

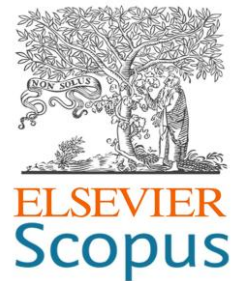


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Local Knowledge of Herbal Processing of Pa Wa Agroforestry Network Members, Kaeng Hang Maeo District, Chanthaburi Province

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Abstract: Objective of this study was to explore the local wisdom of herbal processing among members of the Pa Wa agroforestry network in the Kaeng Hang Maeo district, Chanthaburi province. The product is a comprehensive application of the existing herbs to the community. By employing a qualitative approach, this research aims to document and preserve traditional herbal knowledge that has been passed down through generations to ensure that such knowledge will remain within the community and not disappear. This study focused on key herbal products, including Aromatic litsea oil, Fang herbal cough remedy, and chili oil, which are used for wound care, respiratory health, and pain relief. Data were collected through in-depth interviews with 15 participants, who were selected based on their active involvement in herbal activities and expertise in herbal processing. The findings reveal the detailed processing methods, ingredient benefits, and potential applications of these herbal products. This research emphasizes the importance of conserving this valuable knowledge to promote sustainable use, enhance economic value, and improve the competitiveness of Thai herbal products in both domestic and international markets. This study contributes to preserving the local herbal wisdom and highlights the role of agroforestry in fostering self-reliance and community development.



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Keywords: local knowledge, herbal processing, Kaeng Hang Maeo, Chanthaburi

尖竹汶府康亨梅奥区巴哇农林网络成员的草药加工本地知识

摘要: 本研究的目的是探索尖竹汶府 康亨梅奥区 Pa Wa 农林网络成员的草药加工当地智慧。该产品是现有草药在社区的综合应用。通过采用定性方法, 本研究旨在记录和保存代代相传的传统草药知识, 以确保这些知识将留在社区中而不会消失。本研究重点关注主要草药产品, 包括 Aromatic litsea 油、Fang 草药止咳药和辣椒油, 这些产品用于伤口护理、呼吸健康和缓解疼痛。数据是通过 15 名参与者的深入访谈收集的, 这些参与者是根据他们积极参与草药活动和草药加工专业知识而选出的。研究结果揭示了这些草药产品的详细加工方法、成分益处和潜在应用。本研究强调了保护这些宝贵知识的重要性, 以促进可持续利用、提高经济价值, 并提高泰国草药产品在国内和国际市场的竞争力。这项研究有助于保护当地的草药智慧, 并强调了农林业在促进自力更生和社区发展方面的作用。

关键词: 当地知识、草药加工、康亨梅奥、尖竹汶府

1. Introduction

Thai herbs have a long history and have been a part of Thai society since the Sukhothai period. Herbs are ingredients in both savory and sweet dishes, as well as medicines used for health care and longevity drugs, including herbs for beauty enhancement. From the past to the present, the use of herbs has been continuously developed by creating value and adding value to herbs by transforming them into various products. Herbal products are the ultimate in wisdom and are important products; they reflect the wisdom of using herbs in communities in each country. Thailand developed the first national master plan for the development of Thai herbs, which consisted of various plans covering the development of Thai herbs from the beginning, middle, and end. This is to make Thailand a country that exports quality herbal raw materials and herbal products in the ASEAN region and to support the production of herbs that meet quality standards and create added value for herbal products, promote confidence in the use of Thai herbs, and increase the competitiveness of Thai herbs in both domestic and international markets continuously and systematically [1]. Pa Wa Agroforestry Network began by meeting at the agroforestry center of Mr. Wibun Khemchalem, Sanam Chai Khet district, Chachoengsao Province, to participate in various projects run by the Agroforestry Center, and had center staff help coordinate activities in the area since 1997. Later, they wanted to unite agroforestry practitioners in nearby areas to meet closer and more conveniently at the agroforestry center and to be able to connect and work with their own communities [2]. The group members are farmers who are interested in learning about self-reliance through agroforestry to apply it in their own areas according to their agricultural background and jointly drive activities in the community according to their interests. In addition, the group organized activities regularly. The most important income-generating activity for

