

## **Innovative Learning Management for the local wisdom on Herb using Local Community Resource Base**

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### **Abstract**

The purposes of this research are; 1) To study local wisdom on herbs of Chaiyaphum province 2) to prepare learning lesson related to local herbs 3) to disseminate and promote local wisdom and local herbs, learning sources of herbs in Chaiyaphum province using the qualitative research method, The main informants of the research consist of 9 people, namely village philosophers living in Sai Ngam and Ban Na Si Nuan villages in Na Siao Subdistrict, Mueang District, Chaiyaphum Province. Tools used in the research are interview forms and field record form. Data derived from the interview are analyzed using content analysis protocol.

Findings in this research reveal that: 1) In the study of local wisdom on the herb of 90 types in Chaiyaphum province, plants with the most medicinal properties include; *Dracaena angustifolia* Roxb (ต้นคอนทมา), *Cryptolepis dubia* (เถาเอ็นอ่อน), Caper tree peels (เปลือกบก), Phlai herb (ว่านไพล), Camphor Tree leaves (ใบหนาด), Turmeric (ขมิ้นชัน), *Croton persimilis* root (รากเปล้าใหญ่), Bergamot peels (เปลือกมะกรูด), used to cure tendon, tendon stretch, back stiff, tendon pain, ligament pain. To use, make it into a hot compress ball. 2) Preparation of lessons about the development of local knowledge by creating a CD of Medicinal Plant Database and Medicinal Plant Documents consisting of photos, medicinal plant name, scientific name, cultivation, properties, and herbs application to be used for learning in communities, schools and for interested people. 3) In the dissemination of local wisdom and innovation of local herbs as a source for learning herbs in Chaiyaphum Province to disseminate knowledge to benefit those interested and can be used as a source for learning herbs, the community can learn how to use herbs as food and medicine which will help to participate in preserving herbs for sustainability.

**Keywords:** Innovative Learning Packages, Local herb wisdom, Community resource base

### **The importance of the problem**

Thailand's 20-year Research and Innovation Strategy (2017 - 2036) aims at creating basic knowledge and understanding of Thai wisdom and Local knowledge in living with quality of life to recognize self-reliance, and health care (20-year Research and innovation Strategy 2017 - 2036, 2017, pages 68 - 69). National Master Plan on Thai Herb Development No. 1, 2017 - 2021 defines the strategy in developing Thai herbs, health promotion, and disease prevention in the community. The Local Government Organization has a plan to promote the uses of health herbs wisdom and primary care in integrating with local medicine wisdom promoting local herbs for health care and disease prevention (Ministry of Public Health. (2017). National Economic and Social

Development Plan 2017-2021 for agricultural development has created and transferred academic knowledge, science, technology and innovation and local wisdom in participatory agriculture to support the utilization of biological resource bases, respond to the quality of life of people and the environment of the country including supporting the development of sustainable agriculture through the participation process. In the study of alternatives and the determination for the process of study, research, development, and mechanisms for the community to be aware of health and natural products that safe for both personal and environmental, the medicinal plant is one option that is commonly used as food. The wisdom of Thai medicinal plants has always been with Thai people since ancient times until now

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although nowadays has been developed with technology to be innovative and into various herbal products but the transfer of knowledge of local wisdom, knowledge transfer will make learners understand, be able to bring into practice. Local wisdom transfers knowledge to learners automatically without learning from the institute, but it will use the Socialization Process method created by imitating and remembering to inherit within the family and it deploys demonstration as transfer method to make an example, explaining every step to learners to understand and then bring into real practice. Demonstrate and put into practice, practice repeatedly until becoming proficient because the work that will be used for a living must be actual work that can be utilized. Learners or target groups that receive wisdom knowledge transferred from knowledgeable people have a belief in keeping a promise for the ancestor to cover up the secret in the technology is not properly developed (Ratana Bua Son (1992). Teaching and learning innovation of modern teachers in order to improve the skills of learners in the 21st century currently has created teaching materials and developed into teaching and learning innovation to provide learners with important and necessary skills for learners in the 21st century to meet the goals of national curriculum according to National Education Plan 2017-2036 which link to national strategies with the goal in developing the potential of people of all ages and the creation of a learning society for all types of innovation that are transferred while providing examples at actual locations to help readers to understand clearly.

