การศึกษาวิเคราะห์พิกัดยาสมุนไพรในคัมภีร์สรรพลักษณะ สรรพคุณ แลมหาพิกัด เปรียบเทียบกับพิกัดยาในบัญชียาหลักแห่งชาติ พิกัดยาในคลินิกอายุรเวทแพทย์แผนไทยประยุกต์ ศิริราช และหลักฐานเชิงประจักษ์

An Analytical Study of Herbal Formulation Groups (Phikat) in the Sapphalaksana Sapphakhun Lae Maha Phikat Scripture Compared with Phikat in the Thai National List of Essential Medicines, the Applied Thai Traditional Medicine Ayurvedic Clinic at Siriraj Hospital, and Their Scientific Evidence

นิพนธ์ต้นฉบับ **Original Article**

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บทคัดย่อ

วัตถุประสงค์: เพื่อเปรียบเทียบพิกัดยาสมุนไพรใน 1) คัมภีร์สรรพลักษณะ สรรพคุณ แลมหาพิกัด กับ 2) ประกาศคณะกรรมการพัฒนาระบบยาแห่งชาติเรื่องบัญชียาหลักแห่งชาติด้านสมุนไพร และ 3) ตำรับยาของคลินิกอายุรเวทแพทย์แผนไทยประยุกต์ ศิริราช ~~(2) เพื่อทวนสอบองค์ความรู้เกี่ยวกับพิกัดยาสมุนไพรที่มีการบันทึกไว้ในคัมภีร์การแพทย์แผนไทยดั้งเดิมกับความรู้เรื่องพิกัดยาสมุนไพรในปัจจุบัน (3) รวบรวมหลักฐานเชิงประจักษ์ของพิกัดยาและสมุนไพรในพิกัดยาเพื่อนำข้อมูลที่ได้ไปใช้ประโยชน์และสร้างความเชื่อมั่นในการทำเวชปฏิบัติทางการแพทย์แผนไทย~~ **วิธีการศึกษา:** การวิจัยเชิงคุณภาพที่เปรียบเทียบพิกัดยาในเอกสาร 3 แหล่ง คือ 1) คัมภีร์สรรพลักษณะ สรรพคุณ แลมหาพิกัด 2) ประกาศคณะกรรมการพัฒนาระบบยาแห่งชาติเรื่องบัญชียาหลักแห่งชาติด้านสมุนไพร และ 3) ตำรับยาในคลินิกอายุรเวทแพทย์แผนไทยประยุกต์ ศิริราช แล้วสืบค้นข้อมูลจากหลักฐานเชิงประจักษ์เฉพาะพิกัดยาที่ตรงกันในฐานข้อมูล PubMed และ Sci-Hub โดยใช้คำค้นจากชื่อของพิกัดยาและชื่อวิทยาศาสตร์ นับพิกัดและหมวดหมู่ที่พบด้วยโปรแกรม MS Excel และนำเสนอสถิติเชิงพรรณนา **ผลการศึกษา:** พบพิกัดยาในคัมภีร์สรรพลักษณะฯ 96 พิกัด จำแนกหมวดหมู่พิกัดยาได้ 10 กลุ่ม กลุ่มที่พบมากสุด คือ พิกัดยา 3 สิ่ง (34%) ตามด้วยจุลพิกัด (32%) และน้อยสุดคือพิกัดยา 2 สิ่ง (1%) ส่วนในบัญชียาหลักแห่งชาติฯ มี 30 พิกัดยาใน 41 ตำรับ (40.59%) โดยเป็นพิกัดตรีกฏุกมากที่สุด (12 ตำรับ, 29.26%) ตามด้วยพิกัดเบญจกลูใน 7 ตำรับ (17.10%)
ผลการเปรียบเทียบพิกัดยาจากคัมภีร์ฯและบัญชียาหลักแห่งชาติตรงกัน 20 พิกัด แสดงให้เห็นถึงความสัมพันธ์ของข้อมูลจากทั้งสองแหล่ง

ผลการเปรียบเทียบพิกัดยาจากคัมภีร์ฯกับบัญชียาหลักแห่งชาติฯและคลินิกอายุรเวทฯ ตรงกัน 4 พิกัด คิดเป็น 4% ของพิกัดในคัมภีร์ฯ และ 13% ของพิกัดยาในบัญชียาหลักแห่งชาติฯ พิกัดยา 4 พิกัด มีข้อมูลเวชศาสตร์เชิงประจักษ์ 3 พิกัด เป็นงานวิจัยในระดับคลิก 2 พิกัด คือ ตรีผลาและเบญจกูล ไม่พบงานวิจัยของพิกัดเกสรทั้ง 5 ผลการสืบค้นหลักฐานเชิงประจักษ์ของสมุนไพรที่เป็นส่วนประกอบในตำรับทั้ง 4 พิกัด ไม่พบงานวิจัยในระดับคลินิก แต่พบงานวิจัยในหลอดทดลองและสัตว์ทดลอง ซึ่งสามารถใช้เป็นแนวทางในการทำเวชปฏิบัติได้ **สรุป:** ผลการศึกษาวิเคราะห์และเปรียบเทียบพิกัดยาสมุนไพรที่พบในคัมภีร์สรรพลักษณะ สรรพคุณ แลมหาพิกัด กับพิกัดยาในบัญชียาหลักแห่งชาติฯ และในคลินิกอายุรเวทแพทย์แผนไทยประยุกต์ ศิริราช แสดงให้เห็นการนำองค์ความรู้เกี่ยวกับพิกัดยาสมุนไพรที่มีการบันทึกไว้ในคัมภีร์การแพทย์แผนไทยในอดีตมาใช้อย่างเป็นรูปธรรมในปัจจุบัน จากหลักฐานที่พบพิกัดยาที่เป็นส่วนประกอบของตำรับยาในบัญชียาหลักแห่งชาติและพิกัดยาที่ถูกพัฒนาขึ้นเพื่อใช้รักษาคนไข้จริงในคลินิกอายุรเวทแพทย์แผนไทยประยุกต์ ศิริราช สามารถนำข้อมูลที่ได้ไปใช้ประโยชน์ในการทำเวชปฏิบัติการแพทย์แผนไทยได้ และพบว่ายังมีพิกัดยาอีกจำนวนมากที่ควรได้รับการพัฒนาเพื่อใช้ประโยชน์ต่อไปในอนาคต

คำสำคัญ: พิกัดยา, สมุนไพร, คัมภีร์สรรพลักษณะ สรรพคุณ แลมหาพิกัด, บัญชียาหลักแห่งชาติ, คลินิกอายุรเวท

