

Chapter IV

Results and Discussion

Because the objective of this study was to develop "Lanna" herbal medicine into appropriate preparation or dosage forms, and to promote its use in primary health care, it is important to understand the concepts concerning indigenous knowledge of traditional medicine before proceeding further. Accordingly, this chapter will show the traditional health care practice in its cultural dimension, to demonstrate how people in "Lanna" culture take care of their sickness or their health. Then emphasis is placed on showing the indigenous knowledge of the use of herbal medicine, in order to understand the concepts and objectives of "Lanna" healers. The data of the use of herbal medicine by people in Phaya Mengrai district are shown to illustrate the situation of use at the present time, and to provide the data for developing suitable dosage forms. Results of the development and experiment are shown subsequently. The last section answers the objective of how to promote the use of herbal medicine in primary health care at Phaya Mengrai district. The result and discussion of this study are presented as follows:

- 4.1 Traditional health care practice in Chiang Rai province.
- 4.2 Traditional herbal medicine.
- 4.3 The use of herbal medicine by people in Phaya Mengrai district.
- 4.4 Development and experiment to determine the suitable preparation or dosage forms.
- 4.5 Promoting the use of herbal medicine in Phaya Mengrai district.

4.1 Traditional Health Care Practice in Chiang Rai Province.

Chiang Rai province is the highland of the “Lanna” kingdom. Most of its people still believe in the indigenous knowledge of traditional health care and use it in their way of life. They have a lot of knowledge and beliefs about health care practice which is done since the child is born until dead, since a person wakes up until he goes to bed, especially knowledge and beliefs about nutrition and health behavior. Even though this present era is a period of high technology, mental health or spiritual (psycho) therapy and herbal therapy are still popular for curing sickness as a holistic health care in the community.

“Mor Sue-Khwan” (หมอสู่วิญญ์; healers who conduct the ritual of calling back the soul), or spiritual healers, are generally accepted in their role to look after the mental health of the community. When someone wants to go to work or study at another place, they usually have a ritual of “Sue-Khwan” before travelling for their good luck and good health. When they came back home they have a ritual of “Sue-Khwan” again to invite or call their “Khwan” (vital energy) to come back home and rehabilitate their “Khwan” which may have been weakened or illness during their stay at the other place.

The second popularly accepted role of Lanna healers in Chiang Rai province is as healers who diagnose the cause of sickness or social problems. They have a role in the basic diagnosis of health problems or social problems which might be related to natural or supernatural forces. These healers are known as: “Mor-Mur” (หมอเมื่อ; หมอดู; Fortune-teller), “Mor-Herg-Kai” (หมอเฮียกไข่; Using an egg in the ritual for diagnosis), “Pee-Yah-Mau-Neung” (ปี่ย่าหม้อน้ำ; Using a pot in the ritual for diagnosis) etc. When people are sick or have some problem of unknown origin they ask for these healers to find the cause and a method to cure their sickness or to solve their problem. If it was caused by disease or health behavior, they were referred to healers who use herbal therapy or physical therapy and behavior therapy. If it was caused by natural or supernatural forces, they were referred for spiritual therapy. (see Figure 2.1)

For illness and disease, “Mor Kradook” (หมอกกระดูก; bone healer) and “Mor Ya-Muang” (หมอยามือ; herbalist) were commonly accepted for curing in the community.

Fracture patients always cure their sudden illness with modern medicine from the hospital or health care center. After that "Mor Kradook" (bone healer) are asked for bone healing by bamboo cast, ritual of Pao (ป้อ; casting a spell) and use of sesame oil.

In chronic diseases or hopeless patients, people always use both traditional medicine and modern medicine. The HIV/AIDS patients provide an example: they use spiritual therapy to support their mind, and use herbal medicine to support their immune system and treat simple symptoms while they are treated with modern medicine as well.

These were results from interviewed with Lanna healers in Chiang Rai province. They related that the beneficial aspects of "Lanna" healers were the holistic care which they cared for all patients and their family. "Mor" Surachart Rukmanuse (2001) a "Lanna" healer who lives in Pa Daet district, Chiang Rai Province explained that :

"Mor Muang" looks after patient with holistic care. For example, when the son or daughter in the family is sick, it means everybody in that family is sick or has problems, father, mother, grandparents, sisters, brother are worried about the sickness, so their minds become abnormal or unhappy. Thus healers have to use many methods to eliminate tension of parents while treating the patient" (Interviewed Rukmanuse, S., 2001).



Figure 4.1 " Pee-Yah-Mau-Neung"(ผีเข้ามือนิ่ง), the spirit ritual for diagnosis

In this figure: a man asked for the cause of his mother's illness of unknown origin she had for a long time.

This study in the social dimension shows that the process of holistic care had a meaning for people which involves not only doctor, medicine, and medical activity, but they also include a lot of things to do for their health, especially the ritual of "Hong Khwan" for calling back a soul which was weak or ill or even absent to come back or get well, and the ritual of "Sue-Khwan" for activating the soul and patient's mind to be renewed.

For example, the case of one man who had a motorcycle accident in the "Study of Ethnology and Ability of Traditional Health Care" by Taoprasert and Onchomchant (1995). This case happened at midnight in December, 1994. After the accident his parents found that he had a problem with his right foot and took him for treatment with a bone healer who lived next to his home. But he did not get well, so they went to the Public Health Center in the community, and he was referred to the community hospital, he was admitted for 3 days to treat the wound and sprain of his right foot. When he came back home, he took medicines from the hospital and went to the first bone healer to "Pao" (เป่า; to use witchcraft) or blow on his wound every day. Seven days later he went to follow up at the hospital where the doctor told him that he was completely well, after coming back from the hospital he went to "Mor-Sue-Khwan" to do a ritual of "Hong-Khwan" to call his "Khwan" (vital energy) came back which may have been lost during his illness. After his "Khwan" came back (they knew from the ritual process) he did a ritual which called "Tud" (ตัด; a ritual to separate between human and the supernatural for prevention the bad happening) with his motorcycle (in this accident) to prevent another accident from happening again. After that he did a ritual of "Sue-Khwan" to activate his soul which was related to the mind and body to get well. (Figure 5) These people really get well by meaning of the people who get well both body and mind (Taoprasert, Y. and Onchomchant, T., 1995)



Figure 4.2 The ritual of "Hong-Kwan", "Tud", and "Sue Kwan"

- (a) "Mor Sue-Khwan" is "Hong Khwan" a man to call his soul back.
- (b) A ritual of "Tud" between a man and his motorcycle to prevent another accident.
- (c) A ritual of "Sue-Khwan" to activate a man's mind and body

In health science, this may looklike nonsensical behavior. Indeed, these were the meaning of healing and health care of people and in fact, they have used complementary medicine of modern and traditional medicine for a long time. Otherwise, conditions of rituals in health culture were an excellent example of a holistic care of body and mind and cover prevention and controlling of health behavior, where health personnel usually disregard the importance of patient's mind after the body gets well.

Onchomchant (1993) commented that "*it is the advantageous role of traditional healers which health personnel can not do* " (Onchomchant, T., 1993). So that if health personnel understand the way of health culture, they will understand meaning of holistic care correctly and they will care or service their patient sincerely and kindly.