Chaiyaphum Province has natural resources and the environment with 50% forest area, which is a local herbal forest called "Phu Laen Kha". It's a natural asset suitable for the growth of herbs. There are knowledgeable people or local sages, folk doctors in the province who have the experience, herbal wisdom that has been registered and granted for professional rights for a total of 36 people. The strategy of Chaiyaphum Province is, therefore to propel for the innovation of community herbs to carry on the preservation of Thai wisdom about herbs to be recognized and to be used for planting, food and medicine processing for quality of life of peo-

ple (Chaiyaphum Farmers Council, 2017). From the result of research on the inheritance and transfer process of folk medicine wisdom leading into the health care of people in Ban Sai Ngam Village No. 3 and Village No. 12, Na Siao Sub-district, Mueang District, Chaiyaphum Province, the results reveal that for the community way of life, the folk healers have a tied relationship with the community forests. There has been herb collecting activity since the year of 1950, with knowledgeable doctors who have local wisdom in using herbs to cure the diseases. For methods in the inheritance of knowledge and local wisdom in using herbs, there are folk healers in the province that transfer knowledge to public health volunteers while there is Miang Khing (wrapped in leave ginger) , a recipe containing ingredients like Black Galin-gale (กระชายดำ), Long pepper (ดีปลี), Toon Caladium (หัวทูน), Ginger (กระเทียม), Phlai (Bengal root ว่านไพล), dried chilies, Crataeva (กุ่ม) Peels, Pipe Tamarind (มะขามเปียก), Brown sugar (น้ำตาลทรายแดง), Odized salt (เกลือไอโอดีน), Elephant garlic (กระเทียมโทน) which is the ancient formulas from Ban Anu Ban transferred to the new generation alongside the Sai Ngam village (Monthan Penporn Chai-pakdee, 2020)

Chaiyaphum Rajabhat University has introduced the King's Philosophy for the local development in accordance with the sufficiency economy philosophy for self-reliance for the dissemination of local herbs to be a community learning center in Chaiyaphum province. With a research fund from the National Research Council of Thailand 2018 on the succession process of folk medicine wisdom leading to the health care of the villagers in Ban Sai Ngam Village No. 3 and Village No. 12, Na Siao Subdistrict, Mueang District, Chaiyaphum Province. It, therefore, has been extended to the research on the learning innovation for knowledge of local herbs from the resource base of the community focusing on people to use a source of learning herbs for medicine and herbal food and preserving the environment and herbs in the community for the sustainability

### Research Objectives

1. To study local wisdom on herbs in Chaiyaphum Province

2. To create a lesson about the development of local wisdom on herbs
3. To disseminate local wisdom on herbs, and herb learning center in Chaiyaphum province

**Expected Benefits**

1. To obtain information about local wisdom on herbs in Chaiyaphum province where management in the production and development of medicinal plant network in Chaiyaphum province are fully implemented
2. To obtain the practical guidelines in the management of learning resources with community participation in continuously driving the activities which result in the development of strong communities and a sustainable environment.
3. The community has continued to create awareness in the community to recognize and preserve the importance of local herbs in the community.

**Research Extent**

1. Areas of study include Sai Ngam Village, Ban Na Si Nuan, Na Siao Sub-district, Mueang District, Chaiyaphum Province
2. Sample population used in the study and providing information are folk philosopher on herbs in Sai Ngam Ban Na Si Nuan Village, Na Siao Sub-district, Mueang District, Chaiyaphum Province
3. The research period is January 2019 - December 2019

**Research Methods**

1. Plan to collect data, create tools for data collection according to objectives
2. Study the concepts, theories related to medicinal plants from various documents and from individuals

The researcher searches for knowledge from relevant research documents, books, academic documents and news from the website and from experienced persons, study topics of medicinal plants used in the treatment of diseases from Thai herbal textbook, research results on Thai traditional medication, and various research reports about medicinal plants.