Abstract

Objective: (1) To study, analyze and compare the dosages of herbal medicines found in Sapphalaksana Sapphakhun Lae Maha Phikat Scripture, the dosages in the National List of Essential Medicines, and the dosages used in the Applied Thai Traditional Medicine Clinic, Siriraj Hospital. (2) To verify the knowledge about herbal medicine formulas that have been recorded in the traditional Thai medical scripture with the knowledge about herbal medicine formulas in the present day, including. (3) Collect empirical evidence of herbal medicine formulas in order to use the information obtained to benefit and build confidence in the practice of Thai traditional medicine. **Method:** This is a qualitative research study utilizing three primary sources: the Sapphalaksana Sapphakhun Lae Maha Phikat Scripture and the medicinal formulas listed in the National Drug System Development Committee's announcement. The collected data was then compared and used to search databases of medicinal formulas used in the Siriraj Applied Thai Traditional Medicine Clinic and to collect evidence of interesting herbal medicine formulas in the PubMed database. **Results:** 96 medicinal formulas were found in the Sapphalaksana Sapphakhun Lae Maha Phikat Scripture These formulas can be categorized into 10 groups. The most common group is the 3-herb formulation group (34%), followed by the "Jula-Phikat" formula (32%), and the least common is the 2-herb formulation group (1%). The "Trichataka" formula is the same as the "Trichat" formula. The “Tri-kesaramat”and “Tri-kesormas” formulas are the same. Analysis of drug classifications found in the National List of Essential Medicines revealed that 41 (40.59%) out of 101 formulates (100%) contained these classifications as ingredients. Of these 41 formulates, 30 contained the Tri-Katu classification (12 formulates, 29.26%), followed by the Benjakul classification (7 formulates, 17.10%). A comparison of drug dosages from the Thai Medical Code and the National List of Essential Medicines revealed a match in 20 dosage categories, demonstrating the correlation between the information from both sources. A comparison of drug dosages from the Thai medical texts, the National List of Essential Medicines, and Ayurvedic clinics revealed matching dosages in 4 categories, representing 4% of the dosages in the medical texts and 13% of the dosages in Ayurvedic clinics. A search of evidence-based medical literature revealed three research areas: two at the clinical level, concerning Triphala and Benjakul; and no research was found

on the five pollen-based herbal formulas. A search for empirical evidence on the herbs used in the four traditional Thai formulations revealed no clinical research, but laboratory and animal studies were found, which can be used as a guideline for medical practice.

Conclusion: The results of a study analyzing and comparing the herbal medicine formulations found in the ancient Thai medical scripture, "Sapphalaksana Sapphakhun Lae Maha Phikat Scripture" with the formulations in the National List of Essential Medicines and the herbal medicine list of the Siriraj Applied Thai Traditional Medicine Clinic, demonstrate the concrete application of knowledge about herbal medicine formulations recorded in ancient Thai medical scripture in the present day. Based on the evidence found in the drug formulations listed in the National List of Essential Medicines and those developed for actual patient treatment in the Siriraj Applied Thai Traditional Medicine Clinic, the data can be utilized in the practice of Thai traditional medicine. It was also found that many more drug formulations should be developed for future use.

Keywords: Herbal formulation groups, Phikat, Herbs, Sapphalaksana Sapphakhun Lae Maha Phikat Scripture, a national list of essential medicines, Ayurvedic Clinic

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Introduction

Thai Traditional Medicine (TTM) has long served as an important healthcare system for the Thai population from ancient times to the present day. In recent decades, various higher education institutions in Thailand have established formal academic programs in Thai Traditional Medicine and Applied Thai Traditional Medicine. These programs provide systematic professional training that encompasses the 4 major domains of TTM knowledge: Thai traditional medicine, Thai traditional pharmacy, Thai traditional therapeutic massage, and Thai traditional midwifery.[1] These bodies of knowledge have historically been documented and preserved in numerous classical medical scriptures. Thai traditional pharmacy, in particular, focuses on medicinal herbs and is structured around 4 fundamental principles: (1) pharmaceutical materials, which concern the sources of medicinal substances including plant, animal, and mineral materials; (2) therapeutic properties, which describe the tastes and therapeutic properties of herbs, comprising 9 medicinal tastes—namely astringent, sweet, oily, salty, sour, bitter, nauseating, pungent, and fragrant —as well as the taste of the whole remedy called “Rot Prathan” comprising 3 tastes—namely hot, cold, and gentle; (3) herbal groupings called “Phikat”, which refer to the categorization of medicinal herbs into specific groups; and (4) pharmaceutical compounding, which involves the preparation and formulation of herbal medicines.[2] These principles constitute essential foundations for clinical practice in Thai Traditional Medicine, particularly in the formulation and preparation of herbal remedies tailored to individual patients.

The present study focuses specifically on herbal groupings (Phikat), a concept within Thai traditional pharmacy that refers to the classification of 2 or more medicinal herbs into a defined group under a single designation. This categorization facilitates the systematic use of herbal groups as components in herbal formulations. For example, Phikat Benjakul is a commonly used herbal grouping that appears in several traditional formulations such as Ya Hom Inthajak and Ya Hom Nawagoth, which are widely used household remedies and are also included in the Thai National List of Essential Medicines (NLEM). This study aims to investigate herbal groupings recorded in classical Thai medical literature and to examine whether these groupings continue to be utilized in contemporary practice. Specifically, herbal groupings were analyzed from 3 sources. The first source is the Sapphalaksana Sapphakhun Lae Maha Phikat scripture from the Royal Medical Textbook of King Rama V, preserved by the National Library of Thailand under the Fine Arts Department.[3] This scripture is considered one of the oldest and most comprehensive references on Thai traditional pharmacy. It was compiled, revised, and systematized under the royal initiative of King Rama V and has been officially endorsed by the Thai Traditional Medical Council as a reference text for education, clinical practice, and professional examinations in Thai Traditional Medicine.[4] To determine whether the herbal groupings recorded historically remain in use today, the findings from this scripture were compared with two contemporary sources. The second source is the Thai NLEM (Herbal Medicines) announced by the National Drug

System Development Committee in 2022[5] and its subsequent revision in 2025 under the Ministry of Public Health.[6] These documents serve as important references for clinical practice among Thai traditional medicine practitioners and applied Thai traditional medicine practitioners. The third source is the herbal medicine inventory list of the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic, specifically the daily herbal medicine stock checklist recorded in 2025.[7] This research extends previous work on herbal groupings conducted in a master's thesis by Thappathep Thipyacharoentham, which documented herbal groupings only from the Sapphalaksana Sapphakhun Lae Maha Phikat scripture.[4] However, that study did not include comparative analysis with the NLEM or with herbal medicines currently used in clinical practice at the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic, nor did it incorporate supporting evidence from contemporary sources. The present study therefore expands upon the earlier research by incorporating comparative analysis, additional data sources, and further interpretation of the findings.