4.2 Herbal Medicine of "Lanna" Healers

In the traditional health care system, herbal medicine was the one of five groups of therapy which use herbs for treatment. "Lanna" people called herbal medicine are "Ya-Muang"(ยาเมือง). The healer who uses herbal medicine were called " Mor Ya-Muang" (หมอยาเมือง; herbalist).

4.2.1. "Mor Ya-Muang" (หมอยาเมือง; herbalist)



Figure 4.3 "Mor Ya-Muang" paying respect to "Kru"(spiritual worship):

"Mor Chevakakomalaputra", Father of traditional herbal medicine

"Mor Ya-Muang" are "Lanna" Healers who learned the indigenous knowledge of traditional medicine and use herbal medicine to treat patients, and use them for health care and health supportive. They have to strictly trust in "Kru" (teacher). "Mor Chevakakomaraputra", the Buddha's doctor who was their forefather. They have to believe in the effectiveness of the medicine which they will use and they have to perform the code of traditional healers and pass on their teachers' practice. There are a lot of rules which "Lanna" healers have to do and not do such as:

To do - do remain moral especially concerning incest and the truth, reality, kindness, honesty, and not being covetous. .

- after curing , they have to pay respect to their "Kru" (ครู; moral teacher) every time

Do not do

- display effectiveness of their curing
- eat food after the others leave
- eat and drink at the patient's home
- bring herbs from the graveyard
- pass under stairs
- pass under a banana tree while its young fruit is not cut off
- prepare medicine while there is a dead body in the village
- keep medicine in their home while there is a dead body in their home
- etc.

If they do not perform according to this rule, their herbal medicine will not be effective and they will lose their knowledge, honor and the trust of the people. Therefore, "Lanna" Healers select students who will transfer their knowledge strictly. There are a lot of characteristics of person who will be "Mor Ya-Muang", such as kindness, calm, clever, etc. They had to learn about both herbal medicine and treatment from their teachers (which were different from Thai traditional medicine in the middle part of Thailand which separated pharmacy from medication.) and had to help their teachers prepare herbs and follow them to find herbs in the forest and treat patients in the community, during which time the teacher taught their knowledge and technique to their students.



Figure 4.4 "Mor Ya-Muang" is studying medicinal plants in the forest

Besides learning by doing , they learnt a lot from their "Pup-Ya" (ปู่ยา; the "Lanna" medical text book), written with "Tua-Muang" (ตัวเมือง; Lanna alphabets) on Sa-Paper(กระดาษสา; mulberry paper) which they received from their teachers or their ancestors. Most "Pup-Ya" usually told about herbal medicine prescriptions, and the methods for which each prescription were given a lot of specific applications. So, the "Mor Ya-Muang" had a lot of knowledge from the "Pub-Ya" and a lot of experience from practice with their teachers. In this way "Mor Ya-Muang" were trusted to take care of people in the community.

Since modern medicine has been promoted to be the main system of health care, the role of " Mor Ya-Muang" has changed to consultant on health problems which relate to nature and the supernatural. They are usually asked to treat chronic disease which modern medicine cannot treat. They are the final caretaker of hopeless patients with holistic care and finally, they are the spirit sender of patients who passed away. Some healers changed their role into the role of pharmacist who prepared herbal medicine for selling in the community and other area. The popular products are herbal medicine for muscle pain, arthritis, stones, allergy, poisoning, postpartum, tonic, diabetes, hypertension and for symptoms of HIV.



Figure 4.5 "Mor Ya-Muang" and his "Pup-Ya" ("Lanna" medical text book)

The cost of compound medicine of "Lanna" healers were inexpensive because of local availability except for some kinds of medicinal plant that were not available locally . Today it is a fact that to take wood out of the forest is not allowed by the Forestry Department, so people in that local area could keep them and transform them to dried materials to be sold. Moreover, people are more interested in using herbs. Some of the healers have recently changed the compounds and transformation of medicinal plant for distribution. This group would have more expenses for packaging and labeling of the products.

As for a patient's expense, it was mostly not paid because those healers would tell the patient or their parents to find or prepare the herbal medicine by themselves. When the patient recovered, they would come for reciprocation a kindness, probably giving money or things or working for compensation. Now that the herbs are very rare to find, the healers have to buy them from other sources. So the patient's expenses would mainly be some money for the ritual which called "Kun Tung" (ขันตั้ง; A tray with flowers, candle, joss stick and some money for paying respect to the to "Kru") and the expense of herbal medicines.

There are some problems of using herbal medicine by "Lanna" healers at this present time, they complained that the biggest problem was that herbal medicine in the forest were lost and difficult to find because forest were destroyed. In other cases some herbs were controlled by law and not allowed to leave the forest. Other complained of the problem of not being lawful, although the healers are accepted more than the past, they were still not lawful and this was the main cause of problem of transferring the indigenous knowledge.

All of the information which was presented above was part of the indigenous information gathered from the in depth interview with "Lanna" healers and by visiting their homes. These results show that, in the past the indigenous knowledge of "Mor Muang" , especially "Mor Ya-Muang" were excellently and systemically transferred from generation to generation. Students were selected for goodness, all the codes which they

had to perform were the framework of honesty and kindness and they were quality healers who took care of the body and mind of people in their community.

At the present time, traditional medicine has changed from the main medical system to alternative medicine. "Mor Muang" have a role in the culture of health care more than a role in the curative process. While the government promoted herbal medicine for economy, most people and researchers who are interested in herbal medicine want to know only the component of herbs and method of medicinal compound, especially herbal medicine for HIV. They Are not interested in other benefits of herbs which are more than just effective of cure. "Mor Ya-Muang" or traditional healers are disregarded and are developed or upgraded into suitable role in health care system, even though they are the most well-informed about herbal medicine. There are three reasons for their being disregarded:

1. the educational system emphasizes the importance of modern medicine. The knowledge of health care is completely separated from culture and indigenous knowledge. Therefore, it is understandable if health personnel or researchers may not understand the benefits of traditional medicine.
2. Traditional healers are not accepted by law and are not strongly promoted and not developed to be the new generation to complement the indigenous knowledge during this technology period.
3. The most important cause is the use of scientific standards to decide on traditional medicine which had a lot of factors related to the effectiveness of the curative results.

However, the study of the indigenous knowledge of "Lanna" traditional medicine showed that the role of "Lanna" healers is still a role of a healer who is the leader of mind and spirit in community. Researchers such as Onchomchant(1993) found that the effective roles of healers were being the member of the community who were joined and helped, cured the condition of health and social problems by using psychotherapy according to the meaning of their culture. (Onchomchant T. 1993).

4.2.2 "Lanna" herbal medicine or "Ya-Muang" (ยาเมือง)

"Lanna" people called herbal medicine of "Lanna" healers were "Ya-Muang." From the in-depth interviews with 30 "Lanna" healers in Chiang Rai Province, it was found that most of them used "Ya-Muang" along with a ritual. They believed that if they didn't keep on using the ritual their drugs would not be effective, and if they didn't keep on maintaining their code of ethics their drugs would become worse in quality.