group members is the group's products processed from herbs, which mostly comes from the knowledge and interest in learning of each member of the Pa Wa agroforestry network. This is the transformation of agroforestry products into various products by applying existing local wisdom, creating products for sale, and developing a study area for interested people. The wisdom in each area is different, especially in the Pa Wa Agroforestry Network. This area efficiently uses resources from agricultural forests. This can also create sustainability. If the community that exists within the forest can use the principles of using the forest to create similar wisdom. However, the wisdom of herbal medicine remains primarily knowledge that resides within people. Therefore, this study aimed to conserve and disseminate local wisdom in herbal processing so that it will continue to exist and not disappear and can be used sustainably.

2. Methods

A qualitative study was conducted on the local wisdom of herbal processing among members of the Pa Wa agroforestry network, Kaeng Hang Maeo district, Chanthaburi province [2]. The sample group was selected using purposive sampling, with the following criteria for key informants: 1) individuals actively involved in the herbal activities of Pa Wa agroforestry network members. 2) Individuals with knowledge and experience sharing local wisdom regarding herbal processing. 3) Individuals recognized by Pa Wa agroforestry network members as knowledgeable in local wisdom regarding herbal processing. Based on these criteria, 15 participants were selected for the study. The research instrument used in this study was an in-depth interview guide, consisting of questions designed to gather qualitative data [3-5]. The in-depth interviews covered topics related to the herbs and ingredients used in processing, as well as the herbal processing steps. After the data collection, the

researcher categorized the information through typological analysis and organized it into systematic knowledge categories. This was then synthesized into a body of knowledge concerning the herbal processing wisdom of Pa Wa agroforestry network members, Kaeng Hang Maeo district, Chanthaburi province. The organized knowledge is then validated by the community using triangulation methods [4, 6].

3. Results and Discussion

3.1. Aromatic Litsea Oil

Ingredients included 1) 300 cubic centimeters of coconut oil; 2) 300 cubic centimeters of clear lime water; 3) 1 tablespoon of camphor; 4) 2 tablespoons of aromatic litsea (*Litsea cubeba*); 5) 2 tablespoons of Chinese goldthread (*Coptis chinensis*), and 6) 2 tablespoons of Chinese starch or talcum powder. The process consisted of eight steps: Step 1 mixed coconut oil and clear lime water in a container and stirred well. Step 2 adds two tablespoons of Aromatic litsea while stirring the mixture from Step 1. Step 3 adds two tablespoons of Chinese goldthread while stirring the mixture from steps 1 and 2. Step 4 adds one tablespoon of camphor and thoroughly mixes it. In step 4, two tablespoons of Chinese starch are added to bind the liquid into a lump. Step 5: The mixture was stirred until it was not separated. Step 6 covered the container with plastic and sun-dried for two days until the paste dissolved. Step 7 after sun-drying, filter through a fine sieve to remove large particles that may irritate wounds. Step 8 Packaging in bottles. The benefits of the ingredients are that coconut oil helps keep the skin moisturized and prevents the wound from drying too quickly. Similarly, the results of the study in [7]. The saponification process of coconut oil and banana peel extract for making antibacterial and wound healing hand soap revealed that coconut oil is known for its moisturizing properties, which help keep the skin hydrated and prevent wounds from drying out too quickly, and exhibits antimicrobial activity, effectively inhibiting bacteria such as *Staphylococcus aureus* [8]. Clear Lime Water. Assists in draining pus from infected wounds. Camphor promotes wound healing and inhibits bacteria from entering the body. The results of [9] revealed that lime water can help in cleansing wounds, potentially aiding pus drainage, which is crucial for infection management and [10]. Water for wound cleansing showed that cleansing with tap water, similar to lime water, showed no significant difference in infection rates compared to saline, suggesting its effectiveness in wound care. Aromatic litsea (*Litsea cubeba* resin) disinfects wounds by killing the bacteria. Chinese goldthread (*Coptis chinensis* resin) promotes skin regeneration by encouraging the shedding of old skin cells. Similarly, the results of [11] on the antifungal activity of *Litsea cubeba* (Lour.) Persoon

essential oil against the waxberry spoilage fungi *Penicillium oxalicum* and its potential application revealed that the combination of *Litsea cubeba* (Aromatic litsea) and *Coptis chinensis* (Chinese goldthread) resins presents a promising approach for treating various types of wounds, particularly burn wounds and infections. *Litsea cubeba* exhibits broad-spectrum antibacterial properties, effectively compromising bacterial cell membranes and promoting wound disinfection. This mixture is particularly effective for treating burn wounds, scalds, blisters, infected wounds, and wounds with pus. According to the Farmer Development Group and Leader Network [12], aromatic litsea oil can be used to treat ruptured abscesses, rotting abscesses, and burns.



