3.2 Conservation and sustainable use of medicinal plant in the Mien community at Sancharurn Village

In conservation and sustainable use of medicinal plants part consists of two issues, first is the integration of scientific knowledge into the Mien's indigenous knowledge for applied *ex situ* conservation, sustainable use and development of the Mien's medicinal plants using laboratory works. The second is a processing of conservation of medicinal plant use knowledge, and also medicinal plant diversity (*in situ* conservation) for sustainable use of medicinal plants using participatory action research. Their details are shown as follows:

3.2.1 Integration of scientific knowledge into the Mien's indigenous knowledge for conservation, sustainable use and development of the Mien's medicinal plants

From prior results, there were both qualitative and quantitative data, showed that the medicinal plants used by postpartum women were the most important plants because they were mentioned in the most frequently used in the community.

The belief and trust in medicinal plants of the postpartum women may base on the usefulness of medicinal plants to the users. The good quality of recipes may come from the effects of phytochemicals of the plants. In the postpartum herbal bath recipes, the phytochemicals of medicinal plants can be absorbed into postpartum women's body by many routes such as their volatile constituents can be inhaled and receptors of olfactory nerve in olfactory epithelium were then contacted and send electrochemical message to limbic

system and hypothalamus in the central nervous system to translate these signals to the endocrine glands to release neurochemicals such as endorphin, enkephalin, and serotonin to adjust hormonal and emotional balance. Olfactory and alveoli epithelium also absorb these volatiles to circulation system and these chemicals were then passed and acted through organs and cells. Anti-inflammatory, analgesic, antioxidant, and antimicrobial activities can be acted with these routes. An immersion of postpartum women's body into a bath-tub for just 10-30 minutes made their skin soft enough to absorb phytochemicals through subcutaneous capillary and venoles. These phytochemicals can be directly absorbed into wound from the tearing of the vagina to the circulation system. The drinking of herbal tea combined with consuming medicinal plants cooked with chicken in postpartum herbal tonic recipes are the other routes that the postpartum women receive nutrients and phytochemicals from medicinal plants.

Information regarding volatile oils of Gramineae, and Lamiaceae families [179] such as volatile oils from lemon grass (*C. citratus* (DC.) Stapf), sweet basil (*Ocimum basilicum* L.), and other Lamiacous plants can confirm the usefulness of volatile oils and their other phytochemicals on antioxidant, antimicrobial, anti-inflammatory, analgesic, and other activities to relating medicinal plants used in postpartum herbal bath.

The indications of twenty plants commonly used in postpartum herbal bath recipes of the Mien at Sancharurn village, the use of other areas, their phytochemicals and biological activities in literature are shown as following in Table 7.

