<b>Principal Investigator</b>	
Somsong Lawanprasert, Ph.D.	
<b>Certification of Institutional Animal Care and Use Committee (IACUC)</b>	
This project has been reviewed and approved by the IACUC in accordance with university regulations and policies governing the care and use of laboratory animals. The review has followed guidelines documented in Ethical Principles and Guidelines for the Use of Animals for Scientific Purposes edited by the National Research Council of Thailand.	
<b>Date of Approval</b>	<b>Date of Expiration</b>
March 24, 2008	March 24, 2009
<b>Applicant Faculty/Institution</b>	
Faculty of Pharmaceutical Sciences, Chulalongkorn University, Phyathai Rd., Pathumwan BKK-THAILAND, 10330	
<b>Signature of Chairperson</b>	<b>Signature of Authorized Official</b>
	
<b>Name and Title</b>	<b>Name and Title</b>
<b>WITHAYA JANTHASOOT</b> Chairman	<b>RUNGPETCH SAKULBUNRUNGSIL, Ph.D.</b> Associate Dean (Research and Academic Service)
<p><i>The official signing above certifies that the information provided on this form is correct. The institution assumes that investigators will take responsibility, and follow university regulations and policies for the care and use of animals.</i></p> <p><i>This approval is subjected to assurance given in the animal use protocol and may be required for future investigations and reviews.</i></p>	

## VITAE

Mr. Puttavee Charoenwanthanang was born on November 30, 1985 in Bangkok, Thailand. He graduated with a Bachelor of Science in Pharmacy (First Class Honours) in 2008 from Faculty of Pharmaceutical Sciences, Chulalongkorn University, Thailand.

