

Some Species of Family Lamiaceae from Malikha Village, Myitkyina

Theint Theint Soe¹, Sanda Htun², Seine Nyoe Nyoe Ko³

Abstract

Historically, species of the family Lamiaceae have enjoyed a rich tradition of use for flavouring, food preservation, and medicinal purposes, due to both their curative and their preventive properties. This study deals with the some species of family Lamiaceae from Malikha Village, Myitkyina, Kachin State. Kachin State has many natural resources. Likely Malikha Village has many valuable plant species. The specimens were collected during July 2017 to February 2018. In this research, 9 species belong to 6 genera of the Lamiaceae. The widely distributed species are *Anisomeles malabarica*(L.) R.Br. ex Sims, *Anisomeles ovate* R.Br. and *Hyptis suaveolens* (L.)Poit.. The species of *Origanum vulgare* L. is rarely distributed in the study area. The taxonomic characters of the species were presented with relevant photographs showing floral parts. The scientific names, Myanmar names and flowering period were mentioned. An artificial key to the species were also constructed. Most used Lamiaceae species which can be used as functional food were listed.

Key words: Lamiaceae, Malikha Village, species, taxonomic

Introduction

Angiosperms Phylogeny Group (APG IV, 2016) stated that flowering plants descended Basal Angiosperms, Magnolids, Monocots and Eudicots. The mint family, Lamiaceae is an important medicinal plant family. It contains about 236 genera and more than 6000 species. Many members of the family are widely cultivated. Some species of Lamiaceae are growing in Malikha village, Myitkyina Township, Kachin State. It is located between North Latitude 25° 21' 22" and East Longitude 97° 11' 15". The elevation of study area is 171 m above sea level.

Plants have been the source for medicinal treatments for thousands of years. Traditional medicine uses plants for both their curative and their preventive properties. When used for preventive purposes, medicinal plants can be classified as functional foods. A good example is the use of spices that besides adding the flavour to foods can improve digestion or help in prevention of diseases. The basic knowledge of foods and their nutritional values was gained and developed in ancient times in the process of looking for adequate foods. The concept of food as medicine was accepted worldwide, especially in China, Japan, and other Asian countries where it was understood that foods have both preventive and curative effects and are an important part of health.

The Lamiaceae species are an important source of preventive agents for the treatment of global health problems (Nayak *et al.*, 2013). *Anisomeles* is an aromatic genus and consists about five or six species. They are native to Asia (Murthy *et al.*, 2015). *Calamintha*, there are about eight species in the genus which is native to the northern temperate regions of Europe, Asia and America (Kumar *et al.*, 2016). *Clerodendrum* consists of more than five hundred species and widely distributed in tropical and subtropical regions of the world (Shrivastava and Patel, 2007). *Gmelina* consists of about 35 species and occurs in Asian countries (Arora and Tamrakar, 2017). *Hyptis* consists of 400 species and widespread in Australia, China and Indonesia (Prince *et al.*, 2013). *Origanum* comprises of 42 species and widely distributed in Eurasia and North Africa (Chishtiet *al.*, 2013).

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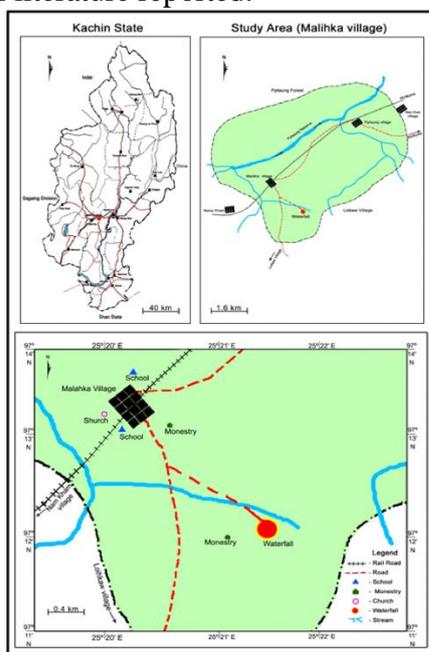
The aim of the present research is to give the knowledge of Lamiaceae species. The objectives are to identify, classify and nomenclature of studied species and to be used as functional food based on literature reported.

Materials and Methods

Specimens were collected during July, 2017 to February, 2018. All the collected specimens were recorded by photographs while flowering. Field notes were made of habitat types and precise location by using GPS (Figure 1). The families of the collected specimens were determined by using key to the families of flowering plants of the world (Hutchinson, 1967), Thonner's analytical key to the families of flowering plants (Thonner, 1981) and the identification of flowering plants families (Davis & Cullen, 1989).

