Conservation Guideline
FOR Medicinal AND Aromatic Plants (MAPS) In Lebanon

International market study for selected medicinal and aromatic plants in Lebanon
(Alcea sps, Micromeria sps, Origanum sps, Satureia sps, Thymus sps, Viola sps, Thymbra spicata, Salvia fruticosa, Cyclotrichium origanifolium)

Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants (MAPs) Production Processes Project in Lebanon
INTERNATIONAL MARKET STUDY FOR SELECTED MEDICINAL AND AROMATIC PLANTS IN LEBANON (Alcea sps, Micromeria sps. Origanum sps, Satureia sps, Thymus sps, Viola sps, Thymbra spicata, Salvia fruticosa, Cyclotrichium origanifolium)

GEF-UNDP-LARI, 2010. International market study for selected medicinal and aromatic plants in Lebanon (Alceasps, Micromeria sps, Origanum sps, Satureia sps, Thymus sps, Viola sps, Thymbra spicata, Salvia fruticosa, Cyclotrichium origanifolium). Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants (MAPs) Production Processes in Lebanon Project. Funded by the Global Environment Facility, implemented by the United Nations Development Program (UNDP) and Lebanese Agricultural Research Institute (LARI), Beirut.
BACKGROUND

This technical document was produced with the framework of the project “Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants (MAPs) Production Processes in Lebanon”, funded by the Global Environment Facility, and executed by the Lebanese Agriculture Research Institute and the UNDP, in coordination and cooperation with the Lebanese Ministry of Agriculture. The project objective was to integrate conservation objectives into gathering, processing and marketing of globally significant medicinal and aromatic plants (MAPs).

The project worked on both a macro level (national scale) and a micro level (pilot sites scale). On the national front the project actively sought to develop and strengthen the enabling environment for sustainable use of MAPs. The project identified regulatory gaps and constraints that had implications for sustainable utilization and value chain of MAP resources. Accordingly, several strategic interventions were implemented on the institutional framework. On the pilot site level, the project worked in four sites (Mejdel-Akkar, Assia-Batroun, Hsarat-Jbiel and Mrusti-Chouf). These four pilot sites were considered as experimental sites for developing sustainable harvesting standards, for developing and implementing value-added processing and product improvement, for MAP based product marketing and sales and for certification and branding. The pilot sites informed the regulative framework (through scientific findings with respect to sustainable harvest standards), informed MAP business development at the national level and they showcased how to increase the profitability of commercial MAP products.

The project focused on seven target MAP species: Salvia fruticosa, Origanum syriacum, Origanum ehrenbergii, Althaea damascena, Cyclotrichium origanifolium, Viola libanotica and Clinopodium libanoticum. The species were selected based on their endemism (regional or national), estimated volume of commercial trade (domestic and international), and perceived decline in wild-collected populations. Four of these target species (Origanum syriacum, Origanum ehrenbergii, Althaea damascena, and Cyclotrichium origanifolium) are regional or national endemic species that were selected based on expert opinion that direct harvest pressure (intentional collection of the species for existing markets) is a factor contributing to decline in resource availability in Lebanon. Two of these target species (Viola libanotica and Clinopodium libanoticum) are endemic to Lebanon and were selected based on expert opinion that these species could be endangered by indirect (unintentional) collection of wild populations because of their resemblance to the commercially important congeneric species V. odorata and M. myrtifolia (syn. juliana). The seventh target species (Salvia fruticosa) is a regional endemic species selected based on the large existing commercial wild-collection and observed negative impacts of wild harvest of this species on other more vulnerable species.
EXECUTIVE SUMMARY

This study investigated the Lebanese export trade data, the legal status and market access requirements of selected target markets, and the quality standards and trade specifications for ten selected Lebanese botanical species. Additionally, the catalogues of the most important importers, processors and distributors of natural ingredients in Europe and North America were surveyed as well as some companies situated in Northern Africa and Western Asia. The report provides lists of botanical ingredients presently offered in the catalogues of these companies from same genera as those prioritized from Lebanon (in the forms of whole, cut & sifted, tea-bag-cut, or powdered botanical raw materials as well as value-added forms of absolutes, concretes, essential oils, extracts and oleoresins). These lists provide good examples of what processed forms of these ingredients are actively in trade. They can also serve as a short list of potentially interested companies to approach once a portfolio of Lebanese specialty products is defined and ready for market.