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature

Botanical name	**Indications in bath recipes**	**Uses of other ethnic groups**	**Bioactivity**	**Phytochemicals**
1. *Blumea balsami-fera* (L.) DC.	- Itching, bone and joint pain, refreshing, anti-flatulence	- A infusion of young shoot and root is topically applied in case of snakebite. - It is ground in cold water and drank or applied to stomach for stomachache patients - Leaves and root were boiled in water to make a tea to treat runny nose, gastritis, stomach ache, flatulence used [180-183]	- Skin inflammations and analgesic activity, antioxidant activity, free radical-scavenging activity of leaves [181-183]	- Flavonoids, monoterpenes, triterpenes - (2*R*,3*R*)-7,5′-dimethoxy-3,5,2′-trihydroxyflavanone [180] - Tamarixetin, rhamnetin, butylated hydroxytoluene, luteolin, butylated hydroxyanisole, a-tocopherol, quercetin, 5,7,3 ',5 tetralzydroxy-flavanone, blumeatin [181-183]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indication	Uses of other ethnic groups	Bioactivity	Phytochemicals
1. *Blumea balsamifera* (L.) DC. (continued)		- Hot water extracted juice applied over affected skin to reduce swelling caused by the poisonous sting of wasp, to treat cuts and wounds [181-183]		- Dihydroquercetin-7,4'-dimethyl ether, dihydroquercetin-4'-methyl ether and (2*R*,3*R*)-dihydroquercetin-4′-methyl ether and (2*R*,3*R*)-dihydroquercetin-4′, 7 methyl ether [181-183]
2. *Eupatorium odoratum* L.	- Stop bleeding, accelerates healing, refreshing	- Leaves are used as a cough remedy, diarrhea, astringent, antispasmodic, antihypertensive, diuretic, malaria, applied to cuts to stop bleeding [185-187].		Flowers possess four flavanones, isosakuranetin (5,7-dihydroxy-4'-methoxyflanone, persicogenin (5.3'-dihydroxy-7,4'-dimethoxyflavanone) [186-187]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	**Indication in bath recipes**	**Uses of other ethnic groups**	**Bioactivity**	**Phytochemicals**
2. *E. odoratum* L. (continued)		- Used as a haemostatic on wounds and anti-inflammatory. - A decoction of flower is used as general tonic, antipyretic and heart tonic [186-187]	- Essential oil extracts from the leaves have efficacy on the morality of insects; the maize grain weevil (*Sitophilus zeamais)* - Ethanol extract produced measurable zones of inhibition (6.5-16 mm) against reference microbial strains [187]	- 4'-hydroxy-5,6,7-trimethoxyflavanone, two chalcones, 2'-hydroxy-4,4',5',6'-tetramethoxychalcone, 4,2'-dihydroxy-4',5',6'-trimethoxychalcone, two flavones acacetin (5,7-dihydroxy-4'-methoxyflavone, luteolin (5,7,3',4'-tetrahydroxyflavone) - Intermidine and lycopsamine [186-187]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indication in bath recipe	Uses of other ethnic groups	Bioactivity	Phytochemicals
3. *Crinum asiaticum* L.	Analgesic and anti-inflamma-tion	- Leaves extract used for earaches and other ear complaints - Poultice made from heated, pounded fresh bulb used for rheumatism - Juice of fresh bulb is emetic - Seeds are applied for purgatives and diuretics actions [188, 203, 206]	- Methanol extract possess active inflammation effect in paw edema in mice - Leaves extract to be effective against hypertrophy of prostate in rats - Lycoriside, an acylglusyloxy-alkaloid showed anti- or prelease-effect on mast cell mediators - Aqueous extract showed sedative activity in mice [197-202, 204-210]	- An alkaloid, lycorine, coumarins, glycosides, triterpenes and flavonoids, tannin, phenolic compound, baconine from bulbs and leaves - Crinumin, a glycosylated serine protease with chymotrypsin-like activity from the latex - Palmilycorine and lycoriside alkaloid conjugates from fleshy scale leaves and roots [189-210]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indications	Uses of other ethnic groups	Bioactivity	Phytochemicals
3. *C. asiaticum* L. (continued)		- Leaves are used as expectorants, against skin diseases. - Roots are regarded as good emetic, fevers lumbago, headaches and swellings. - Used as rheumatic remedy [206].	- Extract showed significant dose-dependent inhibition of pain and a significant effect on leucocyte count - Ethanol extracts of leaves showed inhibitory activity against bacteria - Bulb showed an increased expression of proliferating cell nuclear antigen (PCNA) in rats [197-210]	- Siculine, 1-epijossephinine, 7-methoxycrinama-bine from bulbs - New asiaticumines A, B alkaloids, together with known amides, phenolic compounds, and flavonoids - 1-(2-hydroxy-4-hydroxymethyl)phe nyl-6-O-caffeoyl-β-D-gluco-pyranoside - Hamayne, ambelline, belladine [189-210]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand, and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	**Indication**	**Uses of other ethnic groups**	**Bioactivities**	**Phytochemicals**
3.*C. asiaticum* L. (continued)			-Effect on tumor cell apoptosis induced by polymorphonuclear leukocyte-derived calprotectin - Their alkaloids possess potent antiviral narciclasine and the Anti-ACE agent assoamine - Extract of leaf shows antiemetic, haemogogue activities [197-202, 204-210]	