There was a lot of knowledge and ritual in the process of preparation of "Ya-Muang", including the process of agriculture, harvesting, raw material preparation, dosage form preparation, storing and use. They spoke holy words at each step of process. Most of the holy words were the communication method between healers and "Kru" (ครู; magic teacher) or supernatural to help them prepare medicines.

In the preparation process of "Ya-Muang" the important things which "Lanna" healers had to do were :

- trust in the "Kru" (magic teacher) and knowledge of herbal medicine
- trust in effectiveness of herbal medicine
- know what kind of medicinal plant and part of plant to be used.
- Know the ritual and method of preparation
- respect the wishes of the teacher or "Pup-Ya" (ปู่ยา; "Lanna" medical text book)

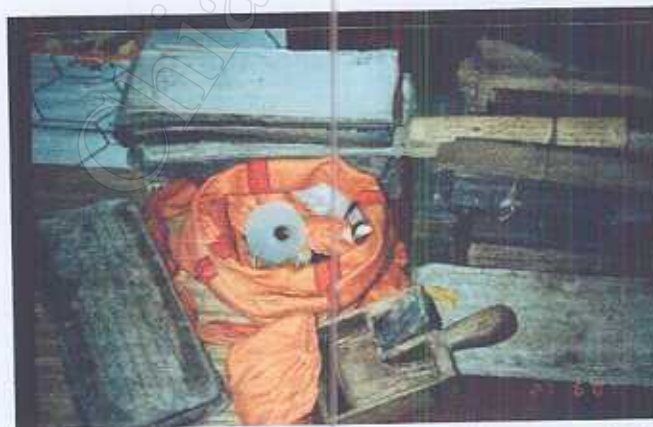


Figure 4.6 "Pup-Ya" and "Thung-Ya"(ถุงยา; medicine bag)

As for step or method of cultivation, they had to know about place and timing of each plant which they want to grow. Some plants required a special technique, some plants required a ritual while growing. At the harvesting step, they had to know about the day and time and direction which medicinal plant would be effective as shown in Table 4.1

Table 4.1 Relationship between day, time, direction and part of medicinal plant which would be highly effective

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat
time morning	stem	root	leaves	root	fruit	leaves	root
Before noon	leaves	fruit	bark	bark	leaves	root	stem
noon	root	leaves	stem	stem	root	bark	bark
evening	bark	bark	root	fruit	bark	stem	leaves
Direction	East	West	East	South	North	South	West

"Lanna" healers were taught to esteem the sacred spirit or the angel who took care of medicinal plants. Therefore before they picked the medicinal plant, they had to make a "Suay-Dok" (สวดยดก=กรวยดกไม้; a cone from banana leaf with flowers, candle and joss stick) to ask permission from the angel to harvest that plant.



Figure 4.7 "Lanna" healers with "Suay-Dok" permission from the angel

At that time there might be some evil which might make the medicinal plant lose effectiveness or not allow "Lanna" healers to pick the medicinal plant. Thus, they had to say the holy words over the knife or the hoe before cutting or digging the medicinal plants in order to fight the evil and support the effectiveness of the medicinal plant.



Figure 4.8 "Lanna" healers say the holy word over the knife

The use of "Ya-Muang" of "Lanna" healers depended on the objectives of use and knowledge that different kinds of herbs had different qualities, so they had a lot of methods of preparation and dosage form. In the past herbs were not as rare as at the present time, they could get herbs around their home or in the nearby forest, Therefore they preferred to use fresh herbs more than dry herbs, except when herbs were not allowed to be used in fresh dosage form or their teacher or "Pup-Ya" told them to prepare it with other methods. However, some herbs were grown or had effectiveness in some times or seasons, some herbs did not grow in their area, so they had get it from other areas. In these cases, it was necessary to keep herbs in other forms, such as dry herbs, powder, preserved in alcohol or in honey, or vinegar, or urine.

There were 27 dosage forms or preparations of "Ya-Muang" (Onchomchant, D., 2000)¹. Most of them were prepared from fresh herbs, dry herbs and powder. There were both single herb and compound herbs. These dosage forms and their application are shown in Figure 4.9.

¹ This was the co-operation research with the Thailand Research Fund in the study of "Development traditional herbal medicine for community economy in Phaya Mengrai District".








Picture of dosage form	Dosage forms and applications
	1. "Ya-Phong" (ยาผง) is a powder preparation used as a medicine for fainting.
	2. "Ya-Tom" (ยาต้ม) is a decoction preparation used as a medicine for back pain, stone, and tonic .
	3. "Ya-Fon" (ยาฝน) is prepared by rubbing dry branches of herbal tree with a little stone and water used as a medicine for fever ,allergy, food poisoning, and postpartum.
	4. "Ya-Dong" (ยาดอง) is a pickled drug preparation by using alcohol to extract herbal medicine, used as a medicine for muscle pain, back pain, tonic and postpartum.
	5. "Ya-Jue" (ยาजू) is a hot compression preparation used as a medicine for muscle relaxant
	6. "Ya-Hoam" (ยาโฮม) is a herbal sauna used as a medicine for muscle relaxant, postpartum, allergy etc.
	7. "Ya-Taa" (ยาทา) is a liniment preparation used as a medicine for muscle pain and insects bite.

Figure 4.9 Dosage forms of traditional medicine in "Lanna"

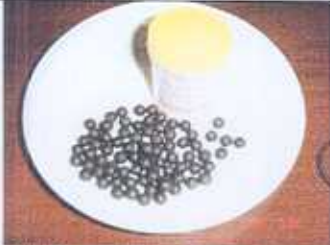






Picture of dosage form	Dosage form and application
	<p>8. "Ya-Luke-klon" (ยาลูกกลอน) is a traditional pill used as a medicine for muscle pain, tonic, appetizer, bone pain.</p>
	<p>9. "Ya-Kuane" (ยาควาน) is a preparation by mixing herbal powder with honey used as a medicine for tonic and appetizer.</p>
	<p>10. "Ya-Kaob" (ยากำบ) is a poultice preparation used as a medicine for fever and abscess.</p>
	<p>11. "Ya-Larm" (ยาหลาม) is a preparation made by boiling fresh herbal medicine in bamboo joint. This is an excellent way of using herbal medicine in emergency cases in the forest where there are not any instruments.</p>
	<p>12. "Ya-Aab" (ยาอาบ) is a preparation for bathing by boiling or soaking fresh herbal medicine.</p>
	<p>13. "Ya-Pid" (ยาปิด) is a liniment preparation like Ya-Taa but it is used by painting on herbal leaves such as pepper then closed on wound or symptom area.</p>
	<p>14. "Ya-Cha-Lang" (ยาชะล้าง) is a preparation made by boiling herbal medicine in pottery, then use for dressing a wound.</p>

Figure 4.9 (continued)








