

การศึกษาตำรับยาผสมโคคลานสูตรที่3 เพื่อลดอาการปวดของข้อเข่าเสื่อมในทางการแพทย์แผนไทย  
A STUDY OF COCLAAN MIXTURE RECIPE VOLUM 3 FOR PAIN RELIEVING KNEE  
OSTEOARTHRITIS IN THAI TRADITIONAL MEDICINE

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### บทคัดย่อ

ตำรับยาผสมโคคลานสูตรที่3เป็นยาอยู่ในบัญชียาหลักแห่งชาติ ในยา100กรัม ประกอบด้วยเถาโคคลานเถาเอ็นอ่อนแก่นฝางและเถาสะค้านหนักสิ่งละ 20 กรัมโตไม้ไม่รู้ล้มและต้นทองพันชั่งหนักสิ่งละ10กรัมมีสรรพคุณบรรเทาอาการปวดเมื่อยตามร่างกาย บทความนี้มีวัตถุประสงค์เพื่อศึกษาสรรพคุณเภสัชของตำรับยาผสมโคคลานสูตรที่3เพื่อช่วยลดอาการปวดและอักเสบของข้อเข่าเสื่อม (Osteoarthritis) ในทางการแพทย์แผนไทย วิธีการศึกษาในครั้งนี้ ใช้ขบวนการวิจัยเชิงคุณภาพ (Qualitative Research) ประกอบด้วยการศึกษาและการวิเคราะห์ข้อมูลจากเอกสารทางวิชาการและผลงานวิจัยที่เกี่ยวข้องกับส่วนประกอบของตำรับยาผสมโคคลานสูตรที่3 ในด้านทฤษฎีการแพทย์แผนไทย ข้อมูลทางวิทยาศาสตร์ ฤทธิทางเภสัชวิทยาและการศึกษาทางคลินิก ผลจากการศึกษา เครื่องยามีสรรพคุณเภสัชดังนี้ (1) เถาโคคลาน (Coclan Vine) ชื่อสามัญ: Cocculus ชื่อวิทยาศาสตร์: *Mallotus Repandus* (Willd.) เป็นพืชในวงศ์ Euphorbiaceae มีสารสำคัญคือ Bergenin ช่วยต้านการอักเสบและต้านอนุมูลอิสระช่วยบรรเทาอาการปวดเมื่อยตามร่างกาย แก้ปวดหลัง ขับปัสสาวะ บำรุงโลหิต (2) เถาเอ็นอ่อน (En-onh Vine) ชื่อสามัญ: *Cryptolepis buehneri* ชื่อวิทยาศาสตร์: *Cryptolepis dubia* (Burm.f.) M.R. Almeida แก้อาการปวดเมื่อยช่วยให้เส้นเอ็นแข็งแรง แก้เคล็ดขัดยอก มีฤทธิ์ทางเภสัชวิทยาปกป้องกระดูกอ่อน ต้านการอักเสบ บรรเทาการปวดกล้ามเนื้อ (3) แก่นฝาง (Khaen-phang) ชื่อสามัญ: Sappan Core ชื่อวิทยาศาสตร์: *Caesalpinia sappan* L. มีสารสำคัญคือ Brazillin ช่วยระงับการอักเสบในร่างกายแก้พิษ แก้ธาตุพิการ ช่วยให้เลือดไหลเวียนสะดวก บำรุงร่างกาย (4) เถาสะค้าน (Sakhan Vine) ชื่อสามัญ: Piper ชื่อวิทยาศาสตร์: *Piper ribesoides* Wall. เป็นตัวยาประจำธาตุลม ช่วยแก้ลมในกองธาตุซึ่งเป็นสมุฏฐานของการเกิดโรค มีฤทธิ์ลดอาการอักเสบและระงับอาการปวด (5) ทองพันชั่ง (Thong-pan-chang) ชื่อสามัญ: White crane flower, Dainty Spurs ชื่อวิทยาศาสตร์: *Rhinacanthus nasutus* Kurz มีสารสำคัญคือ Rhinacanthin และ Oxymethlanthraquinone ช่วยลดอาการอักเสบ แก้พิษไข้ แก้เคล็ดขัดยอก มีฤทธิ์ฆ่าเชื้อโรคได้ (6) โตไม้ไม่รู้ล้ม (Doh-mi-rou-lomh) ชื่อสามัญ: Prickly-leaved elephant's foot ชื่อวิทยาศาสตร์: *Elephantopus Scaber* L. แก้ปวดเมื่อย ขับปัสสาวะ มีฤทธิ์แก้ปวดและแก้อักเสบ สรรพ โรคข้อเข่าเสื่อมในทางการแพทย์แผนไทย จัดเป็นโรคลมชนิดหนึ่งคือโรคจับโปงเข่า ซึ่งมีอาการอักเสบของข้อเข่า ทำให้มีอาการปวด บวม แดง ร้อนและอาจมีไข้ร่วมด้วย ในการรักษาด้วยตำรับยาผสมโคคลานสูตรที่ 3มีข้อมูลวิทยาศาสตร์อ้างอิงซึ่งมีสรรพคุณในการช่วยลดการอักเสบและระงับการปวดของโรคข้อเข่าเสื่อม (Knee Osteoarthritis)