Figure 1. Aromatic litsea oil (developed by the authors)

3.2. Fang Herbal Cough Remedy

Ingredients included 1) 200 g of fang wood (chopped); 2) 50 g of Galangal; 3) 50 g of black peppercorns; 4) 50 g of orange peel; 5) 15 g of white lime powder from clamshells; 6) 6 liters of water; 7) 25 g of Phimsen (a herb); 8) 25 g of menthol; 9) 15 g of camphor (or 30 g of sugar if a sweeter taste is desired). The process consisted of a Fang herbal cough remedy following 10 steps. Step 1 boils water until it boils. Step 2: Add chopped fang wood and wait for water to boil again. Step 3 adds black peppercorns and waits for water to boil again. Step 4 adds galangal and waits for water to boil again. Step 5: Add orange peel and wait for the water to boil again. Step 6 adds white lime powder and waits for water to boil again. Step 7 Camphor is added and the water is allowed to boil again. Step 8 adds Phimsen and menthol, and then removes the pot from the heat. Let it cool and then transfer it to a jar. Step 9: Let it sit for 2 nights. Step 10: Filter with a medical strainer and let it settle before bottling. The benefits of these ingredients are that fang wood helps nourish blood and heal inflammation. According to [13-14], the anti-inflammatory and wound healing effects of mouth gel containing kaempferol K from *Kaempferia galanga* rhizomes, Fang wood, is known for its blood-nourishing properties and aids in healing inflammation and enhancing recovery from respiratory ailments.

Galangal exhibits antibacterial properties, making it effective against respiratory infections [8]. Black peppercorns relieve cough, expel phlegm, and treat cold. Orange peel aids in settling sediments in the digestive system, which can indirectly support respiratory health [15]. White lime powder from clamshells helps expel phlegm and is effective in expelling phlegm; thus, clearing airways Phimsen reduces coughs, expels phlegm, and has anti-inflammatory properties. Menthol relieves coughs and reduces throat inflammation, and camphor helps relieve cough and reduces throat inflammation. Camphor helps expel phlegm and keeps the throat moist [8]. According to [16], a comparison of the results of formularies Fang syrup and brown mixture, the cough in upper respiratory tract infection patients found that the use of fang cough syrup and black cough syrup to reduce the severity of cough in patients with upper respiratory tract infection had a statistically significant difference of 0.05. The results of this study are good for using herbal products to replace modern medicines to increase their use to create domestic self-reliance and reduce the import of drugs and chemicals from abroad, which is beneficial to the health of the people in the country.



Figure 2. Fang herbal cough remedy (developed by the authors)

3.3. Chili Oil

Ingredients included 1) 1-4 rhizomes of mature galangal or wild galangal; 2) a handful of small dried chilies; 3) a handful of large, dried chilies; 4) a handful of black peppercorns; 4) 1 liter of coconut oil; 5) 2 tablespoons of wintergreen oil; and 6) a tablespoon of camphor. The process consisted of Fang herbal cough remedy following four steps: Step 1: Roast the galangal, large, dried chilies, small, dried chilies, and black peppercorns until charred, and then crush them. Step 2 Place the prepared herbs from step 1 into a glass jar, add coconut oil, wintergreen oil, and camphor, and stir well. Step 3: Close the lid and let the mixture sit for seven days. Step 4: Strain the oil using a medical strainer and bottle. The benefits of these ingredients are to help relieve body aches, reduce inflammation, and treat paralysis, numbness, and tingling sensations (but avoid massaging the affected areas). Chilies help treat sprains, bruises, and muscle pain; reduce joint