The results of this study are expected to support and validate the contemporary application of knowledge regarding herbal groupings in Thai Traditional Medicine. Furthermore, the findings may serve as valuable academic resources for teaching and learning about herbal groupings, enhance confidence in applying these concepts in clinical practice, and provide a foundation for future research and development in the field.

Objectives and Methods

Objectives

The objectives of this study were:

1. To analyze and compare herbal groupings (*phikat*) found in the Sarpakunaksin text scripture with those listed in the NLEM (Herbal Medicines) announced by the National Drug System Development Committee, and with herbal groupings that have been developed into formulations used at the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic
2. To verify and validate the knowledge of herbal groupings documented in classical Thai traditional medical scriptures in comparison with contemporary knowledge and practice
3. To collect empirical evidence of herbal medicine formulas in order to support their practical application and strengthen confidence in clinical practice in Thai Traditional Medicine.

Methods

Review and Analysis of Herbal Groupings

The researcher reviewed herbal grouping lists from three primary sources: (1) The *Sapphalaksana Sapphakhun Lae Maha Phikat* scripture; (2) The NLEM (Herbal Medicines) announced by the National Drug System Development Committee in 2022 and its subsequent revision in 2025 under the Ministry of Public Health and (3) The herbal medicine inventory list of the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic (2025). Ethical approval for the study was obtained from the Human Research Ethics Committee (Reference No. AW 78.071/EC 0016).

Search for Scientific Evidence

Scientific evidence was searched specifically for herbal groupings that were identified in all three data sources. Literature searches were conducted in PubMed and Sci-Hub databases using the names of herbal groupings as search terms, such as *Triphala* and *Benjakul*. In addition, scientific evidence related to the individual herbs constituting each herbal grouping was retrieved using their scientific names.

Data Analysis

Herbal groupings (*phikat*) data were analyzed and compared across the three data sources. The herbal groupings were then ranked according to the frequency of their occurrence or mention. Data analysis was performed using Microsoft Excel version 13, and results were presented using descriptive statistics, including frequencies, graphs, and percentages.

Results

1. **Analysis of Herbal formulation groups in the Sapphalaksana Sapphakhun Lae Maha Phikat Scripture**

The analysis of the Sapphalaksana Sapphakhun Lae Maha Phikat scripture identified a total of 96 herbal groupings (phikat) 4. These were classified into 10 categories, including: (1) Julaphikat (31 groupings), (2) 2-herb formulation group (1 formula), (3) 3-herb formulation group (33 formulas), (4) 4-herb formulation group (2 formulas), (5) 5-herb formulation group (12 formulas), (6) special formulation group (5 formulas), (7) 7-herb formulation group (3 formulas), (8) 9-herb formulation group (3 formulas), (9) 10-herb formulation group (3 formulas), and (10) Mahaphikat (3 formulas) as shown in

Table 1. Among these categories, 3-ingredient formulas were the most common (34%), followed by Julaphikat (32%), whereas 2-ingredient formulas were the least frequent (1%). Additionally, 4-ingredient formulas were identified as having identical herbal components but different names. For example, Trichataka and Trichat contain the same herbal components. Linguistic analysis indicated that the terms “chataka” and “chat” share the same meaning. Similarly, “Tri-kesaramat”and “Tri-kesormas” were found to contain identical herbal components, suggesting that they represent the same herbal formula.

Table 1. Herbal formulation groups (Phikat) found in the Sapphalaksana Sapphakhun Lae Maha Phikat Scripture

No.	Formulation groups	Name of Formulations in scripture
1	3-herb formulation groups: 33 formulatioms (34.37%)	(1) Trikatuk, (2) Trikatuk Samutthan, (3) Trikalaphit, (4) Trikesaramat**, (5) Trikhanthawat, (6) Trichinthalamaka, (7) Trichataka***, (8) Triyanarot, (9) Trithawetikhantha, (10) Trithipparot, (11) Trithurawasa, (12) Tritharathip, (13) Tripittaphon, (14) Triphala That, (15) Triphala, (16) Triphala Samutthan, (17) Tripitchakra, (18) Triphet Samakhun, (19) Triwatphon, (20) Trisattakula, (21) Trisannibataphon, (22) Trisan, (23) Trisindhurot, (24) Trisukatisamutthan, (25) Trisukhon, (26) Trisuraphon, (27) Trisemhaphon, (28) Triamrit, (29) Tri-akasaphon, (30) Nam Som Thang Sam, (31) Nam Triphala, (32) Phon Trikatuk, (33) Ya Khat Mon Sam Prakan.
2	Julaphikat 31 formulatioms (32.28%)	(1) *Khopchanang Thang Song, (2) Khae Thang Song, (3) Chan Thang Song, (4) Chingcho Thang Song, (5) Chaba Thang Song, (6) Cha-em Thang Song, (7) Chingchi Thang Song, (8) Thian Thang Song, (9) Nam Chan Thang Song, (10) Boraphet Thang Song, (11) Bua Luang Thang Song, (12) Bai Khae Thang Song, (13) Pro Thang Song, (14) Pro Hom Thang Song, (15) Phon Chan Thang Song, (16) Phon Phakchi Thang Song, (17) Phon Munkan Thang Song, (18) Phon Reo Thang Song, (19) Phak Khrat Thang Song, (20) Phak Sian Phi Thang Song, (21) Phak Hom Thang Song, (22) Phak Hom Thet Thang Song, (23) Munkan Thang Song, (24) Mun Lek Thang Song, (25) Ya Klet Hoi Thang Song, (26) Rak Sam Sip Thang Song, (27) Lamphan Thang Song, (28) Sattabongkot Thang Song, (29) Sisiat Thang Song, (30) Ya Phan Ngu Thang Song, (31) Opchoei Thang Song.
3	formulation groups: 12 formulatioms (12.50%)	(1) Kluea Thang Ha, (2) Kot Thang Ha, (3) Thian Thang Ha, (4) Nam Nom Thang Ha, (5) Bua Nam Thang Ha, (6) Benchakun, (7) Benchaphon That, (8) Benjamun Noi, (9) Benjamun Yai, (10) Benjalokawichian, (11) Benchaloh, (12) Hora Thang Ha.
4	Spacial formulation groups: 5 formulatioms (5.21%)	(1) Kluea Phiset, (2) Kot Phiset, (3) Thian Phiset, (4) Bua Phiset, (5) Hora Phiset;
5	7-herb formulation groups: 73 formulatioms (3.13%)	(1) Kot Thang Chet, (2) Thian Thang Chet, (3) Sattaloh
6	9-herb formulation groups: 3 formulatioms (3.13%)	; (1) Kot Thang Kao, (2) Thian Thang Kao, (3) Naowaloh;
7	10-herb formulation groups: 3 formulatioms (3.13%)	(1) Thotsakulaphon, (2) Thotsabenchakun, (3) Thotsabenchakhan
8	Mahaphikat groups: 3 formulatioms (3.13%)	(1) Mahaphikat Benchakun, (2) Solot Benchakun, (3) Aphinyan Benchakun
9	4-herb formulation groups: 2 formulatioms (2.08%)	(1) Chatuthipkhantha, (2) Chatuphalathika
10	2-herb formulation groups: 1 formulatiom (1.04%)	(1) Thawesukhon.
Total	96 formulatiom (100%)	

*The numbers in parentheses (…) indicate the numbering of the herbal formulation groups.