Picture of dosage form	Dosage forms and application
	<p>15. "Ya-Yord-Hoo"(ยาหยอดหู) is ear drop preparation. It is used by baking fresh herbal leaves and press water from that leaves to used for ear drop.</p>
	<p>16. "Ya-Khome" (ยาขมิ้น) is poultice preparation put on the head for fever in children.</p>
	<p>17. "Ya-Suk" (ยาซัก) is tattoo preparation. It is prepared by pounding fresh herbs and then press water from that herbs mix with sesame oil. In the past healer used for immunization.</p>
	<p>18. "Ya-Non" (ยานอน) is preparation for patient to lay down above pounded herbal medicine. It usually used in paralysis or weakness patient.</p>
	<p>19. "Ya-Soob" (ยาสูบ) is smoking preparation by using dry herb leaves roll a cigarette. Mainly used in Sinusitis and Rhinitis.</p>
	<p>20. "Ya-Kae-lim" (ยาแก้ลม) is preparation by mixing herbal powder and charred meal with water, then mold into pyramidal shape, and drying. The complete preparation will be hard. It is used by rubbing on small stone like <i>Ya-Fon</i>.</p>
	<p>21. "Ya-Med" (ยาเม็ด) is tablet dosage form. It is prepared by mixing herbal powder with meal and compress with traditional compression instrument.</p>

Figure 12 (continued)







Picture of dosage form	Dosage forms and applications
	<p>22. "Ya-kvad-Lin" (ยากวาดลิ้น) is a preparation used by swabbing the throat with herbal medicine.</p>
	<p>23. "Ya-Pao-Poan" (ยาเป่าพ่น) is a blowing preparation used by spitting herbal powder or potion with or without pipe. Mainly used with a ritual.</p>
	<p>24. "Ya-Sood-Dom" (ยาสูดดม) is a inhalation preparation. Mainly used in rhinitis, common cold, and fainting.</p>
	<p>25. "Ya-Nud" (ยานัด) is a snuff dosage form which is mainly used in a patient who had a stuffy nose.</p>
	<p>26. "Ya-Roel-Plae" (ยาโรยแผล) is a powder preparation. It was used by spraying the herbal powder on the wound.</p>
	<p>27. "Ya-Suan" (ยาสวน) is an enema preparation. It is used by connecting the herbal medicine through a tube-like stem of tree which has a hole.</p>

Figure 4.9 (continued)

"Mor Ya-Muang" described the use of "Ya-Muang" in the past, When *Ya-Fon* was the common medicine for people to use for self reliance to treat allergies and fever, "Ya-Tom" and "Ya-Dong" were mostly used by men for health supportive or tonic, Which women usually used "Ya-Hoam" to activate blood circulation for health support, and postpartum. They continued to use these until the present time. The most popularly used herbs were "Ya-Phong", "Ya-Tom", "Ya-Fon", "Ya-Dong", "Ya-Jue", "Ya-Hoam", "Ya-Taa", "Ya-Luke-Klon", "Ya-Kuane", and "Ya-Koab", but some had dosage forms which were unsuitable for use and were rarely found such as "Ya-Yood-Hoo", "Ya-suk", "Ya-Suan".

"Lanna" healers had respect for the development of traditional medicine that we should consider the objective and ritual of using medicine. Some dosage forms are necessarily used in the indigenous concept, but some can be developed in suitable dosage form or preparation which are easy to use, safe, at suitable cost and sustain their effectiveness in the indigenous concept. Selected dosage forms which can be developed and are not effected by ritual are presented in table 4.2

Table 4.2 Dosage form of Lanna traditional herbal medicine
which Lanna healer suggested for development

Traditional dosage form	Development into dosage form of
Ya-Jue and Ya Hoam	Modify the package or other convenient format
Ya-Tom and Ya-Dong	Mixture or instant powder
Ya-Soob	Cigarette
Ya-Suk	Modified the suitable instrument
Ya-Khuan	Modified the package or other convenient format
Ya-Kvad-Lin	Dropper solution
Ya-Phong and Ya -Luke Klon	tablet

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สำนักหอสมุด มหาวิทยาลัยเชียงใหม่

4.3 The use of traditional herbal medicine in Phaya Mengrai district .

Traditional medicine activities are popular in Phaya Mengrai district (Appendix D) and its development was conducted by Phaya Mengrai Hospital during the time of Dr. Thara Onchomchant who was the director (1990-2000). He had complemented modern and traditional medicine in the hospital since 1990. Herbal medicine and traditional Thai massage are used for primary health care in this hospital and the community, aiming at self-reliance and holistic care. "Lanna" healers are supported in their role in the community and have established the Assembly of "Mor-Muang" of Phaya Mengrai district. In 1998, the Phaya Mengrai Herbal Material Development Center was established near the hospital by the Traditional Medicine Institute of the Ministry of Public Health. In co-operation with Phaya Mengrai Hospital they try to develop and upgrade herbal materials and herbal medicine to the standardization of Good Manufacturing Practice (GMP) and for use in health care system.



Figure 4.10 The use of "Ya-Jue" (herbal hot compress) and Thai massage at Phaya Mengrai hospital

In this study the use of herbal medicine in Phaya Mengrai district was investigated. The questionnaire was given with 956 persons (2 percent of total population) in 5 Tambons of Phaya Mengrai district, namely Tambon Mae-Pao, Meng-Rai, Mae-Tume, Mai-Ya, and Tad-Kwan. The SPSS/PC⁺ analysis was used for analyzing these data (see Appendix E). It was found that, 663 persons (69.4%) used to use traditional herbal medicine. Most of them obtained it from their elders (37.4%), bought it in a grocery (35.7%), and obtained it from healers (10.6%) as shown in Table 4.3

Table 4.3 Sources of traditional herbal medicine in Phaya Mengrai district

Sources	Number	Percent
Grocery	237	35.7
Pharmacy store	31	4.7
elders	248	37.4
Healers	70	10.6
Public Health	42	6.3
Other	35	5.3
Total	663	100

Most people used herbal medicine for self care of common symptoms and diseases such as fever, headache, back pain, food poisoning, skin rash, postpartum etc. The popular use of dosage form were shown in level of satisfaction. The most popular were "Ya-Tom", "Ya-Phong", "Ya-Fon" and "Ya-Dong" (36.8%,19.8%, 13.4%,and 11.0%, respectively). The most common symptom for which people used traditional medicine was muscle pain in the dosage form of "Ya-Tom", "Ya-Dong" and "Ya-Jue". The second symptoms were Fainting and Poisoning in the dosage form of "Ya-Phong" and "Ya-Fon" as shown in Table 4.4

Table 4.4 Relation of dosage form and symptoms for which people used herbal medicine

	Fainting	Tonic	Post partum	Poison	Muscle pain	others	Total	Percent
"Ya-Phong"	104	14		4	5	4	131	19.8
"Ya-Tom"	7	17	56	11	145	8	244	36.8
"Ya-Jue"	*	*	*	*	46	*	46	6.9
"Ya-Luke-Klon"	5	11	3	2	6	16	43	6.5
"Ya-Fon"	*	*	1	84	4	*	89	13.4
"Ya-Dong"	1	13	*	4	51	3	73	11.0
Others	2	7	2	14	11	1	37	5.6
Total	119	62	62	119	268	33	663	100
Percent	17.9	9.4	9.4	17.9	40.4	5.1	100	

* = no data

The satisfaction of using traditional herbal medicine was 59.3% satisfied with effectiveness (88.5%) , easy to use (63.0%), cheap (57.3%), There were many reasons of using it such as use by their elders, can prepare it by themselves, easy to find around their house and nearby forest, used as food and tonic and less side effects than modern medicine. But they were not sure about the safety of preparation (51.0%) in the manner of cleaning in process of preparation drying and storing, and they wanted to develop preparation and dosage form (83.9%) even though it may be more expensive (71.2%). They also recommend to develop the standardization of GMP., make it easier to use, and prepare it in modern dosage form but still in effectiveness of traditional medicine.