**1. Population and samples**

1.1. To study and survey of data in the area, the researcher has chosen to study the use of herbs, herbs used to treat diseases in the garden areas of Baan Sai Ngam Herb, Ban Na Si Nuan, Na Siao Sub-district, Mueang District, Chaiyaphum Province which are sources of over 90 medicinal plants in an area of 9 rai. The researcher meets with Phra Kru Kittithamworakhun, a monk dean of Na Siao Sub-district an abbot of Wat Pa Phatthanatham temple at Na Siao Sub-district, Mueang District Chaiyaphum province, the grower and the planter who takes care of the herb garden in Pa Phatthanatham Temple to clarify the purpose of the study to understand and to request in exploring and studying the use of herbs for the treatment of diseases, as well as various herbs in the herb garden of Wat Pa Phatthanatham Temple and Sai Ngam Community. The re-

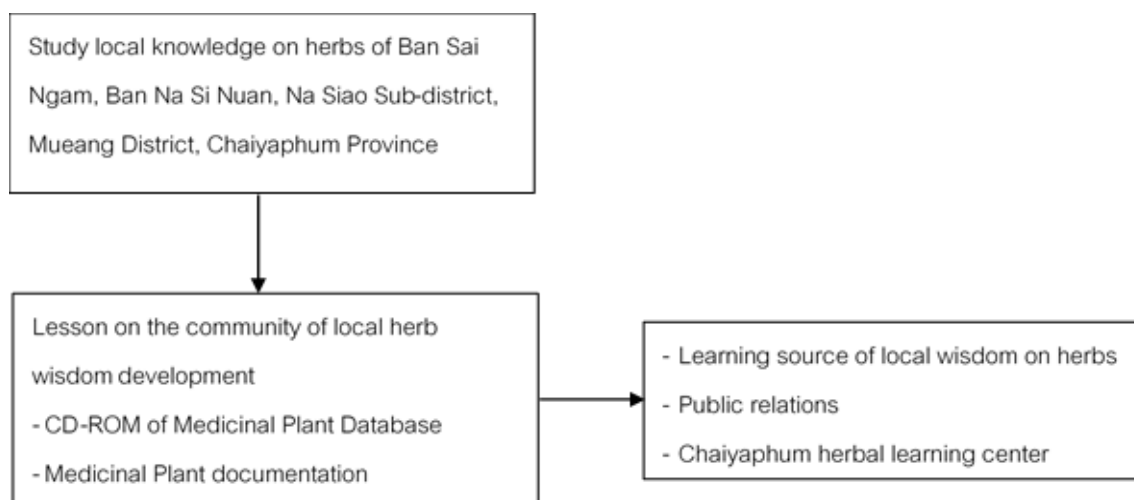


Figure 1. Research Conceptual Framework

searcher requests permission from the village headman, community leader, village health volunteer to interview the local philosophers and folk healers at Ban Sai Ngam, Na Siao Sub-district, Mueang District, Chaiyaphum Province to collect research data. The researcher used the research methods as follows

1.2 Interview with the local philosopher and folk healers 3 times 9 persons at Sai Ngam village, Na Siao Subdistrict, Mueang District, Chaiyaphum Province.

1.3 Interview with individuals or a group of people who use the Baan Sai Ngam Herb garden, about the study of various knowledge of herbs in the community, natural planting sources, uses of herbs as food and medicine, properties of each type of herbal, the method in using herbs for food and treating diseases. The interviews are conducted 3 times with 9 people.