Identification of genera and species were carried out by referring to the available literature such as Flora of British India, Vol 4 (Hooker, 1885), Flora of Java, Vol 2 (Backer & Brick, 1965), Flora of Ceylon, Vol 4 (Dassanayake, 1983), Flora of Hong Kong, Vol 1-3 (Qi-ming, 2009), Flora of China, Vol 17 (Wu, Raven & Hong 1994-2009). The international plant name index and online database of tropicos containing taxonomic information on plants were used to confirm the names and synonyms of plants up to the rank of species (Thawatchai&Kailarsen, 2008).

The collected specimens were identified and described by their taxonomic descriptions with the photographs. The generic and specific arrangement was described by alphabetically. An artificial key to the species of the family Lamiaceae were also constructed. Most used Lamiaceae species which can be used as functional food were listed based on literature reported.



Source: Land Records Office

Figure 1. Location Map of Study Area

Results

List of Collected Species

Nine species belong to six genera were found in the present study. The resulted species were arranged by alphabetically as shown in Table 1.

Table 1. List of Collected Species from Malikha Village

Group	Order	Family	No.	Scientific Name
Asterids	Lamiales	Lamiaceae	1.	<i>Anisomeles malabarica</i> (L.) R.Br. ex Sims
			2.	<i>Anisomeles ovata</i> R.Br.
			3.	<i>Calamintha umbrosa</i> (M.Bieb.) Rchb.
			4.	<i>Clerodendrum calamitosum</i> L.
			5.	<i>Clerodendrum infortunatum</i> L.
			6.	<i>Clerodendrum serratum</i> L.
			7.	<i>Gmelina arborea</i> Roxb.
			8.	<i>Hyptis suaveolens</i> (L.) Poit.
			9.	<i>Origanum vulgare</i> L.

An Artificial Key to the Species

1. Trees **7. *Gmelina arborea***
1. Perennial shrubs and herbs 2
 2. Flowers actinomorphic 3
 2. Flowers zygomorphic 5
3. Ebracteate **5. *Clerodendrum infortunatum***
3. Bracteate 4
 4. Bracts lanceolate **4. *Clerodendrum calamitosum***
 4. Bracts oval-shaped **6. *Clerodendrum serratum***
5. Stamens didynamous **9. *Origanum vulgare***
5. Stamens equal 6
 6. Leaves oblique at the base **3. *Calamintha umbrosa***
 6. Leaves rounded at the base 7
7. Leaves blade crenate along the margin **1. *Anisomeles malabarica***
7. Leaves blade serrate along the margin 8
 8. Stamens exerted **2. *Anisomeles ovata***
 8. Stamens inserted **8. *Hyptis suaveolens***

1. *Anisomeles malabarica* (L.) R.Br. ex Sims, Bot. Mag. 46: t. 2071.1819. (Figure 2)

***Nepta malabarica* L., Mant. Pl. 566. 1767**

Myanmar name : Pin sein a yaine

Flowering period : September to January

Mesophytic perennial erect shrubs, up to 1 m high; stems and branches quadrangular, furrowed; clothed with snowy-hairs. Leaves simple, opposite and decussate; exstipulate; petioles quadrangular, 8 mm – 10 mm long, brownish green, soft hairy; blades ovate, 2 cm – 4 cm long, 1.0 cm – 2.5 cm wide, obtuse at the base, crenate along the margin, acuminate at the apex, tomentose; lateral veins 3-4 pairs. Inflorescences terminal paniculate cymes, peduncles 3 cm – 5 cm long. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, purple, 7 mm – 10 mm in diameter at anthesis, showy; pedicels short, 1 mm – 2 mm long, pubescent, bracts minute, pale green, ebracteolate. Sepals 5, 1 mm- 2 mm long, about 0.5 mm wide, brownish green, pubescent. Corolla tubular, tube 3 mm – 4 mm long, about 2 mm wide, purplish white, pubescent, lobes 2 mm – 3 mm long, about 2 mm wide, pubescent. Stamens 4, free, inserted; filaments about 1.5 mm long, tomentose; anthers ditheous, dorsifixed, about 0.5 mm in diameter, dark purple, dehiscing by longitudinal slits. Carpels 2 with false septum, syncarpous; ovary superior, about 1 mm in diameter, locules 2, four ovules in each locule on axile placenta; styles filiform, 2.0 mm – 3.5 mm long, glabrous; stigma bifid. Fruit nutlets, 4-seeded,

ellipsoid, about 3 mm long, pale green, glabrous. Seeds small, ovoid, non-endospermic.