This study found that most of the prioritized Lebanese species do not appear on any positive lists in most or all of the selected target markets. This was not a surprise since the habitat and range of many of the species is quite limited, in some cases to Lebanon or to neighboring countries such as Syria and/or Turkey. In some cases, closely related species appear on some positive lists. Since most of the prioritized species would be classified as new or novel ingredients in many international markets, various types of submissions would need to be made to the regulatory agencies in each country providing requisite human safety, efficacy and quality data. Information is provided in this report on the avenues for filing new ingredient submissions in the EU and USA.

Three of the Lebanese species however do appear on many positive lists and have fairly well established international trade status. Those are three-lobed sage leaf (Salvia fruticosa Miller; syn.: Salvia triloba), sweet violet (Viola odorata), and wild pansy flowering aerial parts (Viola tricolor).

Since the ability and capacity for sustainable scaling-up of additional annual production for purposes of boosting domestic consumption of value-added products and/or export promotion is not yet determined for many of the Lebanese species, this report recommends starting out with a focus on the one or two species that already have an established regulatory framework for market access in the largest number of countries, and for which the quantities being collected in Lebanon are high enough to justify the development of new value-added products and markets above and beyond the local and regional markets that are presently responsible for the current annual demand.

The national consultant, in the report “Monographs of the 7 targeted species” made the recommendation of developing a Lebanese geographical quality brand for the selected species. Although three-lobed sage leaf is produced in several other countries (Albania, Greece, Italy, Russian Federation, Turkey, and Republics of the former Yugoslavia), it could be possible to develop a unique Lebanon brand for differentiation of geographical origin and quality grade designation. This report provides information on the various grades and standards for three-lobed sage leaf by comparison to the Lebanese Standard.

After experiencing success with the launching and promoting of a range of products made from this species, gradually other Lebanese species could be added to the catalogue of specialty products from the region. Additional products would be based on a determination that a sustainable scale-up for new product development is feasible and practicable in each case.

The types of value-added products that could be made from Lebanese three-lobed sage could include the following:

**Processed Botanical Raw Materials**

- Food grade dried leaf, whole, cut & sifted, ground, tea-bag-cut or
powdered; conventional or with certifications (e.g. certified organic wild and/or FairWild certified).

- Pharmacopoeial grade dried leaf (e.g. Salviae trilobae folium PhEur); whole or cut; conventional or with certifications (e.g. certified organic wild and/or FairWild certified).

### Extracts and Oils

- "Salvia Triloba Leaf Extract" marketed for use in cosmetic products for antimicrobial, astringent and oral care functions.
- "Sage Triloba CO2 Extract" marketed for use in cosmetics and in perfumery, i.e. mouth water, tooth paste, shampoos, soaps etc., as well as potential uses in food and pharmaceutical products.
- Sage essential oil.
- Sage distilled water.

### Finished Products in Retail Packs

- A Lebanese brand of the Unani Medicine herbal tea formulation "Zahraa" that is presently available in Syria. This formulation contains some of the prioritized Lebanese species including three-lobed sage leaf.
- A Lebanese brand of a three-lobed sage leaf single herb tea infusion product packed in filter teabags in cartons.
- A Lebanese brand of Spice Seasoning Mix that contains three-lobed sage leaf.
- A Lebanese brand of three-lobed sage leaf as a single-herb spice.

Even with an eventual strategy to develop a Lebanese geographical designation and brand for a whole range of botanical products, it would be useful to start out by identifying those companies in selected destination markets who are already trading in various Salvia and Viola species ingredients. These companies are listed in this report. By approaching these companies first with natural ingredients that they are already familiar with (and already appear in their catalogues), the ability to bring new items later will be somewhat easier after a good trade relationship is established over time.

Nonetheless, until the regulatory framework for each of the new or novel ingredients is addressed in each target market, it would be difficult to interest buyers or to invest in market development. Some of the prioritized species may not have sufficient quantities available to consider an international approach. For some of the species, special regional products might be developed specifically for the local and regional markets that Lebanon already exports to including Jordan, Syria, Turkey, United Arab Emirates, and Saudi Arabia.