**Trikesaramat and Trikesramat refer to the same formulation group.

***Trichataka and Trichat refer to the same formulation group.

2. **Analysis of Herbal formulation groups in the NLEM**

A total of 101 herbal formulations were identified in the NLEM. Among these, 41 formulations (41%) contained herbal groupings as components, representing 30 distinct herbal groupings. The most frequently identified grouping was “Trikatuk”, which was included in 12 formulations (40%). The second most common grouping was “Benjakul”, found in 7 formulations (23%). The third most common position was shared by 3-herb formulation group — “Trichat”, “Thian Ha” (five spice seeds), and “Kesorn Ha” (five flowers)—each appearing in 5 formulations (17%) as shown in Table 2.

Table 2. Analysis of herbal formulation groups used as components in 41 herbal formulations listed in the Thai National List of Essential Medicines, from a total of 101 formulations.[5,6]

No.	the Thai National List of Essential Medicines	
	Name of Phikut	**Name of remedy**
1	Trikatuk – 12 formulations (29.26%)	(1) *Ya Ridsiduang Mahakan, (2) Ya Kae Ai Phuenban Isan, (3) Ya Tri Phikat, (4) Ya Pluk Fai That, (5) Ya Prasa Kaphrao, (6) Ya Prasa Phlai, (7) Ya Fai Pralai Kan, (8) Ya Lueat Ngam, (9) Ya Prap Chomphu Thawip, (10) Ya Prasa Kancha, (11) Ya Suk Saiyat, (12) Ya Thamlai Phra Sumeru
2	Benchakul – 7 formulations (17.10%)	(1) Ya Bamrung Lohit, (2) Ya Hom Inthachak, (3) Ya Kasai Sen, (4) Ya Hom Nawakoht, (5) Ya Manthat, (6) Ya Benchakun, (7) Ya Prasa Kanphlu
3	Trichat – 5 formulations (12.19%)	(1) Ya Hom Inthachak, (2) Ya Wisamphaya Yai, (3) Ya Kasai Sen, (4) Ya Hom Nawakoht, (5) Ya Hom Thepchit
4	Thian Thang Ha – 5 formulations (12.19%)	(1) Ya Bamrung Lohit, (2) Ya Ridsiduang Mahakan, (3) Ya Manthat, (4) Ya Prasa Pro Yai, (5) Ya Thamlai Phra Sumeru
5	Kesorn Thang Ha – 5 formulations (12.19%)	(1) Ya Hom Thip Osot, (2) Ya Kasai Sen, (3) Ya Hom Nawakoht, (4) Ya Hom Thepchit, (5) Ya Satri Lang Khlot.
6	Triphala – 4 formulations (9.75%)	(1) Ya Kae Ai Makham Pom, (2) Ya Tri Phikat, (3) Ya Triphala, (4) Ya Mahachak Yai
7	Kot Thang Ha – 4 formulations (9.75%)	(1) Ya Bamrung Lohit, (2) Ya Wisamphaya Yai, (3) Ya Manthat, (4) Ya Prasa Pro Yai
8	Kot Thang Kao – 3 formulations (7.31%)	(1) Ya Hom Thip Osot, (2) Ya Hom Thepchit, (3) Ya Hom Nawakoht
9	Thian Thang Kao – 3 formulations (7.31%)	(1) Ya Hom Thip Osot, (2) Ya Hom Thepchit, (3) Ya Hom Nawakoht
10	Chan Thang Song – 3 formulations (7.31%)	(1) Ya Chanlila, (2) Ya Hom Thip Osot, (3) Ya Hom Thepchit
11	Cha-em Thang Song – 3 formulations (4.87%)	(1) Ya Kae Ai Phasom Manao Dong, (2) Ya Kae Ai Phuenban Isan
12	Thian Thang Song – 2 formulations (4.87%)	(1) Ya Kae Lom Kae Sen, (2) Ya Amarit Osot
13	Trisan – 2 formulations (4.87%)	(1) Ya Satri Lang Khlot, (2) Ya Tri Phikat
14	Samae Thang Song – 1 formulation (2.43%).	(1) Ya Bamrung Lohit.
15	Muak Thang Song – 1 formulation (2.43%)	(1) Ya Hom Inthachak
16	Khopchanang Thang Song – 1 formulation (2.43%)	(1) Ya Ridsiduang Mahakan
17	Mak Thang Song – 1 formulation (2.43%)	(1) Ya Khiao Ho
18	Kum Thang Song – 1 formulation (2.43%)	(1) Ya Kae Lom Ammaphruek
19	Mawaeng Thang Song – 1 formulation (2.43%)	(1) Ya Prasa Mawaeng
20	Rak Khika Thang Song – 1 formulation (2.43%);	(1) Ya Thai Di Kluea Farang
21	Sisiat Thang Song – 1 formulation (2.43%)	(1) Ya Lueang Pit Samut
22	Hua Kradat Thang Song – 1 formulation (2.43%)	(1) Ya Thorani Santakhat
23	Thian Thang Sam – 1 formulation (2.43%)	(1) Ya Sahatsathara
24	Tripitchakra – 1 formulation (2.43%)	(1) Ya Manthat
25	Trithipparot – 1 formulation (2.43%)	(1) Ya Hom Inthachak
26	Trikhanthawat – 1 formulation (2.43%)	(1) Ya Lueat Ngam

No.	the Thai National List of Essential Medicines	
	Name of Phikut	Name of remedy
27	Trisattakula – 1 formulation (2.43%)	(1) Ya That Banchop
28	Trikesaramat – 1 formulation (2.43%)	(1) Ya Trikesaramat
29	Benjalokawichian (Ha Rak) – 1 formulation (2.43%)	(1) Ya Ha Rak
30	Phio Som Paet Prakan – 1 formulation (2.43%)	(1) Ya Hom Thepchit
Total	41 formulations (100%)	

3. Analysis of Herbal formulation groups in the Herbal Medicine List of the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic

The herbal medicine list of the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic contained 75 herbal medicine items. Among these, 4 herbal formulations (5%) have been developed into herbal formulations used in the clinic. 2 herbal formulations —*Triphala* and *Kesorn Ha*—are developed as herbal tea formulations. 1 formulation, *Benjakul*, was developed in tablet form, while *Benjalok Wichian* (Five Roots formulation) are developed as a capsule formulation (Table 3).