Specimen examined : September 18, 2017; Theint Theint Soe, Sanda Htun, collection no. (5, 83).

2. *Anisomeles ovata* R. Br., Hort. Kew. ed. 2, 3: 364. 1811. (Figure 3)

Myanmar name : Unknown

Flowering period : July to August

Mesophytic perennial herbs, up to 60 cm high, strongly aromatic, stems and branches quadrangular, pubescent, brown. Leaves simple, opposite and decussate; exstipulate; petioles 6 mm – 20 mm long, 1.0 mm – 1.5 mm wide, pubescent, reddish brown; blades ovate, 5.2 cm – 9.0 cm long, 3.0 cm – 5.5 cm wide, rounded at the base, serrate along the margin, acute at the apex, pubescent; lateral veins 5-6 pairs. Inflorescences terminal dense paniculated or spiked, many flowers, peduncles 3 cm – 12 cm long, 1.5 cm – 2.0 cm wide, pubescent, reddish brown. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, purple tinged with white, 4 mm – 6 mm in diameter at anthesis, showy; pedicels very short, 1 mm – 2 mm long, pubescent, bracts acuminate, 3 mm – 4 mm long, 0.5 mm – 1.0 mm wide, pubescent, dark reddish brown, ebracteolate. Calyx tubular, 5 united lobes; tubes 4 mm – 5 mm long, 3.0 mm – 3.5 mm wide, pubescent; lobes 2 mm – 3 mm long, about 1.5 mm wide, reddish brown, pubescent. Corolla bilabiate, 2-lipped; tubes 5 mm – 6 mm long, 1.5 mm – 2.0 mm wide, white, glabrous; upper lip erect, margin entire, slightly concave; lower lip longer, spreading, 3-lobed, middle lobe large, lobes 4 mm – 5 mm long, 3.0 mm – 3.5 mm wide, pubescent within, glabrous without. Stamens 4, free, epipetalous, exserted; filaments 3 mm – 4 mm long, about 0.7 mm wide, pubescent; anthers ditheous, basifixed, about 0.5 mm in diameter, dark purple, dehiscing by longitudinal slits. Carpels 2 with false septum, syncarpous; ovary superior, globose, 0.8 mm – 0.9 mm long, about 1 mm in diameter, locules 2, four ovules in each locule on axile placenta; filiform, 5 mm – 6 mm long, 0.5 mm – 0.6 mm wide, glabrous; stigma bifid. Fruit nutlets, black, shiny. Seeds small.

Specimen examined : July 22, 2017; TheintTheintSoe, collection no. (1, 110).

3. *Calamintha umbrosa* (M.Bieb.) Rchb. Fl. Germ. Excurs. 329. 1831 (Figure 4)

***Melissa umbrosa* M.Bieb., Fl. Taur.-Caucas. 2:63. 1808.**

Myanmar name : Pin sein a yaine

Flowering period : July to September

Mesophytic perennial herbs, up to 60 cm high; stems and branches quadrangular, pubescent, green. Leaves simple, opposite and decussate; exstipulate; petioles 1.0 cm – 1.5 cm long, about 1 mm wide, pubescent, white; blades elliptic, 4.0 cm – 8.7 cm long, 2.0 cm – 4.5 cm wide, oblique at the base, crenate along the margin, acuminate at the apex, pubescent. Inflorescences axillary or terminal verticillaster cymes, 13 cm – 15 cm long, 3 cm – 4 cm wide, pubescent, white. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, purple, 0.8 cm – 1.0 cm in diameter at anthesis, showy; pedicels very short, 1mm – 2mm long, pubescent, bracts acuminate, 3 mm – 4 mm long, 0.5 – 1.0 cm wide, pubescent, ebracteolate. Calyx tubular, 5-lobed; tubes 2 mm – 3 mm long, 1.5 mm – 2.0 mm wide, pubescent; lobes 1.0 mm – 1.3 mm long, about 1 mm wide, green, pubescent. Corolla bilabiate, free, tubes 4 mm – 5 mm long, 1.5 mm – 2.0 mm wide, white, pubescent, upper lips erect; lower lips spreading lobes 5.0 mm – 5.5 mm long, 1.5 mm – 2.5 mm wide, pubescent. Stamens 4, free, epipetalous, exserted; filaments slender, 5 mm – 6 mm long, about 0.6 mm wide, pubescent, anthers ditheous, dorsifixed, 0.5 mm – 0.8 mm long, about 1 mm wide, dark purple, dehiscing by