## 2. Research tools

In this study, the researcher conducts qualitative research. The tools used in this study are :

1. The survey form, to survey of medicinal plants grown in Wat Pa Phattham Temple, Ban Na Nuan and Ban Sai Ngam, Na Siao Sub-district, Mueang District, Chaiyaphum Province to collect data of name, type, properties, and parts of medicinal plants

2. The interview form, an interview with Pra Kru Kittitham Worakhun, a monk dean of Na Siao District and is the abbot of Wat Na Siao Subdistrict, Mueang District, Chaiyaphum Province.

3. Medicinal plant database record form to disseminate knowledge about the herbs in Sai Ngam villages and herbs in Pa Phatthatham Temple, Na Siao Sub-district, Mueang District, Chaiyaphum Province.

4. Interview forms about the use of herbs for treating diseases of the herb gardens in Sai Ngam village and herbs in Pa Phatthana Tham Temple, Na Siao Sub-district, Mueang District, Chaiyaphum Province.

## 3. Data Collection

In this research, the researcher collects data covering all the contents according to the studied issues as follows;

1) Study documents, articles, books, and related research from academic experts to be used as research guidelines

2) In-depth interview about herbs information based on the main questions according to the needs and convenience of the informants

3) Observation, the researcher uses the principle of participatory observation to help find and evaluate information during the interview and records the required data later.

4) Field records, the researcher use both shorthand lecturing and tape recording methods during the interview. After that, the researcher transcribes the tape and collects and organizes all recorded data every time after the interview to record all the events occurred and then verify and update to be correct and complete.

## 4. Procedures for field data collection in the field

4.1 Community preparation, the researcher goes to study in the area full time. The researcher arranges the interview at home or depending on the convenience of samples. To become familiar with the samples for qualitative data collecting, the informants can perceive value and the benefits of research.

4.2 Observation, it's the methodology to analyze or find out the relationship of the incident with other things in which the researcher uses participant observation as an observation methodology where the researcher does not involve in the event to be interviewed. The researcher follows the interview with the informants according to the questions that the researcher creates.

4.3 Data collecting by in-depth interview uses interview guidelines as follows

4.3.1 The first in-depth interview, the researcher starts by talking about general topics in order to create a friendly atmosphere in the form of person to person conversation rather than an official interview. The researcher behaves on the basis of good manners and punctuality being a good listener, sensitive to both the emotional reaction and to a matter of information, accepts the behavior that the sample group is expressing, not much sticking with the sequence of the question while linking to the issue using conversation. Researcher exchanges with the samples for opinion, belief, life experiences which are subjective using broad questions to open issues with the sample group as open-ended

questions.

4.3.2 The researcher records the conversation during the interview, summarizes important issues that have been interviewed for informants to verify for accuracy, arranges an appointment for the next interview, gathers and categorizes information received from interviews, simultaneously transcribes the recorded interview and analyze the data to understand the content of the interview while looking for definitions that are not clear and some issues that are still missing to ask the next sample group

4.3.3 The Duration of the interview is 30-45 minutes. Each session, the number of times used for the interviews is between 2-3 times by mainly taking into account the suitability and completeness of data derived from the in-depth interview each day, 1 interview per day. The second in-depth interview is approximately 4-5 days from the first interview. This depends on the convenience of each time appointment but not for more than 15 days. The second interview will be an interview based on additional questions to gather the information that may be missing from the 1st interview. After the interview, the interview content will be reviewed so that the sample informants will be informed for information from the 1st interview to add or edit further information if needed

4.3.4 Time and place of interview will depend on the convenience of the sample informants which is usually at homes of the samples where following up of interview can be possible

4.3.5 The interview will be completed once all the information required is sufficient and the researcher expresses the appreciation for the cooperation of the sample groups for shared valuable experiences.

#### 4.4 Data Validation Checks

The researcher uses methods in checking the reliability of the data using the following methods.