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indications in bath recipe	Uses of ethnic groups	Bioactivities	Phytochemicals
4.*Cymbopogon citratus* (DC.) Stapf	- Relief of bone and joint pain, refreshing, anti-flalulence	- Leaves are used for anti cough, gastrointestinal problems [211] - Used as an ansiolitic - Used as tea against flu, fever, pneumonia, and to solve gastric and sudorific problems [211, 216] - Used as antipyretic, stimulating, and, antispasmodic effects [216]	- Stem extract possessed anti *H.pylori* - For oral thrush in AIDs patients - Antibacterial activity on *S. typhi* - Leaves extract elevate anxiety in mice - Anticonvulsant activity of pentylenetetrazole, pilocarpine, strychnine, and maximal electroshock tests [217-221, 223]	- Alkaloids, saponins, tannins, anthraquinone, steroids, phenols and flavonoids - *C. citratus* oil were geranial (40.1%), neral (29.7%), and myrcene (11.3%) - Hydrocarbon terpenes, alcohols, ketones, esters and aldehydes [212-215, 224-227]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indications	Uses of ethnic groups	Bioactivities	Phytochemicals
4. *C. citratus* (DC.) Stapf (continued)		- Promotes sweating and emmenagogue - Antitussive, antiseptic, sudarific, stomachis, anti-rhumatic, backache, sprain, haemoptysis, analgesic, anti-inflammatory actions, combat diabetes, coughing, cuts, asthma, bladder disorders, carminative, as diaphoretic, and to relieve headaches [217-220]	- The essential oil is strongly prolonging the mice sleepness time, produced marked depression on the CNS of mice - The myrcene extract presented antinociceptive, presented antimutagenic activity in mammary cells - Alimonene, geraniol presented inhibition of the liver and intestinal mucous membrane cancer in mice [228-237]	