The results showed that people used traditional herbal medicine in their life, as they were used by their ancestors and they could find it in anywhere which have groceries and some pharmacy store. If they couldn't care for themselves, they consulted

healers in the community and personnel in public health system such as Phaya Mengrai Hospital and Public Health Center.

This result was comparable to the studies of the popularity of traditional herbal medicine of "Lanna" healers in Chiang Rai province by Onchomchant (2000). The interviews with 545 persons were done at Phaya Mengrai district, it was found that 59.4% used traditional herbal medicine for common diseases with their elder's experience, and related to their culture. It was shown that the major use of traditional herbal medicine were "Ya-Tom", "Ya-Phong", "Ya-Fon", "Ya-Dong" and "Ya-Luke-Klon". Even though the Phaya Mengrai Hospital had developed some dosage forms into modern dosage forms such as capsule and Tea bag, but only 6.3% (table 2) use herbal medicine from Phaya Mengrai Hospital and Public Health Center (Onchomchant, D., 2000). The results indicated that the impression of believing in indigenous knowledge, the effectiveness of traditional herbal medicine and healers who had the role of counselor of health in the community and helped to normalize their lives. So, the effectiveness of traditional herbal medicine of the traditional healers is not only the effectiveness of the pharmacology but it means the effectiveness of caring for the whole person as shown by the studies of Brun and Schumacher(1987), Pradubmuk(1991), and Davis(1999). Each researcher found that a lot of knowledge and belief were involved in each steps of the process of herbal medicine production. The effect of curing was not only the medical effectiveness but also the effect of believing in their culture. The recovery from illness may due not only to the effectiveness of drugs but also because belief and faith were stimulated to get well. (Brun V. and Schumacher,T.,1987, Pradubmuk,P.,1991, Davis Patricia A.,1999).

Thus, Health personnel and researchers who want to develop the herbal medicine have to realize the importance of belief and indigenous knowledge, and they have to think of the level of use, such as the primary health care level. The development can be done by improvisation or innovation using the indigenous knowledge, by adding knowledge or technology to upgrade the traditional herbal medicine into suitable

dosage forms which are easy to use, safe, suitably priced and effective which people are still familiar with in their lives and can use for self reliance.

4.4 Development and experiment to determine the suitable preparations or dosage forms.

The step of development and operation of traditional herbal medicine was done by analyzing data of surveying from the questionnaire with people in Phaya Mengrai district, group in depth interviews and Participatory Action Research (PAR) technique with "Lanna" healers in Chiang Rai province. The disadvantage or dissatisfaction with the usage from these results were the point of issue for decision to design a methodology of development and experiment.

The result showed that 51.0 percent of the target population were dissatisfied with the safety of preparation, by the means of cleaning of raw plant material and preparation process and storage. 83.9 percent of the population wanted to develop preparation and dosage form even though it may be more expensive.

The result of group in depth interviews and Participatory Action Research (PAR) showed that Lanna healers wanted to develop some dosage form which did not effected the rituals of indigenous knowledge such as "Ya-Tum", "Ya-Dong", "Ya-luke-Klon", "Ya-Jue", "Ya-Home", "Ya-Suk" and "Ya-Khaun".

So design of development and experiment were done in two steps as following

Step I was for development of raw medicinal plant material which healers and people can do by themselves.

Step II was for improvisation or renovation in a suitable dosage form but still in the indigenous concept.

4.4.1 Development of raw medicinal plant material of herbal medicine

By surveying each step it was found that "Lanna" healers should improve their process of herbal material preparation, especially, drying and storing which had a high risk of contamination. Most herbal materials were dried by laying them on the ground nearby their house and packed in plastic bags or fertilizer bags, some were stored in kerosene cans, hung under the roof or piled up untidily on the floor, and some were milled and stored in powders. These were the causes of several residuals and fungus and that were the important cause of dissatisfaction among the people.



Figure 4.11 Preparation of "Lanna" healers

- (a) cut on the floor (b) dried on the ground (c) stored under the roof
 (d) Packaged in several containers (e), (f) untidy storage on the shelf

The improvisation of raw medicinal plant material preparation process were done by practical demonstration at Phaya Mengrai Herbal Material Development Center during February 2001 to December 2001. The procedure were carried out by using the standardization of Good Manufacturing Practice (GMP) in steps of cleaning, cutting into small pieces , drying, storing, milling and transferring the raw medicinal plant material.

The GMP standard is one of the five standards of the universal standard which were call "5G". It was cover with the good practice in step of cultivation, harvesting, storing, milling and transferring. The standardization of GMP in "*The Hand Book of Herbal Medicine for Community Ecomony*" was used to develop raw plant material at the Phaya Mengrai Herbal Material Development Center, and the results of the usage are shown in table 4.5

Table 4.5 Results of using the GMP standard to develop raw plant material at Phaya Mengrai Herbal Material Development Center

Step of procedure	Standard of GMP	Result of using standard
Cultivation	Know detail of plant: <ul style="list-style-type: none"> - Species, part to use, - Agrotechnology - Harvesting - Production 	Set seminar to advise healers and people who were members of Phaya Mengrai Herbal Material Development Center. And follow up to see and advise them in their garden.
Harvesting	Harvest with 3 "right" <ul style="list-style-type: none"> - right kind of plant - right part for medicine - right time of ingredient 	Raw plant material had high active ingredient.
Cleaning	To remove the residual To clean up after harvest immediately and do not soak a	Raw plant materials were cleaned and without residue.

Step of procedure	Standard of GMP	Result of using standard
	<p>long time</p> <p>Always lay in container</p> <p>Know specific technique for each plants</p>	
Cutting into small pieces	<p>Big or thick plants have to be cut into small pieces for drying and storing , ought to know each character of plant and beware about cleaning of place, instrument, personnel and technique.</p>	<ul style="list-style-type: none"> - Improve technique of cutting on the floor to cutting on the table which catch in a ware. - Personnel were taught and strictly to cutting without contaminating it.
Drying	<ul style="list-style-type: none"> -Drying in the sun in the wooden hall with a net roof and on the bamboo table catch in a net -Drying with oven, beware about temperature which might be cause of active ingredient loss. 	<ul style="list-style-type: none"> - Build the hall for drying with a brightly zinc and a bamboo table which was 80 centimeters high from the ground. - Make a clear plastic to cover the bamboo table when drying in open air.
Storing	<ul style="list-style-type: none"> - packing in a clean bag or container, don't use the fertilizer bag or chemical bag. - have a label including name of plant, date, place, and name of personnel who prepare it. - Separated or grouping 	<ul style="list-style-type: none"> - Packing in a cleaning bag and container with label. - Storing in the stock room Which is clean and has a controlled cool temperature - Separate kind of plant and keep on the shelf with stock card and had the account book of

Step of procedure	Standard of GMP	Result of using standard
	kind of plant for corrected and comfortable to use. - Each plant don't store more than 2 years.	stock in and out. - Stock each plant just for using in one year.
Milling	- Raw plant material before mill must be crispy and humidify less than 5 percent. - size of powder should be related to dosage form such as capsule of tea bag.	- have a milling room and control about cleanliness. - Dry raw plant material before milling again in an oven. - Using powder glider suitable to dosage form such as use glider No. 80 for dosage form of capsule.
Transferring	- Check quality of raw plant material before transfer for cleanliness, no residue, fungus or insects. - Packages are ready for transfer, no tears and kept in a container which related to character of plant.	- Double check the quality of raw plant material before transfer by stocker and administrative business. - Drying in an oven again before transfer in the case , raw plant material to be kept for more than 6 months.