4.1.1 Data validation is conducted every time the data is studied. The researcher uses a qualitative data validation method called the triangular inspection from the data source as follows

1) Individual sources, by examining the infor-

mation of the same topic but different individuals to acquire different information and for evaluating if the data that has changed or not. If checking and receiving the same information every time, it means that the information acquired is reliable. However, if the acquired information conflicts, the researcher will repeat the interview to collect further information and verify with other informants again.

2) Source and place, by interviewing the same informants in different locations, such as interviewing the local philosopher and observing the similarities and differences of the data, if the information obtained is the same, it is considered accurate

3) Checking the same data but at different times, such as morning, afternoon, or evening. It sometimes may require defining the interval between the sessions.

#### Data Analysis

Data analysis is performed simultaneously with data collection. Qualitative data analysis is conducted using Content Analysis consists of 3 analysis principles (Mile and Huberman, 1994) including data organizing, data display, and conclusion, interpretation, and verification of the research results in order to obtain the ideas about local wisdom on medicinal plants. The information obtained from the in-depth interview relative to the questionnaire is collected and organized into categories, summarized, analyzed, and used for discussion according to the process of qualitative data analysis.

#### Results

1. In the study of local wisdom on herbs of Sai Ngam Village and Na Si Nuan Village, Na Siao Subdistrict, Mueang District, Chaiyaphum Province from the survey and sampling of medicinal plant species derived from Wat Pa Phattham, Ban Na Si Nuan Around Sai Ngam homes, consisting of 90 species, the results reveal that for herbs in the area used as medicine for external use as hot herbal compress ball the most commonly used herbs (Table 1).

In using dried ginger for cuisine as leave-wrapped ginger, it is found to be very nutritious which

contains the following ingredients;

1) The main ingredient includes 3 portion ginger, but if cooked for a lactating woman, add small fried ginger 1 portion.

2) Secondary ingredients are Black Galingale (กระชายดำ), Long pepper (ดีปลี), Toon (Caladium (หัวทูน) 1 part for each. Other parts include Ginger (กระเทียม), Phlai (Bengal root ว่านไพล) ½ part for each

3) The flavor enhancers to add are dried chilies, Crataeva (กุ่ม) Peels, Pipe Tamarind (มะขามเปียก), Brown sugar (น้ำตาลทรายแดง), Odized salt (เกลือไอโอดีน), Elephant garlic (กระเทียมโทน)

4) Side dishes include Piper Lolot (ชะพลู) Star Gooseberry leaves (ใบมะยม), Raw Bananas (กล้วยดิบ)

2. Create lessons for the community about local wisdom development for Sai Ngam Village, Na Siao Subdistrict, Mueang District, Chaiyaphum Province with information on medicinal plants, photos, scientific names, medicinal properties, and parts of herbs used, and propagation for the benefit of visitors while focusing on the importance of the propagation of herbs in the community.

3. In the dissemination knowledge and local knowledge for learning resources, the local knowledge center is established to disseminate local wisdom in Chaiyaphum province. The learning center consists of CD-ROM of medicinal plants database, medicinal plant documentation

**Table 1.** The most commonly used herbs.

Common Name	Scientific Name	Properties	Parts of herbs that are used	Propagation
- Khon Mah ต้นคองหมา	Dracaena angustifolia Roxb.	Drink to Cure diabetes	- Mild leaves and flowers - Use the whole trunk for boiling with water	-Cultivation using seed -Leaving to root
- ต้นกุ่มบก Sacred barnar, Caper tree, Sacred garlic pear, Temple plant กุ่มบก	Crataeva magna (Lour.) DC.[1] or Crateva religiosa Ham.[2] or Crateva religiosa G.Forst.	Thai medicine formula use: - Root, intense flavor to relieve stomach aches, nourishing the element - Leaves taste bitter and fragrant, improve sweat excretion, antipyretic and laxative properties, expel the parasite, cure tendon pain, and rheumatoid arthritis. Leaves are used for massaging - The bark is used as an antidote for the skin. - The flower tastes minty, cure eye, and throat sore - The fruit tastes bitter, cure fever - The bark tastes intense flavor to cure hiccups, improve fart and sweat excretion, cure the wasting disease. The bark of the trunk is heated with steaming hot to use to relieve pain. - The seed is used for boiling and drinking to help relieve aches.	Mild leaves and flowers can be fermented giving a sour taste. Nutritional values per 100 grams provide energy 88 kilocalories carbohydrate 15.7 grams, in 3.4 grams of protein, 4.9 grams of fiber, 1.3 grams of fat, 73.4 grams of water, Vitamin A 6,083 international units, Vitamin B1 0.08 mg., Vitamin B2 0.25 mg., Vitamin B3 1.5 mg., Vitamin C 5 mg., Calcium 124 mg, Iron 5.3 mg., Phosphorus 20 mg.	Propagated by seeds, leaving the cuttings to root, and grafting