Table 3. Comparison of herbal formulation groups described in the *Sapphalaksana Sapphakhun Lae Maha Phikat* Scripture[3] with those listed in the Thai National List of Essential Medicines (NLEM)[5,6] and those used in the Ayurvedic Clinic[7].

No.	Name of Phikut	Source		
		Scripture	NLEM	Ayurvedic Clinic
1	Khopchanang Thang Song	/	/	
2	Chan Thang Song	/	/	
3	Cha-em Thang Song	/	/	
4	Khika Thang Song	/	/	
5	Sisiat Thang Song	/	/	
6	Trikatuk	/	/	
7	Trikesaramat	/	/	
8	Trikhanthawat	/	/	
	Trichat (Trichataka)[4]	/	/	
10	Trithipparot	/	/	
11	Trisattakula	/	/	
12	Trisan	/	/	
13	Triphala*	/	/	/

	Triphala		Benchakul
	Kesorn Thang Ha		Ha Rak

No.	Name of Phikut	Source		
		Scripture	NLEM	Ayurvedic Clinic
14	Kesorn Thang Ha*		/	/
15	Benchakul*	/	/	/
16	Benjalokawichian (Ha Rak)*	/	/	/
7	Kot Thang Ha	/	/	
18	Thian Thang Ha	/	/	
19	Kot Thang Kao	/	/	
20	Thian Thang Kao	/	/	

* Herbal formulation groups found consistently across all three data sources.

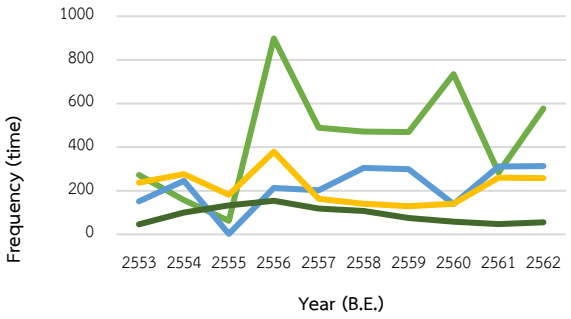
An analysis of herbal medicine usage over a 10-year period (2010–2019) showed that *Triphala* was the most frequently used formulation, followed by *Kesorn Ha, Benjakul*, and Five Roots formulation, respectively as shown in Figure 1.

4. Comparison of Herbal formulation groups Between the *Sapphalaksana Sapphakhun Lae Maha Phikat* Scripture and the NLEM

A comparison between the 96 formulations identified in the scripture and the 30 formulations[5] identified in the NLEM revealed 20 overlapping formulations in Table 3. When analyzed based on the 96 formulations in the scripture (100%), 20 formulations (21%) were also found in the National List, while 76 formulations (79%) were found only in the scripture. However, when analyzed from the perspective of the 30 formulations in the National List (100%), 20 formulations (67%) corresponded with those documented in the scripture. These findings indicate that a substantial proportion of herbal groupings recorded in historical Thai medical scriptures continue to be used in contemporary practice. This also highlights the strong continuity of Thai Traditional Medicine knowledge and its reliance on classical medical texts, particularly the *Sapphalaksana Sapphakhun Lae Maha Phikat* scripture. The remaining 10 formulations (33%) found in the

National List originate from other traditional medical texts or sources.

Figure 1. Frequency (units) of herbal formulation groups used in the Ayurveda Clinic from 2010 to 2019.



5. Comparison of Herbal formulation groups Among the Scripture, the NLEM, and the Siriraj Clinic

4 formulations were found to be common across all three data sources: *Triphala*, *Kesorn Ha*, *Benjakul*, and Five Roots formulation (Table 3). The proportion of herbal groupings used in the Siriraj clinic relative to the scripture was 4:96 (4%), while the proportion relative to the National List was 4:30 (13%). These results suggest that the herbal formulations developed and used in the Siriraj Applied Thai Traditional Medicine Clinic are closely linked to both the NLEM and classical Thai traditional medicine scriptures. Furthermore, while the therapeutic indications of these herbal formulations remain consistent with those described in traditional texts, additional information regarding precautions and safety considerations is provided in the NLEM, representing updated knowledge not specified in the classical scriptures as shown in Table 4.

6. Scientific Evidence Supporting Herbal formulation groups

Among the 4 formulations identified across 3 sources, scientific evidence was found for 3 formulations: *Triphala, Benjakul*, and Five Roots formulation. No research evidence was identified specifically for Kesorn Ha. 2 herbal groupings—*Triphala* and *Benjakul*—were supported by in vitro studies, animal studies, and clinical research. In contrast, Five Roots formulation had evidence only from in vitro and animal studies, with no available clinical research. Additionally, studies on the individual herbal components of all 4 formulations did not include clinical trials but were limited to in vitro and animal studies as shown in Table 4.

Table 4. Empirical evidence of herbal formulation groups and their constituent herbs identified from the comparison of formulation groups in the *Sapphalaksana Sapphakhun Lae Maha Phikat* Scripture[3] with those listed in the Thai National List of Essential Medicines (NLEM)[5,6] and those used in the Ayurvedic Clinic[7].

Phikut/ Herb	**Therapeutic property and Precautions**	**Types of evidence and pharmacological activities.**		
		In vitro	**In vivo**	**Clinical trials**
Triphala	**Therapeutic property:** Sour and astringent taste; used to relieve phlegm. **Precautions:** Use with caution in patients who are prone to diarrhea[5]. If used for more than 7 days, consultation with a Thai traditional medicine practitioner or healthcare professional is recommended[6].	Antioxi-dant activity [8]	Anti-diarrheal effect[9] Anti-inflammatory Effect in the intestines[10,11] Lipid-lowering effect[12] Anti-inflammatory activity[13]	Laxative effect[14,15]
Samor Phiphek	**Therapeutic properties:** Sour and astringent taste; used to treat fever associated with phlegm and wind disorders, relieve dysentery, and act as a mild laxative[42]. **Precautions:** Excessive consumption may cause diarrhea*.	-	-	-