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	**Indications**	**Uses of other ethnic groups**	**Bioactivities**	**Phytochemi-cals**
4. *C. citratus* (DC.) Stapf (continued)		- Used as restorative, digestive, antitussis, effective against colds, analgesic, anti-hermetic, anti-cardiopathic, antithermic, anti-inflammatory of urinary ducts, diuretic antispasmodic, diaphoretic, antiallergic, psychorological diseases, sedative [217-220]		
5. *Leea indica* (Burm. f.) Merr.	- Increase blood circulation, refreshment, pelvic pain	- Leaves are used for post partum bathing [42]		- Di-isobutylphtha-late, di-n-butylphthalate, n-utylisobutyl-phthalate, buthylisohexyl phthalate [238]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of others ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	**Indications in bath recipe**	**Uses of other ethnic groups**	**Bioactivities**	**Phytochemistry**
5. *L. indica* (Burm. f.) Merr. (continued)		- Anti-diabetes, vertigo, snake bites from leaves. - Roots were used for sudorific, antidiarrheal, antidysenteric, antispasmodic activities , allergy, skin diseases, and ear troubles [238-239]	- Antibacterial activity, antifungal activity in LPS and IFN-γ-induced RAW 264.7 cells [238]	
6. *Phlogacan-thus curviflorus* (Wall.) Nees var. *curviflorus*	-Recupera-ting of postpartum women's health		- Phlogacantholides B showed penicillin augment activity [240-241]	- Phlogacantho-lides A, B, C, lupeol, betulin, β-sitosterol, β-daocosterol, (+)-syringaresinol [240-241]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	**Indication in bath recipe**	**Uses of others ethnic groups**	**Bioactivities**	**Phytochemistry**
7. *Plumbago indica* L.	Urinary infection, Pain, anti-inflamma-tion, increased blood circulation	- Root used for digestion**,** promote appetite, as rubefacient**,** in rheumatism, paralytic affections**,** abortion, secondary syphilis, leprosy, a good remedy to check postpartum hemorrhage, the milky juice is used as ophthalmia, scabies. - Treating of mental disorders - In large doses is present as acronacrotic poison [242-243]		- Root possesses Plumbagin, sitosteraol glucoside, lignin, sesquiterpines, triterpenes, steroid [242-243]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indications in bath recipe	Uses of other ethnic groups	Bioactivities	Phytochemistry
8. *Ricinus communis* L.	Prevent numbness, increase blood circulation	- Fresh leaves are applied to relieve body pain, inflammation and swelling. The raw seed paste applied on swollen foot and wounds - Used to treat wounds, pain, rheumatism and bacterial infection - Seeds were used as oral contraceptive - Leaf, root, seed were used for treatment of liver disorders [244, 248]	- The alkaloidic extract was effective against E.coli - Leaf extract was effective in inhibiting *candida albicans, C. glabrata* and *C.tropicalis* - Anti-inflamma-tory and anti-bacterial activities - Anti-fertility activity of seed extract in , is a potential male contraceptive agent [245-250, 253-264]	- Ricinine and N-demethylricinine, alkaloids, favonoids, kaempferol-3-O-beta-d-rutinoside, and kaempferol-3-O-beta-d-xylopyranoid - Leaves compose of saponin, steroids, alkaloids - Gallic acid, queracetin, gentisic acid, rutin, epicatechin and ellagic acid [251-252]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Plant species	**Indication in bath recipe**	**Uses of other ethnic groups**	**Bioactivities**	**Phytochemistry**
8. *Ricinis communis* L. (continued)			- Leaves posses antinociceptive, hepatoprotective , antidiabetic [245-250, 253-264].	
9. *Adenia penangiana* (G.Don) Wilde	- Analgesic and anti-inflammation	-		-
10. *Olax imbricata* Roxb.	- Eliminating waste matter from vagina	-		-

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Plant species	Indications in bath recipe	Uses of other ethnic groups	Bioactivities	Phytochemicals
11. *Poikilosper-mum suaveolens* (Bl.) Merr.	- Prevention of fever with convulsion, pain, numbness	- Sap of stem has been used for postpartum women, diseases of eye, as cooling for fevers - Roots are used for poultice, itches, and fevers - Pounded stems are used to make a hair-wash to destroy vermin [265]		-
12. *Gouania leptostachya* DC. var. *leptostachya*	Prevention of fever with convulsion, anti-inflamma-tion		- Antifungal activity [266]	- Bark and root contains saponin [266]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Plant species	Indications in bath recipe	Uses of other ethnic group	Bioactivities	Phytochemistry
13. *Tetrastigma* sp.	- Anti-itching, skin diseases	-		-
14. *Pothos chinensis* (Raf.) Merr.	- Common cold, flu	- Allergy, pain, antitoxic, improves digestion, stomach gas pain, hernia [267]		-
15. *Schefflera* aff. *S. bengalensis* Gamb.	- Bone, joint pain, anti-spasmodic, recuperating of postpartum women's health	- Postpartum herbal bath [268]		-
16. *Trevesia palmata* (Roxb. *ex* Lindl.) Vis.	- Eliminating of waste matter from vagina, abdominal pain	- Young flowers are used as appetizer [269]	- Antiprolife-rative activity present by the crude saponin fraction [270]	- Bisdesmosidic saponins, triterpenoid saponins, 1h−13c (hsqc, hmbs) [270]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups their phytochemicals and bioactivities in previous literature (continued)