Table 1. (Continued)

Common Name	Scientific Name	Properties	Parts of herbs that are used	Propagation
- Bergamot มะกรูด	Citrus hystrix DC.	Bergamot is high in antioxidants, help to strengthen the immune system to be healthy and resistant to disease improving appetite	1. The bark helps relieve stroke, dizziness. Used as a heart tonic by using a slice of fresh kaffir lime peels about 1 curry spoon of curry. Add camphor or a handful of borneol, brew with boiling water, leave to soak, and then drink the boiled water 1-2 times.	- Seeds in the mature bergamot fruit - Grafting
-Phlai, Cassu- munar ginger, Bengal root ว่านไพล	Zingiber montanum (J.Koenig) Link ex A.Di- etr.	Relieve inflammation, cure sprains, swelling and bruising while it can help to alleviate aching	- Leaves help to relieve pain or fever. - Roots help to relieve nosebleeds. But the most important and valuable part is the mature rhizome	Seeds or rhizomes or rhizomes of the underground trunk. Parts of the rhizome as the stem for planting. Planting in the soil is not flooded, not near a source of toxic substances.
- Ngai Cam- phor Tree, Camphor Tree หนาด	Blumea balsamifera (L.) DC.	Relieve body aches and dizziness and it helps increase blood circulation nourishing the skin	- Roots are carminative resulting in good blood flow. Improve excretion and cure diarrhea. Relieve swelling, joint pains, bruises. Relieve aches after childbirth -Leaves nourish the body resulting in good blood flow Relieve swelling, bruises, and wounds. Relieve joint and bone pains. Cure eczema having carminative properties curing stomach aches. De-worm the parasite. Relieve the fever, headache, asthma. stop the bleeding. Increase sweat excretion and expectorate. Cure hemorrhoids -Stems help improve expectorate	An outdoor plant species that often grows in wide areas, fields, or valleys in general Propagated by seeds or fruits.

Table 1. (Conrinue)