The evaluation of these developments was made by personnel of the Science and Technology Institute twice; in March and December 2001. It was accepted, and passed the standard and received a certification from the Science And Technology Institute and the Thai Traditional Medicine Institute.



Figure 4.12 Development of raw plant material into GMP standard

- (a) cutting on the table which catch in a ware, (b) bamboo table
- (c) open air drying cover with clear plastic
- (d) Drying Hall



Figure 4.12 Development of raw plant material into GMP standard (continued)

(e) packing with a quality control label (f) stocking with a stock card

(g) stock of powder (h) stock of solutions

As for the development or improvisation of raw plant material, the personnel or people must have understanding about the appropriate method of growing and harvesting to get the highest amount of active ingredients in raw plant material.

For example, development of raw plant material of "Fa-Tha-lai-Jone" (ฟ้าทะลายโจร; *Andrographis paniculata* Burm.f.Nees.) at the Phaya Mengrai Herbal Material Development Center. I studied a lot about nature of "Fa-Tha-Lai-Jone" and tried to practice the step of cultivation, cleaning and drying to get highest amount of active ingredients. Finally, the method for getting the highest amount of active ingredients of raw plant material of "Fa-Tha-Lai-Jone" can be done as follows.

By the nature of "Fa-Tha-Lai-Jone", it is found that this plant can be grown in a shady area such as under the tree or around the house; and it grows well during June to December, but the best timing for the highest amount of active ingredients is while it begins to bloom which is during August to September. The part of plant which has the highest amount of active ingredients is the leaves. The stem has active ingredients less than the leaves and has the ingredients about 6-8 inches from the top of stem. And the active ingredients are easily damaged by the sun.

From knowledge about the nature of "Fa-Tha-Lai-Jone", development of raw material was done by

- Planting in June by grow under the tree and around the house.
- Harvested during August to September when flowers were beginning to bloom; picking by taking measuring from the top of stem about 6-8 inches and cutting it off.
- Cleaning away the soil and residual with water about 2-3 times and then gathering a handful, tying with a rope, and hanging in a shady area until it is dry or not wet. This step is done to prevent rotting from mistake and clinging leaves.
- Cutting the half dry stems and leaves of "Fa-Tha-Lai-Jone" into small pieces, to a size of about 2-3 centimeter. This step is done on the table which catches the cut herbs in a tray.
- Drying on the table in the drying hall or in open air in a shady area.

- Heating before packing with electric oven controlled temperature of 50 Degree Celsius
- Packing in thick plastic bags with quality control label which has name, date and place or name of farmer who grew them for this package.
- Store in the stock room on the shelf with a stock card.
- If a powder form is desired, It will be milled and glide with glider No.80 and the powder will be packed in double thickness plastic bag.



Figure 4.13 Development of raw plant material of "Fa-Tha-Lai-Jone"
 (a) "Fa-Tha-Lai-Jone" is grown well in the shady area (b) picking
 (c) cleaning (d) tying with the rope and hanging
 (e) drying in the drying hall (f) packing and storing (g) powder with label

Natakankitkul, et.al. (2002), studied an appropriate method for identification of "Fa-Tha-Lai-Jone" by chromatographic fingerprint using High Performance Liquid Chromatography (HPLC). The raw plant material of "Fa-Tha-Lai-Jone" of the Phaya Mengrai Herbal Material Center was one of the samples which were collected from various source in the country, and its position of peak from the chromatogram was accepted as shown in Appendix G (Natakankitkul, S.,et.al., 2002).

The use of standards of GMP to improve traditional medicine, either raw plant material or herbal medicine, is very important to upgrade the acceptance of traditional medicine in globalization, but the standard must also be variable for each level of use, such as the level of the community or primary care. It might be only controlled in Good Agrotechnical Practice (GAP), Good Harvesting Practice (GHP) and Good Manufacturing Practice (GMP) and the evaluation might be the physical evaluation by personnel at the level of the community such as the municipal office, the community hospital or the Health Science Center in that area. At the secondary level or secondary care, the raw plant material will be used to produce herbal medicine for use in the hospital and domestic market. Thus, raw plant material should be evaluated with GAP, GHP, GMP and GLP. (Good laboratory Practice). However, this is basic laboratory or physical evaluation such as evaluation of humidity, active ingredient with TLC. At the tertiary level, it is for industry or for export, Certainly it is necessary to do the complete 5G (the last G is Good Clinical trial Practice- GCP) for universal acceptance. However, the standard must also be the standard for Thai people and variable for compound herbal medicine which will be useful for traditional herbal medicine development.

4.4.2 Experiment for the suitable dosage forms

This step of experiment was done in co-operation with The Thailand Research Fund in my study of "Development traditional herbal medicine for community economy in Phaya Mengrai District".

Dosage forms in this study were selected by using data about dosage form from the survey and in-depth interviews with "Lanna" healers. The result was that most people used herbal medicine for muscle pain in dosage form of "Ya-Tom", "Ya-Dong" and "Ya-Jue" but these dosage forms were not easy to use, so an experiment were done by improvisation into suitable dosage form as follows

- "Ya-Tom" and "Ya-Dong" were selected "Ya-Dong-Laoe"(ยาตองเห็ดดำ) is the traditional herbal medicine which people prefer to use for muscle pain after hard work and can use in dosage form of "Ya-Tom" and "Ya-Dong". The experiment improved it to a dosage form of melted powder.
- "Ya-Jue" or herbal hot compress was improved to a dosage form of Herbal Sand Bag.

4.4.2.1. Experiment to improve dosage form of "Ya-Tom" and "Ya-Dong"



Figure 4.14 Traditional preparation of "Ya-Tom" and "Ya-Dong"

(a) "Ya-Tom" (b) "Ya-Tom"

Traditional preparation

"Ya-Tom" is a dosage form for using herbal medicine by decoction of the active ingredient from herbs. It may be single or compound herbs which the healer cuts to

small dry pieces and packs in a plastic bag. When people want to use "Ya-Tom", they have to boil in a crockery or stainless pot, not in an aluminum pot. Most of them have to boil it until the water decrease to one-third part of water. They had to soak it before boiling. If they want to use it again, they have to boil it again every time they want to use it.

"Ya-Dong" is like "Ya-Tom" but it is extracted by pickling dry pieces of herbs in alcohol from three days to fifteen days and you have to shake it every day.