longitudinal slits. Carpels 2 with false septum, syncarpous; ovary superior, globose, about 0.8mm in diameter, 0.7 mm – 0.8 mm long, locules 4, four ovules in each locule on axile placenta; styles slender, 6 mm – 8 mm long, 0.5 mm – 0.8 mm wide, curved, pubescent; stigma bifid. Fruit nutlets, about 1.5 cm in diameter, one seeded, pubescent. Seeds small, white, glabrous.

Specimen examined : August 22, 2017; Theint Theint Soe, collection no. (9, 29).

4. *Clerodendrum calamitosum* L., Mant. Pl. 1: 90. 1767. (Figure 5)

Myanmar name : Thawka

Flowering period : July to September

Mesophytic perennial shrubs, about 2 m high; stems and branches terete, quadrangular when young, pubescent. Leaves simple, opposite and decussate; exstipulate; petioles 1 cm – 3 cm long, 1.5 mm – 2.0 mm wide, pubescent, blades ovate, 5.5 cm – 12.0 cm long, 2.5 cm – 6.5 cm wide, oblique at the base, serrate along the margin, acute at the apex, pubescent, lateral veins 6-7 pairs. Inflorescences axillary or terminal verticillaster cymes with many flowers, peduncles 8 cm – 12 cm long, 11 cm – 15 cm wide, pubescent. Flowers bisexual, regular, actinomorphic, pentamerous, hypogynous, white, 1.0 cm – 1.3 cm in diameter at anthesis, showy; pedicels short, 3 mm – 5 mm long, about 1 mm wide, pubescent; bracts lanceolate, 1 mm – 2 mm long, about 0.5 mm wide, pubescent, ebracteolate. Calyx campanulate with 5 lobes, 5 mm – 7 mm long, 1 mm – 2 mm wide, pubescent. Corolla 5, lobes with a slender tube, white; tubes 2.0 cm – 2.5 cm long, about 2.5 mm wide, pubescent; lobes 5, 7.0 mm – 8.5 mm long, about 5 mm wide, rounded at the apex, glabrous. Stamens 4, free, epipetalous, exserted; filaments slender, 2.0 cm – 2.2 cm long, about 0.5 mm wide, pubescent; anthers ditheous, basifixed, 1.3 mm – 1.5 mm long, about 1 mm wide, dark brown, dehiscing by longitudinal slits. Carpel 1 with false septum, syncarpous; ovary superior, globose, 2 mm – 3 mm long, about 2 mm in diameter, locules 2, four ovules in each locule on axile placenta; styles slender, 4.0 cm – 4.5 cm long, 0.6 mm – 0.8 mm wide, pubescent, stigma simple. Fruits drupaceous, calyx persistent, more or less inflated, one seeded, pubescent. Seeds small, white, glabrous.

Specimen examined : August 22, 2017; TheintTheintSoe, collection no. (16, 22).

5. *Clerodendrum infortunatum* L., Sp. Pl. 2: 637. 1753. (Figure 6)

Myanmar name : Phetkha

Flowering period : July to September

Mesophytic perennial shrubs, about 3 m high; stems and branches quadrangular when young, glabrous. Leaves simple, opposite and decussate; exstipulate; petioles 7 cm – 9 cm long, 2.5 mm – 3.0 mm wide, cordate at the base, entire along the margin, acute at the apex, glabrous, lateral veins 4-5 pairs. Inflorescences terminal verticillaster cymes with many flowers; peduncles about 5.5 cm long, glabrous. Flowers bisexual, regular, actinomorphic, pentamerous, hypogynous, white, about 1.3 cm in diameter at anthesis, showy; pedicels short, 1.0 mm – 1.5 mm long, glabrous, ebracteate. Calyx tubular, 5-lobed; tubes 2.5 cm – 3.0 cm long, 1.0 cm – 1.5 cm wide, glabrous; lobes 5, triangular-shaped, 5 mm – 6 mm long, 3.0 mm – 3.5 mm wide, acute at the apex, glabrous. Corolla tubular, 5 lobed; tubes 10 mm – 11 mm long, glabrous; lobes 5, white, rounded at the apex. Stamens 4, free, epipetalous, exserted; filaments filiform, 2.2 – 2.5 cm, white, glabrous; anthers ditheous, 1.5 mm – 2.0 mm long, glabrous, basifixed, dehiscing by longitudinal slits. Carpel 1 with false septum, syncarpous; ovary superior, about 1 mm in diameter, glabrous, locules 2, four ovules in each locule on axile placenta; styles long, 3.5 cm – 4.0 cm long, 0.5 mm wide, white,

glabrous; stigma simple, green. Fruits baccate, about 5 mm in diameter, one seeded, glabrous. Seeds 2-4, ovate.