Common Name	Scientific Name	Properties	Parts of herbs that are used	Propagation
- Thick-leaved croton, Thick leaf croton รากคั้งคี่	Croton crassifolius Geiseler ( Science Synonym Name: Croton chinensis Benth.)	Help pain relief. The root helps to cure colic, flatulence, stomach ache, and abdominal distension which can be cured by using boiled roots with drinking water.	Roots can be processed by pounding to make a compress ball to relieve pain	By seeds. Found mostly in the northeast region. Grow in all soil conditions, medium humidity under full-day sunlight.
- Turmeric ขมิ้นชัน	Curcuma longa L.	Apply to blisters on the scalp. Use mature rhizome a size of 1 thumb. Wash, clean, grind and add a little alum and moistened coconut oil sufficiently for use as an external medicine	- Turmeric powder can be applied to the area of pock, ulcers from insect bites. - Mature dried rhizomes, ground into fine powder to apply to the area of the rash. /- Dried rhizome ground into powder, simmer with vegetable oil making oil to apply fresh wounds	Seedling in a planting hole covered with the soil of 5 - 10 cm thick. Or bringing the seed to cultivate before planting by exposing to dry in the shade covered with decomposed manure for about 20 days. The seed will sprout up. Therefore, brought to plant in the plot
- Croton perisimilis root รากเปล้าใหญ่	Croton oblongifolius Roxb.	Cure diarrhea nourishing blood. Relieve pain and hepatitis Relieve joint pain and muscle aches.	- Bark and leaves are used to relieve diarrhea, nourishing blood. - Boiled water of the bark is used for fever relief, curing hepatitis, joint pain, and muscle aches	Propagation by tissue culture method (Research of Duangporn Ang Sumalee)
- Dried ginger ขิงแห้ง	Zingiber officinale Roscoe.	Where the dried ginger is used as a component of traditional medicine includes Na Wa Kot cordial, Wisampaya Yai medicine, clove pills, Fai Palaikulp medicine, and diuretics drug in the herbal drug list from the Main National Drug Information announced on 7 August 2013	Dried ginger rhizome is used as an ingredient in 5 other formulas: haematinic drug (ยาเลือดงาม), Blood tonic drugs (ยาบำรุงโลหิต) Benjakul (BJK) drug (ยาเบญจกุล) gastric juice pills (ยาปลูกไพธาดู) , Yar Tree Phikat medicine (ยาตรีพิกัต)	Dried ginger rhizome



## Discussion

Results in the study of the innovative learning of local wisdom from the community resource base in Na Si Nuan Village, Sai Ngam Village, Na Siao Sub-district, Mueang District, Chaiyaphum Province are discussed as follows:

1. According to the study of species and properties of medicinal plants in Na Si Nuan Village, Ban Sai Ngam, Na Siao Sub-district, Mueang District, Chaiyaphum Province by surveying, collecting specimens of medicinal plants with taking pictures and collecting important details related to herbs in the Na Si Nuan Village, Ban Sai Ngam, Na Siao Sub-district, Mueang District, Chaiyaphum Province, the results indicate that herbs in the area that people use for the treatment of diseases and nourishing the body include the following herbal samples

1. Roselle, properties: mild fruit can be eaten for parasitic excretion
2. Black Sugarcane: Relieve leg pain, use as diuretic
3. Dung Etok (passiflora lye, passion fruit): Relieve leg pain
4. *Gymnanthemum extensum* (bitterleaf tree): Bitter taste, cure fever
5. Sweet Basil: carminative properties, nourish the wind element
6. Citronella grass: Diuretic properties
7. Pak Waan Ban Tree (*Sauropus androgynus*): can be eaten at all times
8. Pea Eggplant: Cure the diabetes
9. Plai (*Zingiber cassumunar*): carminative properties
10. Galangal: carminative properties
11. Ginger, Lesser Galangal: deodorize the fishy smell
12. Agasta Flower (Vegetable Hummingbird): mild leaf help cure a seasonal Influenza, the peels cure mouth ulcer
13. Karen Chili: carminative properties, enhance digestion, cure napping, nausea, vomiting, dizziness
14. Carambola, lemon; reduce blood fat, dissolve fat, and blood clots. Help cleansing

15. Heart-leaved moonseed (*Tinospora crispa*): inhibit aphthous ulcer and immunodeficiency symptoms, purify blood. Chew to eat for internodes of 1 finger per day

16. *Cryptolepis Dubia*: Relief disabled tendons and nourish tendons

17. *Derris Scandens*; relief fever in women

18. Chaya (spinach): nourish the four elements; Ceylon Spinach and Morning glory help nourishing eyesight

19. Indian cork (*Millingtonia hortensis*) tree: Cure asthma and allergy symptoms

20. *D. longissima* Schum: Help nourishing milk and blood; stalks cure Hemorrhoids, allergy, and asthma symptoms