Phikut/ Herb	Therapeutic property and Precautions	Types of evidence and pharmacological activities.		
		In vitro	In vivo	Clinical trials
Samor Thai	**Therapeutic properties:** Acts as a mild laxative; used to relieve abdominal colic, alleviate internal heat toxicity, regulate the body elements, relieve flatulence and abdominal discomfort, promote bowel movement and defecation, and help eliminate fever-related toxins[25]. **Precautions:** Excessive consumption may cause diarrhea*.	Anti-bacterial activity [25]	Effect on intestinal motility [25]	-
Makham Pom	**Therapeutic properties:** Sour, astringent, and bitter taste; used to expel phlegm, moisten the throat, act as an astringent, and relieve hemorrhoids and dysentery[40]. **Precautions:** Excessive consumption may cause diarrhea*.	-	-	-
Bencha-kul*	**Therapeutic properties:** Hot taste; used to expel flatulence and tonify the body elements. **Precautions:** Use with caution in individuals who are prone to internal heat and when used during the hot season. It should not be taken continuously for more than 7 days[5].	Anti-inflam-matory activity[16]	Anti-inflammatory activity[17]	Analgesic activity[18–19] No toxicity observed
Dee Plee	**Therapeutic properties:** Hot taste; used to expel flatulence, relieve cough and throat irritation caused by phlegm, reduce bloating and abdominal discomfort, tonify the fire element, relieve abdominal pain, alleviate nausea and vomiting, support liver function, treat diarrhea and cough, stimulate uterine contraction, and tonify the body elements[26]. **Precautions:** Excessive consumption may cause internal heat or diarrhea*.	Antibacte-rial activity[26]	Hypolipide-mic activity Anti-inflammatory activity Analgesic activity Anti-ulcer activity Anxiolytic activity Anticancer activity [26]	-
Cha Phlu	**Therapeutic properties:** Hot taste; used to tonify the body elements, expel intestinal flatulence, treat phlegm accumulation in the rectal region, promote the downward elimination of phlegm through the anus, and help dry excess phlegm[27]. **Precautions:** Excessive consumption may cause internal heat or diarrhea*.	Acetylcholi nesterase inhibitory activity Lipid peroxide-tion inhibitory activity Antioxi-dant activity Antimuta-genic activity[27]	Antihypergly cemic activity Anti-inflammatory activity [27]	-

Phikut/ Herb	Therapeutic property and Precautions	Types of evidence and pharmacological activities.		
		In vitro	In vivo	Clinical trials
Sakhan	**Therapeutic properties:** Pungent and hot taste; used to expel intestinal flatulence, relieve abdominal fullness and colic, tonify the body elements, promote belching, and used as an ingredient in digestive formulations to treat disorders of the body elements. It is considered a principal herb for the wind element[28]. **Precautions:** Excessive consumption may cause internal heat or diarrhea*.	-	Anti-inflammatory activity Analgesic activity[28]	-
Chetamul Ploeng Daeng	**Therapeutic properties:** Hot taste; used to tonify the fire element and nourish the blood, expel flatulence in the intestines and stomach, promote belching, relieve bloating, abdominal pain, and chest tightness, and help generate warmth in the body [29]. **Precautions:** Excessive consumption may cause internal heat or diarrhea*	Antibacte-rial activity Antifungal activity Antimara-rial activity Anti-inflamma-tory activity Effect on gastric fluke parasites Antioxi-dant activity test and formation of complexes with iron[29]	-	-
Ginger	**Therapeutic properties:** Sweet and pungent taste; used to relieve constipation, treat intermittent fever, alleviate insomnia, relieve chest tightness caused by wind disorders, reduce nausea, and relieve stabbing pain caused by wind disturbance[30]. **Precautions:** Excessive consumption may cause internal heat or diarrhea*.	Inhibitory activity against leukemia cells and colon cancer cells Inhibitory activity against pathogeni c bacteria in the stomach Anti-inflammat ory activity in neural cells Antioxi-dant activity Anti-inflam-matory activity Antipara-sitic activity[30] No toxicity observed	Carminative effect Anti-colitis activity Antidiarrheal activity Antispas-modic effect Antiparasitic activity[30]	-
Benjaloka wichian (Ha Rak)*	**Therapeutic properties:** Cooling taste; used to treat all types of fever. **Precautions:** Use with caution in patients with dengue fever and in women during menstruation. It should not be used for more than 3 days[6].	Antimala-rial activity[20]	Antipyretic activity [21,22] Anti-inflammatory activity [23]	
Chingchi root	**Therapeutic properties:** Bitter and cooling taste; used to relieve internal heat and treat fever [31]. **Precautions:** Excessive consumption may weaken the fire element*.	Antimicro-bial activity in the respiratory tract [31]	-	-

Phikut/ Herb	Therapeutic property and Precautions	Types of evidence and pharmacological activities.		
		In vitro	In vivo	Clinical trials
Khontha root	**Therapeutic properties:** Bitter taste; used to treat toxic fever, diarrhea, dysentery, and reduce body heat[32]. **Precautions:** Excessive consumption may weaken the fire element*.	Anti-inflam-matory activity [32]	Anti-inflammatory activity [32]	-
Yanang root	**Therapeutic properties:** Bitter taste; used to treat fever[33]. **Precautions:** Excessive consumption may weaken the fire element*.	Antimalarial activity Antituber-culosis activity Anticancer activity [33]	Anticancer activity[33]	-
Maduea Chumphon root	**Therapeutic properties:** Astringent taste; used to neutralize heat toxicity, alleviate toxic fever, treat all types of fever, relieve wind disorders, and soothe phlegm and blood[34] . **Precautions:** Excessive consumption may weaken the fire element*.	Antioxi-dant activity Radioprotective effect Antibacte-rial activity[34]	Antipyretic activity [34]	-
Tao Yai Mom root	**Therapeutic properties:** Bland and slightly bitter taste; used to neutralize heat toxicity, relieve toxic fever, and treat all types of fever[41]. **Precautions:** Excessive consumption may	-	-	-

Phikut/ Herb	Therapeutic property and Precautions	Types of evidence and pharmacological activities.		
		In vitro	In vivo	Clinical trials
	weaken the fire element*.			
Kesorn Thang Ha	**Therapeutic properties:** Aromatic cooling taste; used to relieve fatigue and help nourish the heart. **Precautions:** Excessive consumption may weaken the fire element*.	**-**	**-**	**-**
Mali flower	**Therapeutic properties:** Aromatic cooling taste; used to relieve fatigue and help nourish the heart [35]. **Precautions:** Excessive consumption may weaken the fire element*.	Coronary vasodila-tory activity and cardiotonic activity Antibacterial activity Aphro-disiac activity[35]	Nervous system stimulant activity Sedative and hypnotic activity[35]	-
Phikul flower	**Therapeutic properties:** Aromatic cooling taste; used to treat fever and nourish the heart and blood[36]. **Precautions:** Excessive consumption may weaken the fire element*.	Antibacte-rial activity[36]	-	-
Bunnak flower	**Therapeutic properties:** Aromatic cooling taste; used to nourish the heart, relieve cardiac weakness, and nourish the blood[37]. **Precautions:** Excessive consumption may	-	Antioxidant activity hepatoprotective activity Anticonvulsant activity and Antibacterial activity [37]	-