Problems "Ya-Tom" and "Ya-Dong", both are not easy to use and the concentration is not stable. If we boiled "Ya-Tom" two or more times it will decrease in concentration, and if we keep herbs in alcohol for a long time it will increase concentration. If we keep the dry pieces of herbs for a long time it may have fungus or insects. These are problems of "Ya-Tom" and "Ya-Dong" dosage form.

Designed I designed a way to develop the preparation from small pieces of herbs to instant powder by using technology of food preservation and selecting "Ya-Dong-Loae" for experiment. "Ya-Dong-Loae" is a compound herbs for muscle pain and tonic which is well-known in Phaya Mengrai district. It can be used by boiling ("Ya-Tom") or extracting with alcohol ("Ya-Dong").

Experiment for the final suitable dosage form

The experiment method was as follows

- 1) Milled pieces of herbal medicine down into powder, and kept residue from the grinding to do step two.
- 2) Boiled the residue by using indigenous technique to make "Ya-Tom" from residue.
- 3) Preserved "Ya-Tom" and powder in step 1 with sugar cane juice like jam and then used a medium heat until the jam was dried and changed to instant powder.
- 4) Kept in dry- clean package such as bottle or packed like toffee.
- 5) Used by drinking like tea or coffee with hot water or alcohol.
- 6) Tried to use with a volunteer in the community.

Results of use

The samples were tried for use by selling in the shop of Phaya Mengrai Herbal Material Development Center and following up with 20 customers who bought it. Three persons used it with hot water, and 17 persons used in alcohol; 100% of users were satisfied with taste and dosage form which was easy to use, especially those who did not drink alcohol. Almost all of them 84.5% were not concerned about packaging and cost.



Figure 4.15 Experiment dosage form of "Ya-Tom" and "Ya-Dong"

- (a) "Ya-Dong-Laoe" in old preparation
- (b) milled "Ya-Dong-Laoe"
- (c) Preserved with sugar cane
- (d) "Ya-Dong-Laoe" in melted powder dosage form
- (e) drink with hot water or extract with alcohol

4.4.2.2 Experiment to improve the dosage form of "Ya-Jue"



Figure 4.16 Traditional preparation of "Ya-Jue"

Traditional preparation

"Ya-Jue" is a dosage form which is used by a healer or masseur / masseuse with a hot compress technique. This preparation was done by using fresh herbal medicine pounded in a mortar and put in a clean square cloth about 8x8 inches wide, and tied with a cord to make it like a small ball with a handle at the top side or a mushroom shape, then it is steamed and used to compress on the painful area. If we want to reuse it, we have to keep it in the refrigerator. If we don't have a refrigerator we have to open it and dry it in the sunshine. It can be reused 3-5 times. In fact, today it has been developed by using a small amount of dry herbal medicine and people can use by themselves but it is not easy to use and not effective like fresh herbs.

Problems The preparation of the healers almost use fresh herbs and it caused of dirty body and clothes, uncomfortable to use and storage for reuse. The developed dosage forms at present are dry herbs but less effective than fresh herbs.

Designed I designed for the suitable dosage form which can correct these problems by changing package, adding the effectiveness of dry herbs and longer heat. Microwave can be used and it does not need to be kept in refrigerator or drying with sunshine. It can dry by itself.

The main herbs for muscle and tendon relaxant in "Ya-Jue" are herbs in species of ginger such as turmeric which have volatile oil and can be extracted by frying in oil. Accordingly, I designed a way to add to the effectiveness of dry herbs

by preparing an ointment with oil from main herbs in "Ya-Jue", and using sand for a longer time. The herbal medicine will slowly dry itself by hot sand. It can be used with a microwave by wetting it and opening pack in the plastic bag which can be used with heat.

Experiment concerning the dosage form of Herbal Sand Bag Compress

The operational method was done as follows:

- 1) Made a cloth bag about 5x9 inches wide
- 2) Milled herbal medicine into the smallest pieces
- 3) Made ointment from main herbs of *Ya-Jue* and mixed with clean sand
- 4) Mixed herbs from step 2 and 3 together and packed in the cloth bag
- 5) Sealed the bag with thread
- 6) Tried to use with volunteer

Result of use

The samples were tried for use with 56 patients in Thai Traditional Medicine Clinic and Diabetes Clinic of Phaya Mengrai Hospital and followed up with 15 customers who bought it from the shop of Phaya Mengrai Herbal Material Development Center. There were 22 persons(30.99%) who used to use the traditional preparation, with 12.68% still satisfied with traditional preparation. None of them found much difference in the cost and effectiveness between traditional and modified preparations.

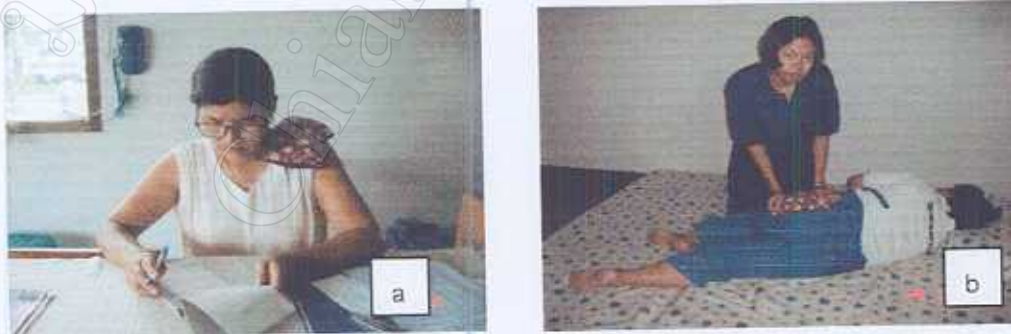


Figure 4.17 The use of "Herbal Sand Bag Compress"

(a) easy to use by oneself (b) use in massage clinics



Figure 4.18 Experiment Procedure of "Ya-Jue"

- (a) Mixed herbs and sand with ointment (b) Made a cloth bag
 (c) Packed herb in a bag (d) Seal the bag (e) Herbal Sand Bag Compress

4.4.2.3 Experiment to improve dosage form of "Ya-Luke-Klon"



Figure 4.19 Traditional preparation of "Ya-Luke-Klon"

Traditional preparation

"Ya-Luke-Klon" is a traditional pill for gastritis. It is prepared by mixing herbal medicine and honey, hand-making the pill, during in sunshine and keeping in clean package.

Problems The process of preparation of "Ya-Luke-Klon" takes time to do with a low output. It was easy to contaminate because it is hand made, easy to get fungus because of the high moisture content, and honey is rare and too expensive in some seasons.

Design I designed new preparation by changing pill dosage form to tablet dosage form by using a Hydraulic Tablet Compression Machine which I modified in the research of "Development of Herbal Medicine for Community Economy in Phaya Mengrai District, Chiangrai Province" (Onchomchant D.2001) This machine was developed from indigenous knowledge of a "Lanna" healer by adding hydraulic technology which is easy to use and not expensive for healers.(see Appendix F) The problem of high moisture was corrected by using the indigenous technique of Thai traditional healer and using cane sugar which is cheaper and easier to find instead of honey. In this experiment I selected "Ka-Min-Chan Luke-Klon"(เขินชันลูกกลอน) as sample of the operation because it was popularly used both in the community and at Phaya Mengrai Hospital.