Specimen examined : August 22, 2017; TheintTheintSoe, collection no. (5, 62)

6. *Clerodendrum serratum* (L.) Moon, Cat. Pl. Ceylon. 46. 1824. (Figure 7)

***Volkameria serrata* L., Mant. Pl. 1: 90. 1767**

Myanmar name : Yin pya

Flowering period : July to September

Mesophytic perennial shrubs, about 2 m high; stems and branches quadrangular, pubescent, pale brown. Leaves simple, opposite and decussate; exstipulate; petioles 1.2 cm – 1.8 cm long, 1.8 mm – 2.0 mm wide, pubescent, blades elliptic-lanceolate, 10 cm – 14 cm long, 4.2 cm – 5.4 cm wide, attenuate at the base, serrate along the margin, acute at the apex, glabrous. Inflorescences terminal verticillaster cymes; peduncles 4 cm – 5 cm long, glabrous, lateral veins 7-9 pairs. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, white, about 1.5 cm in diameter at anthesis, showy; pedicels subsessile, 1.0 mm – 1.5 mm long, glabrous; bracts oval-shaped, 5 mm – 7 mm long, 4 mm – 5 mm wide, pale green, bracteoles triangular-shaped, 4 mm – 5 mm long, about 1 mm wide, pale green, pubescent. Calyx tubular, 5-lobed; tube 2 mm – 3 mm long, 2.5 mm – 3.0 mm wide, pubescent, lobes 0.5 mm – 1.0 mm long, about 1 mm wide, acute at the apex, pale green, pubescent. Corolla funnel-shaped; tubes 7 mm – 8 mm long, about 4 mm wide; lobes 5, 6 mm – 9 mm long, about 6 mm in diameter, white, rounded and crenate at the apex, pubescent. Stamens 4, free, exserted; filaments filiform, 2.0 cm – 2.2 cm long, anthers ditheous, 1.5 mm – 2.0 mm long, about 1.5 mm wide, pubescent, basifixed, dehiscent by longitudinal slits. Carpels 2 with false septum, syncarpous; ovary superior, oblong, about 2 mm in diameter, glabrous, locules 2, four ovules in each locule on axile placenta; styles filiform, 2.3 cm – 2.6 cm long, pubescent; stigma bifid, green. Fruits drupaceous, about 4 mm in diameter, glabrous. Seeds black, subglobose.

Specimen examined : July 22, 2017; Theint Theint Soe, Sanda Htun, collection no. (15, 23).

7. *Gmelina arborea* Roxb. ex Sm., Cycl. 16: Gmelin. 4. 1810 (Figure 8)

Myanmar name : Ya ma nay

Flowering period : December to January

Mesophytic perennial trees, up to 8 m high; stems and branches terete, glabrous, green. Leaves simple, opposite and decussate; exstipulate; petioles about 7 cm long, about 2 mm wide, pubescent; blades deltoid, 4 cm – 11 cm long, 3.5 cm – 9.5 cm wide, rounded at the base, entire along the margin, acute at the apex, pubescent; lateral veins 5-6 pairs. Inflorescences terminal racemes with many flowers, 6 cm – 8 cm long, 3 cm – 4 cm wide, pubescent, white. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, brownish yellow, about 3.5 mm in diameter at anthesis, showy; pedicels short, 4 mm – 6 mm long, brownish green, pubescent, bracts 5 mm – 7 mm long, 1.5 mm – 2.0 mm wide, pubescent, sessile. Calyx tubular, tubes 4 mm – 5 mm long, 3 mm – 4 mm wide, pubescent; lobes 5, 0.5 mm – 0.8 mm long, about 1 mm wide, pubescent. Corolla campanulate, 5-lobed, tubes 6 mm – 7 mm long, 4 mm – 5 mm wide, brownish yellow, pubescent; lobes 5, 14 mm – 20 mm long, 6 mm – 17 mm wide, rounded at the apex, pubescent. Stamens 4, free, didynamous, epipetalous; inserted; filaments long, straight, 11 mm – 6 mm long, about 0.5 mm wide, glabrous; anthers ditheous, dorsifixed, about 1.3 mm in diameter, yellow, dehiscent by longitudinal slits. Carpels 2 with false septum, syncarpous; ovary superior, globose, about 2.5 mm in diameter, locules 2, four ovules in each locule on