Plant species	Indications in bath recipe	Uses of ethnic groups	Bioactivities	Phytochemistry
17. *Acorus gramineus* Sol. *ex* W. Ait.	- Common cold, flu, congestion, cervical pain		- Rhizome and leaves showed Antifungal activity [62-63]	
18. *Dianella ensifolia* (L.) Red.	- Common cold, flu, refreshing	- Used as anti-malaria - Used in sore bladder disease - Root used for stomachache, indigestion [271-272]	- Skin modification - Antioxidant and mushroom tyrosinase inhibition activity [273-274]	-1-(2,4-dihydroxyphenyl)-3-(2.4-dimethoxy-3-methyl-phenyl) propane [274]
19. *Crotalaria assamica* Bth. var *assamica*	- Analgesic and anti-inflammation	- Used to treat cancer [275]	- Anti-inflammation [277]	- Pyrrolizidine alkaloids -Isoflavone, [275-277]

Table 7 Indications of medicinal plants commonly used in postpartum herbal care of the Mien at Sancharuen Village, Nan Province, Thailand and uses of other ethnic groups, their phytochemicals and bioactivities in previous literature (continued)

Botanical name	Indications in bath recipe	Uses of other ethnic groups	Bioactivities	Phytochemistry
20. *Kalanchoe* sp.	- Pelvic pain, anti-inflammation	- Used for oral mucosa inflammation -Crushed leaves and stems are applied on skin burn -Leaves decoction are applied over cuts to stop bleeding [279	-Antimicrobial activities [279] - Analgesic and anticonvulsant -Inhibits mass cell activation and prevents allergic airway disease [282-283]	- Phenolics [280] - Flavonoids [281]

According to an above table, there have been ten important species which have obvious indications but lack of phytochemicals and bioactivity data in previous literature. There are *P. curviflorus* (Wall.) Nees var. *curviflorus, P. indica* L., *A. penangiana* (G.Don) Wilde., *O. imbricata* Roxb., *P. suaveolens* (Bl.) Merr., *G. leptostachya* DC. var. *leptostachya*, *Tetrastigma* sp., *P. chinensis* (Raf.) Merr., *Schefflera* sp. aff *S. bengalensis* Gamb., and *T. palmata* (Roxb. ex Lindl.) Vis. These plants were then selected for study of phytochemicals and bioactivities. The tests were designed according to the medicinal plants' indication of the postpartum herbal

bath recipes. These tests consisted of antioxidant and antibacterial activities which can help the validation of the usefulness of medicinal plants used in postpartum herbal bath recipes. Plant's descriptions of ten selected species are shown as follows:

1. *Phlogacanthus curviflorus* (Wall.) Nees var. *curviflorus*

Figure 4 *Phlogacanthus curviflorus* (Wall.)

Nees var. *curviflorus*

Family: Acanthaceae

Mien Name: hung tiew yam

Elevation: 900 m

Habitat: alluvial banks of the stream

Medicinal use: aerial parts were boiled with plants to recuperate postpartum women's health in postpartum herbal bath recipes.

Plant description: it is a perennial, evergreen which is 1-2 m tall. Its stem is brown, corella are pink, leaves are green.

Abundance: rare (at local: information from interview)

2. *Plumbago indica* L.

Figure 5 *Plumbago indica* L.

Family: Plumbaginaceae

Mien Name: hong lin

Elevation: 450, 650 m

Habitat: home garden, coffee field

Medicinal use: root is used for bone and muscle pain, aerial part used to relieve pain inflammation in postpartum herbal bath recipes

Plant description: herb which leaves oblong, attenuate, stem is brown, flowers are red

Abundance: medium rare (at local: information from interview)

3. *Adenia penangiana* (G.Don) Wilde

(a) (b)

Figure 6 *Adenia penangiana* (G.Don) Wilde

(a) = stem, (b) = aerial parts

Family: Passifloraceae

Mien name: sung bung ma hi

Elevation: 700 m

Habitat: evergreen forest

Medicinal use: stem is boiled with other plants for bath to relieve pain in postpartum herbal bath recipes

Plant description: the climber with its stem shaped like a lower leg bone

Abundance: medium rare (at local: information from interview)

4. *Olax imbricata* Roxb.

Figure 7 *Olax imbricata* Roxb.