Experiment concerning the dosage form of "Ka-Min-Chan" Tablet

The experiment method was done as follows:

- 1) Experiment to decrease moisture by simmering honey until it had the smallest bubbles then adding water equal to the rest and simmered again and repeating about 3 times.
- 2) Experiment to use cane sugar instead of honey by using cane sugar with an equal quantity of water, simmering until it began to be sugar cane juice, then decrease moisture like the method of honey.
- 3) Experiment to make tablet dosage form by using "Ka-Min-Chan" powder, decreasing honey or sugar cane juice and using corn powder as a binder.
- 4) The Hydraulic Tablet Compression Machine was used to make the tablet dosage form.
- 5) Coating tablet with beeswax.
- 6) Physical evaluation, In this step I tested active ingredient of *Curcumin* in "Ka-Min-Chan" by using HPLC., and evaluated physical effectiveness of dosage form about Weight, Disintegration, Friability of tablet and Hardness.
- 7) Tried to use with volunteer



Figure 4.20 Preparation of "Ka-Min-Chan" Tablets

- (a) Making tablet by the Hydraulic Tablet Compression Machine
- (b) "Ka-Min-Chan" tablet from the experiment.

Result of use

There were 8 persons who used "Ka-Min-Chan" tablet from this experiment, All of them (100%) accepted that the effectiveness of the drug was not different from the dosage form of "Ya-Luke-Klon" because there was no change of raw material of herb or ingredients. They agreed with the improvisation of the dosage form of "Ya-Luke-Klon" to a tablet dosage form, They found it easier to use, more pleasure in preparation, and it looked like modern medicine, but they recommended a change in the size and coating of tablets which were big and had sharp edges.

On the other hand, "Ka-Min-Chan" tablets from this experiment were evaluated with a physical and chemical evaluation at the Faculty of Pharmacy, Chiang Mai University for weight, disintegration, friability of tablet, hardness and Chromatographic finger print by HPLC. The evaluation was in the standard range. (see Appendix I)

From these experiments, either the experiment of "Ya-Tom", "Ya-Jue" or "Ya-Luke-Klon", it should be noted that herbal formulation was not changed from the old preparation. The experiment only improved the preparation for a new look. There were two reasons, one was that the formulations were accepted by the people in the community and it was not necessary to prove or analyze the effectiveness. The second reason was to continue the indigenous knowledge adding easy technology which can be used in the community.

Although, the experiment seemed to be routine, it offered a lot more in benefits for "Lanna" healers and people in the community. Onchomchant (2001) explained that the benefit of development of traditional herbal medicine was by healers. Herbal medicine was developed without frame of science and chemical evaluation but used variable standards for primary care, people could decide or choose which to use for their health, and they themselves can produce it in the community and become owners of this production (Onchomchant D., 2001).

4.5 Promotion of the Use of Herbal Medicine in Primary Health Care at Phaya Mengrai District.

From results of the surveying it was found that traditional herbal medicine were continuously used at Phaya Mengrai district. The promotion by health personnel and the use by medical doctors at Phaya Mengrai Hospital confirmed the use of people confidently. They also recommended to promote the use of herbal medicine more widely in the community.

Hence, research was done to promote the sustainable use of herbal medicine in the community for primary health care. The activities were carried out during November 2000 to December 2001 with the co-operation of the Phaya Mengrai Herbal Material Development Center, Phaya Mengrai Hospital and the Foundation of Dr. Thara Onchomchant.

The aims of this promotion were to return the sense of ownership and the management of herbal medicine in the community back to people for sustainable development. The activities were promoted to use for health care and for economy. In this way, herbal medicine will clearly be a part of their way of life and used as a matter of commonsense for primary health care. The activities were conducted as follows:

1. To establish the "Healthy Center Shop" in the community to demonstrate herbal medicine of Phaya Mengrai Hospital, natural health products and demonstrate the herbal medicine from the experiment of this study.



Figure 4.21 The "Healthy Center Shop"

2. To motivate the sustainable use of herbal medicine into "One Tambon One Product" of Phaya Mengrai district. This activity was done in co-operation with the Department of Community Development and the Agricultural Department in Phaya Mengrai district. This step was done to return the management back to people by

2.1 Establishing the "Group of Fund Management for Herb Plant Material of Phaya Mengrai District", for people to manage the use of herbs for their economy and health care.

2.2 Conducting a seminar with members of that group to give them knowledge of good manufacturing practice of herbal medicine.

2.3 Motivating the community leaders to become interested in using herbal medicine for community economy and health care by taking them to visit the Wung-Num-Kiow district in Nakhon Ratchasima province to study the methodology of using herbal medicine for sustainable economy and health care.



Figure 4.22 Motivating the sustainable use of herbal medicine in the community

(a) Establishing the "Group of Fund Management for Herb Plant Material of Phaya Mengrai District",

(b) Conducting a seminar with members of that group

Motivating the community Leaders at the temple of Wat Sun-Chiang-Mai, Tambon Mae-Pao. "

These activities were conducted to promote the commonsense use of herbal medicine by people to develop the medicinal plant in their community for economy and health care. It was found that the promotion of herbal medicine into "One Tambon One Product" increased the use of herbs in the community and made it more well known in other places. The demand for raw medicinal plant material and herbal medicine increased too. The largest sales of herbal medicine at the "Healthy Center Shop" were herbal medicines from Phaya Mengrai Hospital such as "Ya-Om-Kae-Ai" (ยาอมแก้ไอ; compound herbs for lozenges), "Ya-Klai-Sen" (ยาคลายเส้น; Compound herbs for muscle relaxant), "Cha-Dog-Kum-Phoi" (ชาดอกคำฝอย; Tea bag form of *Carthamus tinctorious* L.), "Fa-Tha-Lai-Jone" (ฟ้าทะลายโจร; capsule of *Andrographis paniculata* Wall.ex Nees), "Ka-Min-Chan" (ขมิ้นชัน; pill of *Curcuma Longa* Linn.), "YA-Dong-Loae" (ยาตองเหล้า; compound herbs for tonic), "Ya-Mong-Pii" (ยาหม่องไพร; ointment of *Zingiber cassumnar* Roxb.), "Pha-Ya-Yo" glycerine (พญายอกลีเซอริน; Tincture in glycerine of *Clinacanthus nutans* Burm.f. Linau). It was shown that herbal medicines were accepted for use for primary health care in the community.

The motivation for promoting sustainable development was presented to the leaders of the community interested in using herbal medicine for increasing community income and reducing their expense by using herbal instead of modern medicine for common symptoms. Accordingly they were alert to survey the sources of medicinal plants in their community and making plans to preserve them for use in the future.

However, from my experience working to promote herbal medicine in the community for seventeen years, the important thing to do is to accept and embrace the concept of holistic health which means a broad concept of health, not only public health. Consequently, working in co-operation with others, both government organizations (GO) and non government organizations (NGO), and with local organizations proved very important for promotion of sustainable herbal medicine in primary health care.