axile placenta; styles long, 6 mm – 8 mm long, about 1 mm wide, glabrous; stigma bifid, pale green. Fruits drupaceous with persistent calyx succulent. Seeds oblong.

Specimen examined : December 23, 2017; Theint Theint Soe, Sanda Htun, collection no.(15, 23).

8. *Hyptis suaveolens* (L.) Poit., Ann. Mus. Hist. Nat. 7: 472, Pl. 29, f. 2. 1806. (Figure 9)

***Ballota suaveolens* L., Ann. Mus. Hist. Nat. 7: 472., Pl. 29. f. 2. 1806**

Myanmar name : Pin sein a yaine

Flowering period : July to August

Mesophytic perennial herbs, up to 45 cm high; stems and branches quadrangular, pubescent, dark purple tinged with green. Leaves simple, opposite and decussate; exstipulate; petioles 5 mm – 14 mm long, 1.0 mm – 1.5 mm wide, pubescent; blades ovate, 1.2 cm – 2.5 cm long, 1.1 cm – 1.9 cm wide, rounded at the base, serrate along the margin, acute at the apex, pubescent, lateral veins 4-5 pairs. Inflorescences axillary or terminal verticillaster cymes with few flowers, 1.0 cm – 1.7 cm long, 2 mm – 3 mm wide, pubescent. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, purple, 2 mm – 3 mm in diameter at anthesis, showy; pedicels short, 1mm – 2mm long, pubescent, ebracteate. Calyx tubular, 5-lobed; tubes 2 mm – 3 mm long, 1.5 mm – 2.0 mm wide, lobes 2 mm – 3 mm long, about 0.5 mm wide, densely pubescent. Corolla bilabiate; tubes cylindric to swollen on one side, 5 mm – 6 mm long, about 1.5 mm wide, purple, pubescent; limb 2 lipped, upper lip 2-lobed, erect; lower lip 3-lobed, 3 mm – 4 mm long, 1.5 mm – 1.0 mm wide, pubescent within, glabrous without. Stamens 4, equal, free, epipetalous, inserted; filaments filiform, 2 mm – 3 mm long, about 0.7 mm wide, pubescent; anthers ditheous, dorsifixed, about 1 mm in diameter, dark purple dehiscing by longitudinal slits. Carpels 3 with false septum, syncarpous; ovary superior, globose, 0.5 mm – 1.0 mm long, about 0.5 mm in diameter, locules 2, four ovules in each locule on axile placenta; styles long, 5 mm – 6 mm long, 0.5 mm – 0.8 mm wide, glabrous; stigma trifid. Fruit nutlets, ovoid to oblong. Seeds small.

Specimen examined : July 22, 2017; Theint Theint Soe, Sanda Htun, collection no.(21, 48).

9. *Origanum vulgare* L., Sp. Pl. 2: 590. 1753. (Figure 10)