Family: Olacaceae

Mien name: dia dan

Elevation: 500 m

Habitat: alluvial banks of the stream

Medicinal use: it is used for the elimination of waste products from vagina of postpartum women

Plant description: climber with brown-gray stem and alternate leaves

Abundance: rare (at local: information from interview)

5. *Poikilospermum suaveolens* (Bl.) Merr.

Figure 8 *Poikilospermum suaveolens* (Bl.) Merr.

Family: Urticaceae

Mien name: pwang dia tom

Elevation: 450, 650 m

Habitat: alluvial banks of the stream

Medicinal use: it is used in postpartum herbal bath to prevent fever with convulsion in the postpartum women

Plant description: woody climber, gray stem and big green leaf

Abundance: medium rare (at local: information from interview)

6. *Gouania leptostachya* DC. var. *leptostachya*

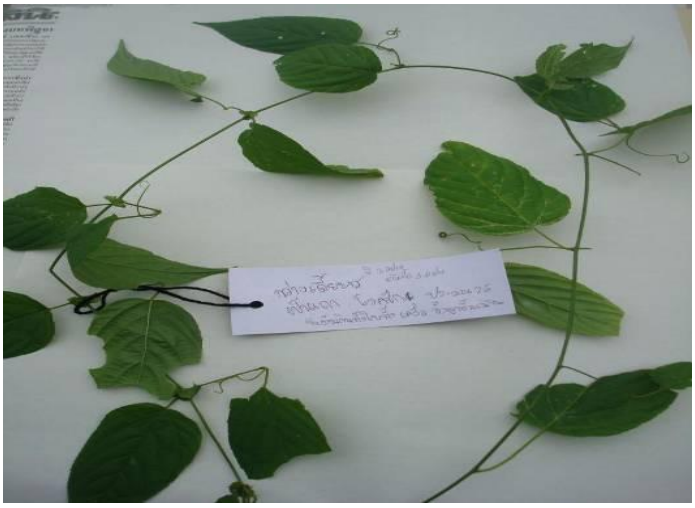

Figure 9 *Gouania leptostachya* DC. var. *leptostachya*

Family: Rhamnaceae

Mien name: pwang dia yao

Elevation: 500 m

Habitat: partly shaded, alluvium banks of stream

Medicinal use: aerial part is mixed with other plants and used for postpartum bath, to prevent fever with convulsion and antimicrobial prevention

Plant description: evergreen climber which is 2 m long, bark is brown, leaves are green

Abundance: medium rare (at local: information from interview)

7. *Tetrastigma* sp.

Figure 10 *Tetrastigma* sp.

Family: Vitaceae

Mien name: kang til mia

Elevation: 600 m

Habitat: general forest

Medicinal use: its stem and leaves are boiled with other plants to create a bath to relieve itching for postpartum women

Plant description: the climber its leaves compose of three leaves on one leaves stalk

Abundance: medium rare (at local: information from interview)

8. *Pothos chinensis* (Raf.) Merr.

Figure 11 *Pothos chinensis* (Raf.) Merr.

Family: Araceae

Mien's name: ha dia ngang

Elevation: 450 m

Habitat: alluvium banks of stream

Medicinal use: it is used in herbal baths for children and postpartum women to prevent common cold and flu

Plant description: the creeping on tree trunks, green stem and winged petiole leaves

Abundance: medium rare (at local: information from interview)

9. *Schefflera* sp. aff *S. bengalensis* Gamb.

Figure 12 *Schefflera* sp. aff *S. bengalensis* Gamb.

Family: Araliaceae

Mien name: au cha pi

Elevation: 450 m

Habitat: home garden, partly shaded, evergreen forest

Medicinal use: leaves are boiled with plants for postpartum bath and are drunk as tea to relieve pain and spasmodic, and to recuperate the postpartum women's health

Plant description: it is a epiphyte, evergreen. The bark is gray, branches and palmate leaves

Abundance: rare (at local: information from interview)

10. *Trevesia palmata* (Roxb. *ex* Lindl.) Vis.