Phikut/ Herb	Therapeutic property and Precautions	Types of evidence and pharmacological activities.		
		In vitro	In vivo	Clinical trials
	weaken the fire element*.			
Sarapee flower	**Therapeutic properties:** Aromatic cooling taste; used to nourish the heart and treat blood toxicity[38]. **Precautions:** Excessive consumption may weaken the fire element*.	Anti-leukemic activity[38]	-	-
Lotus pollen	**Therapeutic properties:** Aromatic cooling taste; used to nourish the heart, liver, and lungs[39]. **Precautions:** Excessive consumption may weaken the fire element*.	Antioxi-dant activity[39]	Inhibitory effect on aldose reductase enzyme in the lens[39]	-

Discussion

The analysis of herbal formulation groups described in *The Sapphalaksana Sapphakhun Lae Maha Phikat Scripture* revealed that 3-herb formulation groups were the most frequently used, accounting for 33 formulations (34.37%), as shown in Table 1. This finding is consistent with the analysis of herbal formulation groups included in the NLEM, which identified *Trikatuk* as the most commonly used formulation group, also consisting of 3 herbal ingredients. *Trikatuk* comprises dried ginger rhizome (*Zingiber officinale* Roscoe), black pepper fruit (*Piper nigrum* L.), and long pepper fruit (*Piper retrofractum* Vahl). This formulation is characterized by a hot taste and is traditionally used to relieve flatulence, stimulate digestive and warm the body, and it is regarded as a formulation particularly suitable for the rainy season.[2] In addition, *Trikatuk* is used as an ingredient in 12 herbal medicinal formulations (29.26%) listed in the NLEM, including: (1) Mahakan hemorrhoid remedy, (2) Isan traditional cough remedy, (3) Triphikat remedy, (4) Pluk Fai That remedy, (5) Prasa Kaphrao remedy, (6) Prasa Phlai remedy, (7) Fai Pralai Kan remedy, (8) Lueat Ngam remedy, (9) Prap Chomphu Thawip remedy, (10) Prasa Cannabis remedy, (11) Suk Saiyas remedy, and (12) Tham Lai Phra Sumeru remedy,[5] as shown in Table 2. Most of these preparations have a hot taste, similar to that of the *Trikatuk* formulation. Therefore, the selection of herbal formulation groups with a hot taste as components of medicinal preparations with similar therapeutic properties reflects a consistent principle in Thai traditional pharmacology. Although the *Trikatuk* formulation itself does not appear as a standalone preparation in the Thai National List of Essential Medicines or in the list of remedies used in the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic, it remains the most frequently selected formulation group used as a component in various herbal preparations. These findings may provide useful information for practitioners who formulate individualized herbal prescriptions for patients or for researchers and practitioners involved in the development of new herbal medicinal formulations.

Among the 3-herb formulation group, only one formulation, namely *Triphala*, was found to be consistent across all three data sources. In addition, *Triphala* had the highest prescription frequency in the Applied Thai Traditional Medicine Ayurvedic Clinic at Siriraj Hospital, as shown in Figure 1. *Triphala* consists of *Terminalia bellirica* (Gaertn.) Roxb. (Samor Phiphek), *Terminalia chebula* Retz. (Samor Thai), and *Phyllanthus emblica* L. (Makham Pom). It is characterized by a sour and astringent taste and is traditionally used to relieve cough, provide mild laxative effects, and help balance the water element (Dhatu Nam). In Thai traditional medicine, it is also regarded as a seasonal formulation particularly suitable for the summer season[2]. *Triphala* is included as an ingredient in 4 herbal medicinal formulations listed in the Thai National List of Essential Medicines (NLEM), namely: (1) Triphala remedy (2) Mahachak Yai remedy (3) Kae Ai Makham Pom remedy, and (4) Triphikat remedy[5], as shown in Table 2. When *Triphala* was further investigated through evidence-based databases, the results showed 1 in vitro study demonstrating antioxidant activity.[8] In addition, 5 in vivo studies reported antidiarrheal activity[9], anti-inflammatory effects in intestinal inflammation[10,11], lipid-lowering effects[12], and anti-inflammatory activity[13]. And 2 clinical studies reported laxative effects[14,15] as shown in Table 4. Furthermore, *Triphala* is included as a component in several formulations listed in the NLEM, which are used in the treatment of diseases involving

multiple body systems, including the circulatory system, gastrointestinal system, and respiratory system, as well as for tonifying and balancing body elements, as presented in Table 5. Based on the available evidence, clinical studies currently support the laxative effect of *Triphala*. However, there is still limited clinical evidence supporting its expectorant, antitussive, and tonic effects, which are described in the classical Thai medical scripture. Therefore, further clinical investigations are warranted. In addition, animal studies have reported lipid-lowering effects, representing an interesting finding from modern biomedical research that could be further developed into future clinical studies. Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic has further developed *Triphala* into an herbal infusion dosage form to facilitate more convenient use. This differs from the preparation method described in the classical medical scripture, in which the formulation is traditionally prepared as a decoction, a process that may be more complicated and time-consuming in practice. All these findings collectively support that *Triphala* is a reliable herbal formulation group with strong traditional and scientific support, and it can be effectively applied in Thai traditional medical practice.

The analysis of herbal formulation groups described in the scripture revealed that paired herbal substitutions called *"Julaphikat"* ranked as the second most frequently identified category, with 31 formulations (32.28%), as shown in Table 1. In Thai traditional medicine, *Julaphikat* refers to two different plant species that share the same traditional name but are botanically distinct[2]. For example, Phikat Chan Thang Song consists of white sandalwood (Chan Khao) and red sandalwood (Chan Daeng). These herbs possess a bitter and cooling taste and are traditionally used to relieve fever. This formulation group is included as a component in several preparations listed in the NLEM, including Ya Chanleela, Ya Hom Thip Osot, and Ya Hom Thep Chit[5]. Another example is Phikat Si Siet Thang Song, which consists of Si Siet Thet and Si Siet Thai. These herbs have an astringent taste and are traditionally used for wound healing and for relieving diarrhea. This formulation group is included as a component of Ya Lueang Pit Samut, a preparation listed in the NLEM used for the treatment of diarrhea. Similarly, Phikat Cha-em Thang Song consists of Cha-em Thet and Cha-em Thai, which possess a sweet taste and are traditionally used to relieve cough and soothe the throat. These herbs are included as ingredients in Ya Kae Ai Phasom Manao Dong, a cough remedy listed in the NLEM. In contrast, 2-herb formulation groups, which refer to two herbs with different names combined in a single formulation, were identified in only one case, namely Phikat Thawe Sukon, as presented in Table 1. This formulation consists of two aromatic roots, Bunnak root and Masang root, and is traditionally used to relieve intestinal flatulence, treat blood-related disorders, and alleviate nosebleeds[2]. However, neither *julaphikat* nor 2-herb formulation groups were found in the list of herbal preparations used in the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic. Nevertheless, the fact that *julaphikat* ranked as the second most frequently identified category indicates that these paired herbal substitutions were widely utilized in the preparation of traditional herbal medicines.