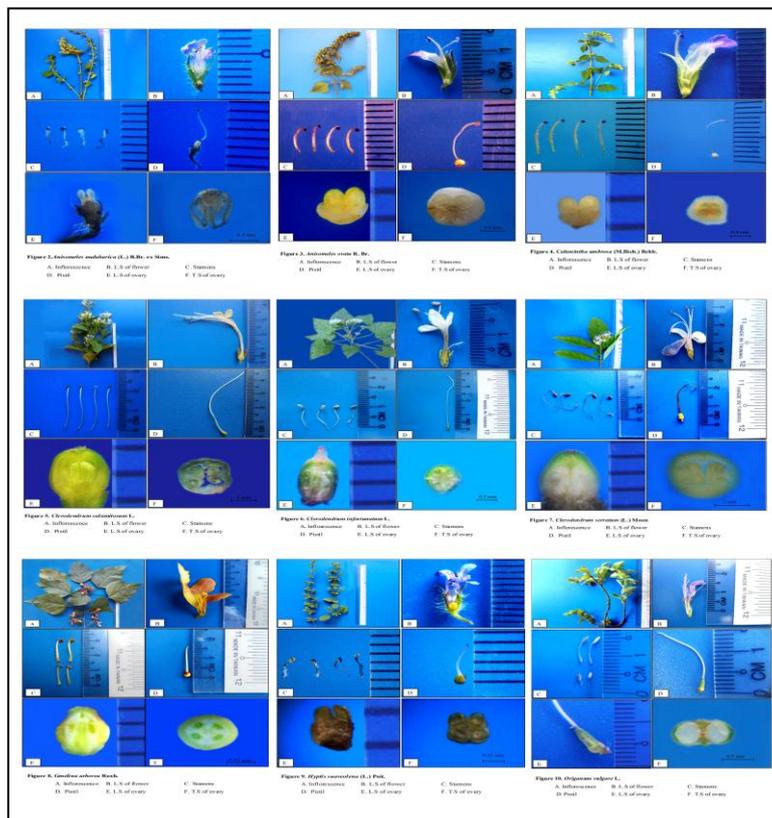
Myanmar name : Pin sein a yaine

Flowering period : July to September

Mesophytic perennial herbs, about 30 cm high; stems and branches quadrangular, pubescent, green. Leaves simple, opposite and decussate; exstipulate; petioles 3 mm – 4 mm long, about 2 mm wide, pubescent, white; blades ovate, 1.5 cm – 4.0 cm long, 1 cm – 3 cm wide, rounded at the base, entire along the margin, acute at the apex, pubescent, lateral veins 6-7 pairs. Inflorescences terminal verticillaster cymes with few-flowered, peduncles 2 cm – 3 cm long, 1.5 cm – 2.5 cm wide, pubescent. Flowers bisexual, irregular, zygomorphic, pentamerous, hypogynous, purple, 4 mm – 5 mm in diameter at anthesis, showy; pedicels subsessile, about 1mm long, pubescent, ebracteate. Calyx tubular, tubes 3 mm – 5 mm long, about 1.5 mm wide, hirsute; lobes 5, 5 mm – 6 mm long, 0.5 mm – 1.0 mm wide, pubescent. Corolla bilabiate, 5-lobed; tubes 9 mm – 11 mm long, 2.0 mm – 3.0 mm wide, pale purple, glabrous; upper lips 2, lower lips 3, 10 mm – 12 mm long, 3 mm – 4 mm wide, glabrous. Stamens 4, free, didynamous, epipetalous, exerted; filaments slender, 4 mm – 6 mm long, about 0.5 mm wide, glabrous; anthers ditheous, basifixed, about 1 mm in diameter, white, dehiscing by longitudinal slits. Carpels 2, syncarpous; ovary superior, oblong, about 1 mm in diameter, locules 2, ten

ovules in each locule on axile placenta; styles long, curved, 11 mm – 13 mm long, about 0.5 mm wide, glabrous; stigma bifid, unequal. Fruit nutlets, smooth. Seeds small, white, glabrous.

Specimen examined : August 22, 2017; Theint Theint Soe, Sanda Htun, collection no. (85, 86)



According to the literature reported, the results of most used Lamiaceae species can be used as functional food as shown in Table 2.

Table 2: The results of most used Lamiaceae species can be used as functional food

No.	Species	English name	Edible part	Functional food
1.	<i>Anisomeles malabarica</i> (L.) R.Br. ex Sims	Malabar Catmint	Leaves	Analgesic, anti-inflammatory, antioxidant, antimicrobial, anti HIV and anticancer, eczema, anthelmintic (Murthy <i>et al.</i> , 2015)
2.	<i>Anisomeles ovata</i> R.Br.	Indian Catmint	Leaves, stems	Analgesic, antihyperalgesic, astringent, carminative, tonic, colic, skin diseases, snake bites and scorpion sting (Murthy <i>et al.</i> , 2015)
3.	<i>Calamintha umbrosa</i> (M.Bieb.) Rchb.	Calamint	Leaves	Antidiabetic, antioxidant, antimicrobial (Kumar <i>et al.</i> , 2016)
4.	<i>Clerodendrum calamitosum</i> L.	White butterfly bush	Leaves, roots	Kidney, gall and bladder stones, diuretic, antibacterial, sedative, antidiabetic, antihypertensive (Kar <i>et al.</i> , 2014)
5.	<i>Clerodendrum infortunatum</i> L.	Hill glory bower	Roots, leaves, stems	Tumors, laxative, antibacterial, antifungal, anthelmintic, analgesic, antioxidant (Das <i>et al.</i> , 2014)
6.	<i>Clerodendrum serratum</i> L.	Blue-flowered glory tree	Roots, seeds, leaves	Dyspepsia, dropsy, febrifuge, cephalgia, ophthalmia (Shrivastava & Patel, 2007)
7.	<i>Gmelina arborea</i> Roxb.	White teak	Leaves, fruits, stem bark	Antidiuretic, antipyretic, antianalgesic, antioxidant, antidiabetic, antihelminthic, anticancer (Arora and Tamrakar, 2017)
8.	<i>Hyptis suaveolens</i> (L.) Poit.	Bush mint	Whole plant, leaves, inflorescences	Carminative, stomachic, antimicrobial, toxicity, headaches, stimulant, diuretic, antipyretic (Ngozi <i>et al.</i> , 2014)
9.	<i>Origanum vulgare</i> L.	Oregano	Leaves	Antioxidant, antimicrobial, against cold, digestive, respiratory problems (Chishti <i>et al.</i> 2013)