Finally, with regard to the prioritized species that presently do not appear on any positive lists in the target markets, it is recommended that dossiers be prepared and submitted to selected regulatory agencies in order to affirm that the botanical ingredient is safe for use in cosmetic, dietary supplement, and/or food products and meets the legislative market access requirements. This would be a prerequisite to new product development and export promotion towards prospective buyers in the target markets.
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ALCEA SPP. INCLUDING ALCEA DAMASCENA MOUT. & ALCEA SETOSA (BOISS.) ALEF. (FAM. MALVACEAE)

Definitions

Alcea acaulis (Cav.) Alef.; syn.: Althaea acaulis Cav. [bas]
- English name: Stemless hollyhock

Alcea apterocarpa (Fenzl) Boiss.
- English name: Wingless fruited hollyhock
- Turkish name: Hatmi

Alcea damascena (Mouterde) Mouterde; syn.: Althaea damascena Mouterde
- English name: Damascus hollyhock
- French name: Alcée de damas
- German names: Chinesische Stockrose; Stockmalve; Stockrose
- Lebanon vernacular name: Khetmiyeh Dimachq

Alcea rosea L.; syn.: Althaea rosea (L.) Cav.
- Pharmacopoeial name: Flores Malvae arboreae
- Czech names: Topolovka ružová; Slézová ruže
- English names: Hollyhock; Garden hollyhock; Rose mallow
- French names: Passe rose; Alcée
- German names: Stockrose; Stockrosenblüten
- Hungarian name: Kerti mályvarózsza
- India vernacular names: Gulkhera; Doddabindigaegidda; Gul-khaira; Katmi; Seemaithuthi

Roots: Raishakhatmi; Bekhekhatmi.
Seeds: Tukhmekhatmi
- Polish name: Malwa róžowa
- Spanish name: Malvón
- Turkish name: Gülhatmi

Alcea setosa (Boiss.) Alef.
- Czech name: Proskurník setý
- English name: Bristly hollyhock
- Italian name: Malvone setoso

Assessment of current Lebanese export trade data current main importers

According to the national consultant’s report “Monographs of the 7 targeted species,” Lebanon imports Alcea damascena primarily from Syria while there are no traceable Lebanese exports of any Alcea species. Furthermore the estimated annual market demand for A. damascena was assessed by UNDP at only about 3 tons. Estimated demand for all Alcea spp. combined may reach 60 tons. There are no data readily available to determine whether any of this estimated quantity is exported or if the total is consumed domestically. Therefore it is difficult to make any determination concerning who the main importers might be, if any. Some assumptions can be made based on the regulatory status of Lebanese Alcea spp. in other countries. If a regulatory framework exists in any countries for the import and use of the prioritized Alcea species, the possibility could then exist for Lebanese exports to the identified countries. After reviewing the regulatory lists of the selected countries, however, it appears that only one species of Alcea (Alcea rosea; syn.: Althaea rosea) is expressly listed or approved for certain uses, and only in some countries.

Even with the listing of the flowers of Alcea (Althaea) rosea (or extracts thereof) on some national positive lists (indicating an allowance for use in certain types of products), almost no evidence was found to demonstrate that any Alcea species ingredients are commercially traded or actively used as components of cosmetic,
food or medicinal finished products in the selected export destination countries.

Importation and use of *Alcea* species, other than *Alcea rosea*, in these countries could also require the submission of a notification or petition to the regulatory authority for the approval or authorization of a new substance in commerce. It appears that there is little or no published information (in English or other European languages) concerning the safety, efficacy and/or quality of *Alcea acaulis*, *Alcea apterocarpa*, *Alcea damascena* and/or *Alcea setosa*. The availability of such data, providing sufficient strength of evidence, would be necessary for any new notifications or petitions to add these species to national positive lists in certain of the selected countries.