Figure 13 *Trevesia palmata* (Roxb. *ex* Lindl.) Vis.

Family: Araliaceae

Mien name: tom toe fim

Elevation: 450 m

Habitat: home garden, general forest

Medicinal use: its aerial part is boiled with other plants for postpartum bath to eliminate waste matter from vagina of the postpartum women, abdominal pain

Plant description: the evergreen treelet, 1 m long stalk, the leaf's shape is like palmation

Abundance: common (at local: information from interview)

3.2.1.1 Experimental study results

This section can be divided into three parts. First is the results of the phytochemical screening test, second is the results of antioxidant activities and total polyphenolic content tests, and third is the results of antibacterial activities tests. Their details are shown as follows:

a. Phytochemical screening tests

Ten species of medicinal plants, which lack of laboratory test data, and are commonly used in postpartum herbal bath of the Mien were selected for testing of their chemical compounds by phytochemical screening. All crude extracts showed positive results with 1% ferric chloride of phenolic compounds, and also showed negative results for cyanotic glycoside, cardiac glycoside, anthraquinones, saponins, and alkaloids. In case of alkaloids, 7 reagents were used to test a present of alkaloids. The results showed that there were only 2 reagents that induced occurrences of slightly turbidity. There were Dragendorff, and Hager's reagents, it can be analyzed that plants may contain a few of some types of alkaloids or it may be a present of false-positive reactions of other salt compounds.

Although all of the extracts showed positive results with 1% ferric chloride, none of them showed positive results with 1% gelatin solution. It indicated that phenolic compounds that were found in these extracts were not present in any forms of tannins. Of these, three of the plants, *O. imbricata* Roxb., *G. leptostachya* DC. var. *leptostachya*, *P. indica* L., showed positive results for Shinoda's test of flavonoids.

Eight extracts, *A. penangiana* (G.Don) Wilde., *O. imbricata* Roxb., *T. palmata* (Roxb. *ex* Lindl.) Vis., *P. suaveolens* (Bl.) Merr., *Schefflera* sp. aff. *S. bengalensis* Gamb., *P. curviflorus* (Wall.) Nees var. *curviflorus*, *P. indica* L., also showed positive results for lactone glycosides.

Preparation 1 (P1) that consisted of 10 main species containing in traditional use recipe, there were *P. suaveolens* Merr., *G. leptostachya* DC., *Schefflera* sp. aff. *S. bengalensis* Gamb., *P. curviflorus* (Wall.) Nees var. *curviflorus*, *R. communis* L., *E. odoratum* L., *B. balsamifera* (L.) DC., *C. citratus* (DC.) Stapf, *C. asiaticum* L., and *L. indica* (Burm. f.) Merr. while preparation 2 (P2) contained 10 selected plants which lack of scientific data and some of them also were contained in P1, there were *P. suaveolens* Merr., *G. leptostachya* DC., *Schefflera* sp. aff. *S. bengalensis* Gamb., *P. curviflorus* (Wall.) Nees var. *curviflorus*, *A. penangiana* (G.Don) Wilde., *O. imbricate* Roxb., *T. palmate* (Roxb. *ex* Lindl.), *P. chinensis* (Raf.) Merr., *P. indica* L., and *Tetrastigma* sp.. Plants in each preparation, P1 and P2, were boiled together in water for 1 hour then the extracts were tested by phytochemical screening. It was found that both of the preparations showed positive results for 1% ferric chloride, Shinoda's test, and the lactone glycosides test while P1 also showed positive results for the froth test of saponins. The difference of phytochemicals results between an aqueous extract of P1 and P2 and each of alcoholic extract indicated that there was difference of constituents from the different extraction methods. However, an aqueous extract of P1 and P2 can confirm constituents that the postpartum women receive from traditional use. Details of the phytochemicals of each of extracts tested by phytochemical screening are shown in Table 8.