คำสำคัญ โรคข้อเข่าเสื่อม ตำรับยาผสมโคคลาน ยาบัญชียาหลักแห่งชาติ

## Abstract

The Coclan Mixture: formula 3 medicine has medical properties of relieved body pains . Its 100 grams included 20 grams each of Coclaan Vine, CryptolepisBuchanani, Sappan Core, Sakhan, and also 10 grams each of White crane flower (stem) and Prickly-leaved elephant's foot. The objective of this article is to study the medical property of “Coclaan (Crawling Bull) Mixture recipe: Formula 3 of National List of Essential Medicines” for knee osteoarthritis pain and inflammatory relieving in Traditional Thai Medicine. **The methodology** used in this study includes qualitative research and documentary research procedures to derive the scientific results in pharmacology properties to support the medical healing properties. The result from reviewing literatures indicated that (1) **Coclaan Vine** (Common Name: Cocculus, Scientific Name: *Mallotus Repandus* (Willd.)) has major substance of Bergenin which have medical properties of anti-inflammatory and anti-free radical. It helps relieving body pains and aches, heals diuresis and hematic. (2) **En-onh Vine** (Common Name: Cryptolepisbuchanani, Scientific Name: *Cryptolepis dubia* (Burm.f.)) M.R. Almeida CryptolepisBuchanani relieves body ache and pain, strengthening tendon, protect cartilage, anti-inflammatory, and muscular pain suspension. (3) **Khaen-phang** (Common Name: Sappan Core, Scientific Name: *Caesalpiniasappan* L.) has Brazillin which help inside body anti-inflammatory. It heals wasting disease, dyspepsia, and improves blood circulation. (4) **Sakhan Vine** (Common Name: Piper, Scientific Name: *Piper ribesoides* Wall.) has medical properties for wind element medicine. It heals wind caused diseases, anti-inflammatory and pain suspension. (5) **Thong-pan-chang** (Common Name: White Crane Flower, Dainty Spurs, Scientific Name: *Rhinacanthus nasutus* Kurz) has Rhincathin and Oxymethlanthraquinone which heal inflammatory, fever and sprain. It is also an anti-pathogen. (6) **Doh-mi-rou-lomh** (Common Name: Prickly-leaved elephant's foot, Scientific Name: *Elephantopus Scaber* L.) can reduce body ache and pain. It's also reduce diuresis and inflammatory. In Summary, the knee osteoarthritis in Traditional Thai Medicine is assigned as a kind of wind disease. It's included an inflammatory in knee joints which have the effects of pain, red swelling, and fever. The Coclaan Mixture Recipe Formula 3 has sufficient scientific data to support that it can reduce inflammatory, fever and relieve pain of the knee osteoarthritis.