Assuming that commercial scale-up, above and beyond the current local annual demand of 3 tons of *Alcea damascena*, could be managed sustainably, it would seem that a reasonable strategy would be to identify and target potentially interested importing companies in the neighboring countries where the population may already be familiar and accepting of the use of *Alcea* species in local ethno- or folk-medicine practice and/or in the context of the codified Unani system of medicine. In this context, there might be a market that could be developed for Lebanese *Alcea* species ingredients or value-added extracts or mixtures in the nearby regional markets of Egypt, Iraq, Jordan, Syria and Turkey. In the context of folk- or traditional medicine, there may be fewer market access barriers in these countries by comparison to the legislative market access requirements for new products in the European Community Member States or in the North American countries of Canada, Mexico and United States.

**Regulatory framework, market access requirements and requirements for use in selected destination countries**

**Australia**

**Cosmetic use:** No information found.

**Food use:** No *Alcea* species are listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.¹

**Medicinal use:** One species, *Althaea rosea* (syn. *Alcea rosea*) is listed as a substance that may be used as an active ingredient in ‘Listed’ medicines for supply in Australia and for export.² No other species of *Alcea* are listed by the Therapeutic Goods Administration (TGA). The Australian Approved Names (AANs) are Hollyhock and Rose Mallow. At a non-therapeutic dosage level, *Althaea rosea* could also be used as an excipient component for listed or prescription medications.³

- **Quality:** For active ingredients of medicines in Australia, the quality standards of the British Pharmacopoeia (BP) are the minimum standard that must be applied in its entirety. The European Pharmacopoeia (PhEur) and United States Pharmacopoeia (USP), respectively, have also been adopted as additional default standards under the Therapeutic Goods Act.⁴
- **Listed products:** No listed products that contain *Alcea spp.* as an active ingredient are present in the Australian

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This suggests that only ingredients made from one Alcea species, *Althaea rosea*, would be permitted for use in therapeutic products in Australia. The use of other species of *Alce* could require a petition to amend and expand the list of substances used in listed medicines.

### Canada

**Cosmetic use:** No *Alcea* spp. ingredients are listed in the Health Canada “Cosmetic Ingredient Hotlist” which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor do any *Alcea* spp. ingredients appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.”

This suggests that while there is no express prohibition against use in cosmetic products, it is possible that an *Alcea* spp. ingredient could be classified as new or novel.

**Food use:** No *Alcea* spp. ingredients are listed in the Canada Food and Drugs Regulations (2010) which suggests that there is no current use of plants of this species in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products.

**Medicinal use:** There are no monographs for any *Alcea* species in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No *Alcea*-containing products are found in the Licensed Natural Health Products Database (LNHPD).

### European Community

**Cosmetic use:** Only one species of *Alcea* (*Althaea rosea*; syn. *Alcea rosea*) is listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. Two different forms are listed, flower extract and powdered flower:

- **Althaea Rosea Flower Extract** is defined as the extract of the flowers of the hollyhock, *Althaea rosea*, Malvaceae. Chemical Abstract Service Number (CAS#) 90045-76-4, European Inventory of Existing Commercial chemical Substances (EINECS) Number: 289-940-2; Function: Skin Conditioning.

- **Althaea Rosea Flower Powder** is the dried, crushed flowers of the hollyhock, *Althaea rosea*, Malvaceae. Chemical Abstract Service Number (CAS#) 90045-76-4, European Inventory of Existing Commercial chemical Substances (EINECS) Number: 289-940-2; Functions: Moisturizing and Skin Conditioning.

**Food use:** No *Alcea* species are listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. The European Herbal Infusions Association (EHIA) includes only one species, hollyhock flowers, a.k.a. Stockrosenblüten (*Althaea rosea*) in its “Inventory List of Herbals Considered as Food.”

**Medicinal use:** There are no monographs for any *Alcea* species in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No *Alcea*-containing products are found in the Licensed Natural Health Products Database (LNHPD).

### References


that this plant is currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions.

**Medicinal use:** There is no *Alcea* spp. European Community Herbal (therapeutic) Monograph published by the European Medicines Agency (EMEA) nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM).

**India**

**Medicinal use:** No *Alcea* species ingredients are listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, no *Alcea* species are found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy), and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT).

The absence of any species of *Alcea* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine would suggest that it could be difficult to gain marketing authorization for *Alcea* species as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India. With that said, there is some evidence that *Alcea rosea* is used in Indian folk- or ethnomedicine, outside of the codified Indian Systems of Medicine.