The analysis of herbal formulation groups described in the scripture revealed that 5-herb formulation groups ranked as the third most frequently identified category, with 12 formulations (12.50%), as shown in Table 1. One example is Phikat Kot Thang Ha, which consists of Kot Chiang, Kot So, Kot Hua Bua, Kot Khema, and Kot Chulalumpa. This formulation is characterized by a mild and balanced taste and is traditionally used to help balance body elements and promote blood circulation[2]. It is considered suitable in cases where medications with excessively hot or cold properties are not appropriate, such as in elderly patients or individuals with weakened conditions. Phikat Kot Thang Ha is included as an ingredient in 4 herbal medicinal formulations listed in the NLEM, namely: (1) Manthathat remedy, (2) Mahachak Yai remedy, (3) Wisamphaya Yai remedy, and (4) Bamrung Lohit[5], as shown in Table 2. A comparative analysis of herbal formulation groups from the three data sources identified 3 5-herb formulation groups that were consistent across all sources, namely *Phikat Benjakul, Phikat Ya Ha Rak,* and *Phikat Kesorn Ha.*

Benjakul consists of *Piper retrofractum Vahl*, *Piper sarmentosum* Roxb., *Piper ribesioides* Wall., *Plumbago indica* L., and *Zingiber officinale* Roscoe. This formulation possesses a hot taste and is traditionally regarded as a remedy for all four body elements[2]. It is included as an ingredient in seven herbal medicinal preparations listed in the Thai National List of Essential Medicines, namely: (1) Benjakul remedy, (2) Ya Hom Navakot remedy, (3) Ya Hom Inthajak remedy, (4) Prasa Kanphlu remedy, (5) Manthat remedy, (6) Bamrung Lohit

remedy, and (7) Kasai Sen remedy[5], as presented in Table 2. Evidence-based database searches revealed one in vitro study demonstrating anti-inflammatory activity[16], one animal study showing anti-inflammatory effects[17], and two clinical studies reporting analgesic effects[18, 19] as shown in Table 4. Furthermore, an analysis of its practical applications in the NLEM indicates that Phikat *Benjakul* has the widest range of therapeutic applications, as it is used in formulations for treating diseases involving multiple body systems, including the circulatory system, gastrointestinal system, and musculoskeletal system, as well as for tonifying and balancing body elements, as shown in Table 5. Although clinical studies have reported analgesic effects from topical cream formulations, this may correspond with Thai traditional medical principles in which herbal remedies with a hot taste help to expel wind[2]. In Thai traditional medicine, pain is often associated with stagnation of the wind element, and therefore the hot properties of *Benjakul* may help promote the circulation of wind within the body and relieve muscular tension and pain. *Benjakul* preparations can be administered both orally and externally, including topical application, rubbing, or massage, providing practical guidance for applying *Phikat Benjakul* in Thai traditional medical practice.

Another 5-herb formulation group is *Phikat Ya Ha Rak*, which consists of Chingchi root, Khontha root, Yanang root, Maduea Chumphon root, and Tao Yai Mom root. This formulation is characterized by a bitter and cooling taste and is traditionally used to treat various types of fever[2]. Unlike other formulation groups, Phikat Ya Ha Rak has been developed as an individual herbal preparation included in both the NLEM and the list of remedies used in the Ayurvedic Clinic, rather than serving as an ingredient in other formulations. Evidence-based database searches identified one in vitro study demonstrating antimalarial activity[20] and three animal studies reporting antipyretic[21,22] and anti-inflammatory effects[23]. No clinical studies of Phikat Ya Ha Rak were identified; however, one study evaluating the formulation reported antipyretic activity[24], as shown in Table 4. These findings suggest that *Phikat Ya Ha Rak* represents another promising herbal formulation group for further research and development. In addition, classical evidence from the Takkasila scripture also supports its traditional use as a remedy for various types of feve.[3]

Table 5. Analysis of the therapeutic properties of the Triphala, Benchakul, Ha Rak, and Kesorn Thang Ha formulation groups in relation to symptom-based treatment categories in the Thai National List of Essential Medicines.

Phikut	properties	Symptom-based treatment categories in the NLEM.*						
		CVS	GIT	OB-GYN	MSK	RS	Ant.	TCM
Tripha-la	Sour and astringent taste: used to relieve phlegm.		✓	-	-	✓	-	✓
Bencha-kul	Hot taste: used to expel flatulence and tonify the body elements.	✓	✓	-	✓	-	-	✓
Ha Rak	Cooling taste: used to treat all types of fever.	-	-	-	-	-	✓	-
Kesorn Thang Ha	Aromatic cooling taste: used to relieve fatigue and help nourish the heart	✓	-	✓	✓	-	-	-

*CVS=Cardiovascular System, *GIT=Gastrointestinal tract
*OB-GYN=Obstetrics and gynecology, *MSK= Musculoskeletal system
*RS=Respiratory System, *Ant.=Antipyretic
*TCM=Tonifying and balancing the body elements

Conclusion

1) The comparative analysis of herbal formulation groups described in *The Sapphalaksana Sapphakhun Lae Maha Phikat* Scripture, the NLEM, and the formulations developed by the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic revealed 4 herbal formulations. This finding reflects the consistency and continuity of traditional knowledge between the past and the present.

2) The validation of herbal formulation knowledge recorded in classical Thai traditional medical scriptures in

comparison with contemporary practices showed that 4 herbal formulations have been practically utilized and further developed into medicinal preparations included in the NLEM and used in clinical treatment at the Siriraj Applied Thai Traditional Medicine Ayurvedic Clinic. This demonstrates the progressive development and adaptation of traditional knowledge from historical sources to modern medical practice.

3) The review of evidence-based studies related to these herbal formulation groups identified clinical-level research supporting 2 herbal formulations, providing strong evidence for the reliability of this traditional knowledge. In addition, most of the individual herbs used as components in these groupings have been supported by credible experimental studies at the animal model level. These findings suggest that the available evidence can support the confident application of such knowledge in Thai traditional medical practice. Moreover, many other herbal groupings remain to be further investigated and developed for future applications, which could contribute significantly to the advancement of Thai traditional medicine and the national healthcare system.

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