**Keyword:** Knee Osteoarthritis, Coclaan Mixture Recipe, National List of Essential Medicines

## Introduction

Knee osteoarthritis in Thai Traditional Medicine is called “Lom Jub-Pong-Khao” (Wind knee joint disease). It is divided into “Lom Jub-Pong-Khao Nam” (Wet wind knee joint disease) and “Lom Jub-Pong-Khao Hang” (Dried wind knee joint disease). It is the most founded joint disease among the world's population, especially for the person aged 50 years and older. It is classified as bone and joint system disease caused by the knee joint deterioration. If it is not correctly treated, there's a risk of collapsing the joint bones. This

will lead to the patient's body structure changes, for example, bowleg, twisted leg, and caused severe pain and limited body movement in daily life. If the symptom is still mild, there are many kinds of treatment available such as massage, hot pack, muscle exercise and taking medicine such as Coclan Mixture Recipe Formula 3.

The Coclan Mixture Recipe Formula 3 medicine has medical properties of relieve pains and reduce inflammatory of knee osteoarthritis. The Mixture Recipe's 100 grams included 20 grams each of Coclan Vine, Cryptolepis buchanani, Sappan Core, Sakhan Vine, and also 10 grams each of White crane flower (stem) and Prickly-leaved elephant's foot. The infused of this oral medicine shall be 1 gram per 120-200 ml. of hot water and taken 3 times a day before meals.

### **Objectives**

To study medical property of Coclan Mixture Recipe Formula 3 in the (Thai) National List of Essential Medicines for reduce pain and inflammatory in knee osteoarthritis.

### **Scope**

Review literatures include Coclan Mixture Recipe Formula 3's pharmacology effect, clinical pathology in relation to osteoarthritis of the knee in Thai Traditional Medicine based on scientific data

### **Methodology**

The methodology used in this study includes qualitative research using studying system methodology, analyzing data from periodical scientific literatures and documentary research work data. The study is also emphasize using standardize research methodology, review thinking trends and theories. It is also uses literatures related to the Coclan Mixture Recipe Formula 3 as part of the (Thai) National List of Essential Medicines to derive the scientific results in pharmacology properties to support the medical healing properties. In which the important knowledges and related procedures are used as follows.

1. Scientific Data, Pharmacology Theories and Clinical Study related to the ingredients of the Coclan Mixture Recipe Formula 3.

2. Thai Tradition Herbal Medicine theorem, its pharmacology properties and the developing basis of knee osteoarthritis.

3. Others related research works

As for the research tool and procedure used in research study design, this study has derived steps as follow: study and research related scientific materials, analyze data from those sources of knowledge, summarize and define the scientific properties related to the tradition Thai medicine properties. The data collections are from multiple sources: scientific literature, research work results, some text book for secondary data. These data are based

on the primary and secondary relationship to the Coclan Mixture Recipe Formula 3 in the point of view of Tradition Thai medicine, scientific data, pharmacology properties and clinical study. These relevant scientific data and its summaries results will be analyzed and used to derive its relationship to the tradition Thai medicine properties.

The detailed results of Coclan Mixture Recipe Formula 3's ingredients study are as follows.

1. **Coclan Vine** Common Name: Cocculus Scientific Name: *Mallotus repandus* (Willd.) Mull. Arg Family: Euphorbiaceae

Image 1: Coclan



Coclan is the vine species plant. Pharmacology information has indicated that its chemical element: Triterpene, Isocoumarin (bergenin), Diterpene Lactone (mallotucin C, D and teucvin), mallorepine, water and root extract from Coclan, have medical properties for inflammatory healing and cancer protection. In animal testing, there are testings for the pain healing and inflammatory healing with Writing test and Formalin test in male rat. The result indicated that Coclan extract, Bergenin, has a medical property to heal pain and inflammatory. For pharmacology property, it can heal the body pains and aches, backache, lumbago, tight pain, wasting disease, kidney disability, fever, diuresis and hematic.

Image 3: En-onh Vine

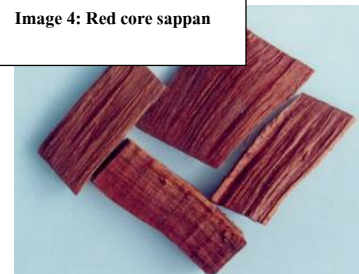


1. **En-onh Vine** Common Name: Cryptolepis buchanani Scientific Name: *Cryptolepis buchanani* Roem. & Schult. Family: Asclepiadaceae Its wood is hard with white latex. Finding from the pharmacology study, *Cryptolepis buchanani* can suspend pain, anti-inflammatory, antibacterial, cartilage bone protection and liver protection. Moreover, *Cryptolepis buchanani* is also the major component in Coclan Mixture recipe for muscular and bone pain healing herbs according to 2015 National List of Essential Medicines. In the toxicity study of *Cryptolepis buchanani* on white blood cell study in rat and in test tube, it has found that ethanol rough extract from *Cryptolepis buchanani* has no toxicity on all cell types. Its medical properties are pains and aches healing, tight pain, and sprain healing.