inflammation and swelling; and relieve muscle pain. Capsaicin in chilies Capsaicin, found in chilies, acts as a counterirritant, providing relief from joint pain and muscle aches [17]. Topical application of capsaicin has shown significant efficacy in reducing chronic pain, with studies indicating a 60.8% response rate in patients with non-specific back pain [18]. Coconut oil moisturizes the skin through its moisturizing properties and enhances skin health. Wintergreen oil is effective for mild pain, including arthritis, and the muscle strain camphor is recognized for its ability to ease muscle and joint discomfort. Wintergreen oil relieves mild pain, such as joint pain, muscle aches due to strain, sprains, arthritis, bruising, and back pain [13, 17]. According to [18], concerning the development of medicinal herbs from the extract of chili and phlai in emulgels, the innovation of herbal medicinal products in the formula helps care for patients with muscle pain and inflammation related to nerve issues. This approach enhances patient compliance with treatment and reduces the risk of side effects associated with conventional medicine, thereby significantly improving the effectiveness of care for this group of patients.



Figure 3. Chili oil (developed by the authors)

In addition to the study of the conservation of wisdom of local herbal plants in Na Pa Nad Village, Khao Kaew Subdistrict, Loei Province, the results obtained showed that there are guidelines for the conservation of wisdom and application of local herbal plants :1) inheritance from ancestors, 2) making a journal or guidebook, 4) processing local herbal plants into medicines, and 4) creating added value by distributing medicines from local herbal plants [19].

Therefore, to take measures to promote the value of local knowledge, according to [20], it is necessary to: 1) disseminate traditional remedies in writing and preliminary processing methods to ensure the medicinal properties of medicinal plants; 2) carry out studies to collect, examine, and store folk remedies.

4. Conclusion

The importance of upholding and applying traditional knowledge is underscored in the study of local herbal processing wisdom within the Pa Wa agroforestry Network in Kaeng Hang Maeo district, Chanthaburi province. This research uncovered different herbal remedies and how they are prepared,

which are deeply connected to local culture and practical uses through in-depth qualitative research. The identified herbal products were aromatic litsea oil, Fang herbal cough remedy, and chili oil, each containing unique ingredients and processes useful for wound care, respiratory health, and pain relief. Research shows that the intergenerational transfer of local wisdom is vital for maintaining the health and well-being of the community.

This indigenous wisdom not only helps the community but can also be expanded into profitable goods, increasing economic worth and improving the competitiveness of Thai herbal products in local and global markets. Recording and organizing this knowledge about herbs, the research also guarantees that it will not disappear, but can be passed on, modified, and maintained for the upcoming generations. This is in line with Thailand's overall goal of boosting its herbal industry and establishing the country as a frontrunner in herbal products across the ASEAN region. The emphasis on community involvement highlights the significance of agroforestry in promoting independence and sustainable farming methods, leading to the welfare of farmers and advancement of their communities.

This study will be the starting point to encourage agricultural forestry groups and people in the community to see the importance of preserving and passing on local wisdom. By recording and organizing knowledge about the use of herbs, this knowledge will not be lost and can be passed on to the next generation sustainably. It also encourages the new generation in the community to see value and participate in continuing this wisdom, promoting the health of people in the community.

Herbs produced in the community are useful in wound care, respiratory treatment, and pain relief. They can be used as common household medicine, reducing dependence on external medicines and increasing health knowledge for people in the community. Independence and self-reliance: The production of herbs at the community level helps create stability for people in the area, reduces dependence on external products, and strengthens the community to be self-reliant in terms of health and economy. In addition, the community requires media to disseminate the wisdom of herbal processing. The research team planned to develop media for the community to conserve and pass on the local wisdom of the community in another way.

Declarations

Author Contributions

Conceptualization, E.T. and P.E.S.; methodology, E.T.; formal analysis, E.T. and P.C.; writing—original draft preparation, all coauthors contributed equally; writing—review & editing, E.T., P.E.S., C.K. and J.K.;

project administration, E.T., P.C. and C.K. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

The data presented in this study are available in this article.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of the King Mongkut's Institute of Technology Ladkrabang, Thailand.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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