21. Fa thalai chon (*Andrographis paniculata*); cure sinusitis and tonsillitis symptoms

22. Long Pepper; carminative properties: Diamnel flower (*Oldenlandia corymbosa*); diuretic properties, heal colic symptoms in the stomach. These 22 medicinal plants are in accordance with the Thailand Institute of Scientific and Technological Research. (2015) which find these plants are edible and can be used as medicine. 23. Dried ginger can be processed into leaf-wrapped ginger. Herbal food products containing the following ingredients; Dried ginger, Black Galin-gale (กระชายดำ), Long pepper (ดีปลี), Toon (*Caladium* (หัวทูน), Wild (Bitter) ginger (กระเทียม), Phlai (Bengal root ว่านไพล), Crataeva (กุ่ม) peels, Pipe Tamarind (มะขามเปียก), Brown sugar (น้ำตาลทรายแดง), Odized salt (เกลือไอโอดีน), Elephant garlic (กระเทียมโทน), Piper Lolot (ชะพลู), Star Gooseberry leaves (ใบมะยม), Raw Bananas (กล้วยดิบ), will be the cuisine that contains herbal ingredients with carminative, properties that help expel wind-dampness, relieve colic syndrome, nourish the milk of women after childbirth. In the use of dried ginger as herbs, it can be chosen based on the understanding and convenience that the plant can be found in the locality. This is consistent with Samittinan, T. (2001) who found that dried ginger is used as a component in traditional medicine in the traditional home medicine, such as Ya Hom Naowa Kot Kot cordial (ยาหอมเนาวโกฐ), Ya Wisumphaya Yai medicine (ยาวิสัมพยาใหญ่), Clove pills (ยาประสะกานพลู).

Sai Ngam villagers have processed products from dried ginger into "Miang Khing" (leave-wrapped ginger) sold at 160 baht per kilogram. According to Duanpenporn Chaiphakdee (2019), it is found that herbal wisdom can help to process food products generating income for the community.

2. Create lessons for the community about local wisdom development for Sai Ngam Village, Na Siao Subdistrict, Mueang District, Chaiyaphum Province with information on the name of medicinal plants, photos, scientific names, family names which are in line with the research of Kamonchat Klom-Im (2017) where information related to herb name, photos, scientific names, parts of herbs used and properties are used to create community lessons for visitors and learners of Thai traditional medicine have applied for plant propagation and herb preserving for sustainability. This is consistent with Pornchulee Archa Amrung and et.al (2018) which find that digital media of herbal products can be linked to technology as a business center for herbs.

3. In the dissemination knowledge and local knowledge for learning resources, the local knowledge center is established at Na Siao Subdistrict Health Promotion Hospital to disseminate local wisdom in Chaiyaphum province. This learning center consists of CD-ROM of medicinal plants database and medicinal plant documentation which is in line with the research of Kanitkan Pankaew et al. (2017) which find that the local wisdom learning center consists of the posters of local wisdom from different ethnic groups, learning materials, booklets and CD with information about local wisdom for schools to be distributed to the youth in the area. This is consistent with Juljerm Suriwong (2016). and Duenpenporn Chaipakdee (2016) which find that

the requirement for knowledge about medicinal plants of students, non-formal and informal education centers in Kaeng Khro District Chaiyaphum province is at the highest level.

### **Suggestions**

1. Knowledge about the properties of herbs should be provided through online media and websites for lifelong learning.

2. Booklets to educate the public about health care for every family should be publicized.

3. Planting, caring for community herbs, and preservation of the nearby community environment should be publicized.

### **Suggestions for future research**

1. The conservation of rare or endangered medicinal plant varieties used for the treatment of diseases should be studied.

2. Research and development of learning courses on local medicinal plants in the form of participatory action research should be conducted while school encourages teachers, students and the community with local knowledgeable people to participate in the learning and teaching activities.

3. Process of knowledge transfer on herbs for cultivation and natural herb resource inherited from local ancestors should be conducted to create knowledge about the sources of herbs in natural forests as a heritage of natural resources and for sustainable environmental conservation

4. Knowledge should be provided by organizing the training for community members to learn the processing of local herbal products to create extra careers for families and the community.

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