Discussion and Conclusion

The habit of *Anisomeles malabarica* was perennial shrubs and quadrangular stem with snowy hairs. *A. ovata* was perennial herbs and quadrangular stem with pubescent. Leaves of these plants were simple, opposite and decussate. These characters were in agreement with those described by Hooker (1885). Inflorescences of *A. malabarica* were paniculate cymes and flower zygomorphic. Inflorescences of *A. ovata* were dense paniculated or spiked. The flowers of *A. malabarica* were pale green, tubular corolla with inserted stamens. *A. ovata* was purple tinged with white, bilabiate corolla with exerted stamens. Two species of *Anisomeles* carpels were bilocular with axile placentation. These characters were agreement with those described by Hooker (1885), Backer & Brick (1965) and Dassanayake (1983).

The habit of *Calamintha umbrosa* was perennial herbs with quadrangular stem. The types of leaves were simple and shape of leaf blade was elliptic and oblique at the base. Both of inflorescences were terminal verticillaster cymes. The flowers were purple, bilabiate corolla and bilocular ovary. These characters were in agreement with those described by Hooker (1885).

The habit of *Clerodendrum* species were perennial shrubs with quadrangular stem. The types of leaves were simple, shape of leaf blade was oblique at the base and serrate along the margin in *C. calamitosum*. Shape of leaf blade was cordate at the base and entire along the margin in *C. infortunatum* and shape of leaf blade was attenuate at the base and serrate along the margin in *C. serratum*. All the flowers of *Clerodendrum* were white. In *C. calamitosum* and *C. serratum* were bracteate and *C. infortunatum* was ebracteate. These characters were agreement with those described by Hooker (1885), Backer & Brick (1965) and Dassanayake (1983).

The habit of *Gmelina arborea* was perennial trees. The types of leaves were simple and shape of leaf blade was deltoid. The flowers were brownish yellow with campanulate corolla with didynamous stamens and bilocular ovary. The habit of *Hyptis suaveolens* was perennial herbs. The types of leaves were simple, shape of leaf blade was ovate and serrate along the margin. The flowers were purple, bilabiate corolla with inserted stamens and bilocular ovary. The habit of *Origanum vulgare* was perennial herbs. The type of leaves was simple and shape of leaf blade was ovate with entire along the margin. The flowers were purple bilabiate corolla with didynamous stamens and bilocular ovary. These characters were agreement with those described by Hooker (1885), Backer & Brick (1965) and Dassanayake (1983).

Nutlet fruits were found in *A. malabarica*, *A. ovata*, *Calamintha umbrosa*, *H. suaveolens* and *O. vulgare*. In *Clerodendrum calamitosum*, *Clerodendrum serratum* and *Gmelina arborea* were drupaceous and *Clerodendrum infortunatum* was baccate. *Gmelina arborea* was tree but the remaining species were shrubs and herbs. Stamens were didynamous in *G. arborea*, *Origanum vulgare* and the stamens of remaining species were equal. The widely distributed species were *Anisomeles malabarica*, *A. ovata* and *Hyptis suaveolens*. The species of *Origanum vulgare* was rarely distributed in the study area.

In conclusion, the intention of this research will contribute towards a better understanding and knowledge of family Lamiaceae. The consumption of Lamiaceae species of functional foods or food ingredients with health claims should be based on sound scientific evidence.

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