## 2. Khaen-phang

Common Name: Sappan Core Scientific Name: *Caesalpinia sappan* Linn. Family: Leguminosae Sappan is divided as 2 types: Red core sappan and Yellow core sappan. In chemical compound of Sappan core, it has been found flavonoid and sterols substances with medical properties included clinical healing, anti-inflammatory. Brazilin, an extract of Sappan core by methanol, has a property of anti-inflammatory in rats. For pharmacology properties, Sappan has effect of hematic, disability lung healing, aphthousulce healing, astringent property, diarrhea healing, dyspepsia healing, hemorrhoids healing, expectorant, cough syrup, menstruation release, lady hematic, nose bleed healing, blood

Image 4: Red core sappan



cooling, and yaws healing. Sappan core mixture with water can be adapted for external medicine to treat some skin diseases, antibacterial, and pus excrete. Sappan core in boiled water can be used as the red color for U-thai water.

3. **Sakhan Vine** Common Name: Piper Scientific name: *Piper Interruptum* Opiz, *Piper Ribesoides* Wall Family: Piperaceae Sakhan has medical properties of inflammatory healing and pain suspension. In the pain suspension experiment with ICR spicy male rats, it founded all extract from Sakhan can suspend painful effecting in late phase better than early phase, which is same standard of aspirin and morphine. For the pharmacology properties, it has spice taste, wind disease medicine, wind caused disease healing, intestine gas excretion, colic healing, dyspepsia nourishment and healing.

Image 6: Dried Sakhan Vine



4. **Thong-pan-chang** Common Name: White crane flower Scientific Name: *Rhinacanthus nasutus* (Linn.) Kurz. Synonym Scientific Name: *Rhinacanthus Communis* Nees Family: Acanthaceae In chemical compound, the major substances are rhinacanthin and oxymethylantraquinone. The pharmacology properties are included ringworm and tinea healing, rash symptom healing, fever healing, Cutaneous larva migrans (CLM) healing, alopecia protection, abscess healing, toxicity healing, some lumpy skin disease.



Image 7: Thong-pun-chang

- 6 **Prickly-Leaved Elephant's Foot** Common Name: Prickly-Leaved Elephant's Foot Scientific Name: *Elephantopus scaber* Linn. Family: Asteraceae The chemical compounds are included sesquiterpene lactones and sesquiterpene glycosides. Moreover, it has been found the important steroid such as stigmaterol, withanolide, alkaloid and flavonoids. For the pre-clinic research, the alcohol extract of Prickly-leaved elephant's foot



Image 9: Doh-mi-rou-

has medical properties included bacterial prohibition, cancer protection, liver protection, anti-inflammatory in the tested rats, and reduce glucose level (3). The pharmacology properties are included tasteless, diuresis and autoerotism. The boiled leaf can be eaten as ascaris vermifuge. The leaf milled with pepper is used for vomit and toothache healing, autoerism nourishment, diuretic, poor lymph disorder healing, fever healing, dysentery healing, jaundice healing, cough healing, heart nourishment, tuberculosis healing, beriberi healing and women venereal diseases healing.

## Result

Coclan Mixture Recipe Formula 3's analysis are separated into 2 issues as follow:

### 1. Scientific data and medical properties of the ingredients

The 6 main ingredients data and its properties are listed in the table below.

Herbal Medicine	Pharmacology properties	Thai Tradition Medical
1. Coclan Vine This recipe uses “Coclan”. Common Name: Cocculus Scientific Name: <i>Mallotusrepandus</i> (Willd.) Mull. Arg. Family: Euphorbiaceae Taste: Bore	1. Bergenin – anti-inflammatory for the testing in rats by Writing and Formalin test 2. Triterpenes and Mallorepine – anti-inflammatory substance in rats	Pains and aches healing, backache healing, lumbago healing, tight pain healing, wasting disease healing, kidney disabilityhealing, fever healing, diuresis and haematic
2. En-onh Vine Common Name: CryptolepisBuchanani Scientific Name: <i>Cryptolepisdubia</i> (Burm.f.) M.R.Almeida Family: Apocynaceae Taste: Bitter	Chemical Compound has 2 major groups: Alkaloids and Cardenolides : Chondroprotective activity Anti-bacterial activity Anti-Inflammatory Analgesic activity	Pains and aches healing, tight pain healing,tendons strengthen, sprain healing
3. Khaen-phang Scientific Name: Sappan Core <i>Caesalpiniasappan</i> L. Family: Fabaceae orLeguminosae Taste: Acerbity Bitter Sweet	1. Brazilin – heart nourishment 2. Core – it has found essential oil having a-l-phellandrene and oeimene, brasilein, brazilin, phellandrene, ocimene, sappanin, and tannin	Diarrhea healing, dyspepsia healing, apthousulce, nose bleed healing, cough syrup, blood cooling, pains and aches healing,
4. Sakhan Vine Common Name: Piper Scientific Name: (1) <i>Piper interruptum</i> Opiz (2) <i>Piper ribesoides</i> Wall	1. Inflammatory healing study with Sprague-Dawley male rat 2. The pain suspension formalin test with ICR	carminativeintestine, colic healing, elements tonic,dyspepsia healing, wind diseases healing, and wind caused disease healing

Herbal Medicine	Pharmacology properties	Thai Tradition Medical
Family: Piperaceae Taste: Spice	spicy male rats has can suspend pain.	
5. Thong-pan-change Common Name: White crane flower Scientific Name: <i>Rhinacanthusnasutus</i> (L.) Kurz Family: Acanthaceae Taste: Bore	Major compounds – Rhinacqnthin and oxymethylantraquinone	Skin rash healing, dieresis, fever healing, poor lymph disorder healing and body nourishment
6. Doh-mi-rou-lomp Common Name: Prickly-leaved elephant's foot Scientific Name: <i>Elephantopusscaber</i> L. Family: Acanthaceae or Compositae Taste: Tasteless	Chemical compounds – sesquiterpene lactones, sesquiterpene, glycosides, triterpenes, steroids, alkaliode and flavonids (3) It has properties of anti-bacterial, anti-viruses, anti-inflammatory	Body pains and aches healing, backache healing, lumbago healing, tendons relaxant, blowing healing, urinate disorder, wasting disease healing, sweat excretion, autoerism nourishment.

## 2. Tradition Thai Medicine Value

The Coclan Mixture Recipe Formula 3's tradition Thai medicine value are explained below. The Mixture Recipe has dominant taste as mild and spicy. The overall Thai Traditional Medical healing properties are muscle and tendons pains healing, anti-inflammatory, fever healing, waste excretion, hematic, blood and body nourishment. For diagnosis and analysis on Tradition Thai Medicine, there was an investigation on patients to find element cause, seasonal cause, age cause, time cause, geographic cause, 8-type diseases causes and external body check of the knee osteoarthritis causes analysis. Also the knee osteoarthritis maybe caused by restricted blood circulation and wind obligation. The symptoms are included muscle and bone pain, muscle, fascia and knee tendons swelling, crepitus and stiffness when moving.

## Summary and Recommendation

In the study of Coclan Mixture Recipe Formula 3 for osteoarthritis of knee pain relieving and inflammatory healing as Thai Traditional Medicine, there are definite scientific data of pharmacology properties supporting the pain relieving, anti-inflammatory and healing results. Some clinical study also showed support for the safety of using this medicine instead of NSAIDs. Since this medicine is still used in a form of a boiled water medicine, it should be

developed into the extract capsule for widely usage. Moreover, an additional clinical research should be done and well results would be published to provide confident to the public. As more populations are aging and most will have this natural chronic disease at some point, the medicine will be helpful to our aging citizens and also beneficial to our national economy according to the government policy as well.

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