Additionally, there is evidence that *Alce damascena* is used in Syria as a component of one Unani medicinal herbal tea formulation. On that basis it would seem possible to gain marketing authorization in India for an otherwise established Unani medicinal preparation.

Additionally, there exists the possibility that *Alcea rosea* is already used in Indian medicinal products, but possibly misidentified as *Althaea officinalis* L. (marshmallow). There is some evidence that hollyhock and marshmallow are commercially traded in Indian markets using the same local vernacular name (khatmi) and that the two herbal drugs may be considered to be interchangeable in herbal medicinal preparations.

**Pakistan**

**Medicinal use:** *Alcea* (*Althaea*) *rosea* appears to be traded, labeled and used interchangeably with *Althaea officinalis*, which shares the same local vernacular names of gul-e-khaira and gul-e-khatmi. There is confusion and disagreement concerning the differentiation of these two plants for use in the Unani system of medicine in Pakistan. Even though the Unani Pharmacopoeia and related therapeutic compendia specify marshmallow (*Althaea officinalis*) as the official drug under the aforementioned vernacular names, a market survey found all trade samples in Pakistani markets to be *Alcea rosea*.

**South Africa**

**Medicinal use:** *Althaea rosea* is listed in the “Western Herbal” Schedule On Complementary and Alternative Medicines for therapeutic use in South Africa.
Switzerland

Cosmetic use: No information found.

Dietary supplement use: No *Alcea* species are included on the list of substances that may be used in dietary or food supplement products in Switzerland.

Food use: *Althaea rosea* (syn.: *Alcea rosea*) is included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products.\(^{16}\)

Medicinal use: The dried, fully developed flowers with calices of *Alcea rosea* L. are used as starting materials for the manufacture of Anthroposophical Medicinal Products.\(^{16}\) *Alcea rosea* is included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances), with the synonym “Malva arborea” for use in Anthroposophical Medicines only for oral and/or parenteral use at a homeopathic dilution of D12.\(^{17}\) Anthroposophical *Alcea rosea* medicines are classified as complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff).

United States of America

Cosmetic use: No *Alcea* species known to be used in cosmetic products in the USA.

Dietary supplement use: Hollyhock (*Alcea rosea* L.; Syn.: *Althaea rosea* (L.) Cav.) is listed in the *Herbs of Commerce*, 2nd edition,\(^{19}\) which indicates that it was in U.S. commerce prior to 1994 and therefore should be permitted for use in herbal dietary supplement products and should not require the submission of a New Dietary Ingredient (NDI) submission. Additionally, as per federal regulation 21 CFR §101.4, the Food and Drug Administration (FDA) requires that the common or usual name of botanical ingredients used in dietary supplement products must be consistent with the names standardized in the *Herbs of Commerce*, copies of which may be obtained from the American Herbal Products Association.\(^{20}\)

Food use: None. No species of *Alcea* are listed as “Generally Recognized as Safe” (GRAS) for use in food products. Its use in foods could require the submission of a GRAS notification to the Food and Drug Administration (FDA).

Medicinal use: No species of *Alcea* are listed as “Generally Recognized as Safe and Effective” (GRASE) active ingredients for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require

**Syria**


a New Drug Application (NDA) process with FDA approval.

**Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries**

**Australia**

**Medicinal:** Although the Therapeutic Goods Administration (TGA) lists an Ingredient Summary page for *Althaea rosea* stating that it can be used as an active ingredient or non-medicinal excipient ingredient of Listed Medicines and/or Prescription Medicines, there are no known quality standards or trade specifications. Nor are there presently any Medicines that contain this plant for sale in Australia.

**European Community**

**Cosmetic:** Although *Althaea rosea* (syn. *Alcea rosea*) ingredients are listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database, no evidence was found of any official quality standards or trade specifications defining the grades or qualities that may be used in cosmetics in the EC.

**Food:** Although the European Herbal Infusions Association (EHIA) lists *Althaea rosea* (syn. *Alcea rosea*) as a botanical considered as food for use in non-medicinal herb teas, no evidence was found of any trade specifications to define the grades and qualities that may be used in European herbal teas.

**Medicine:** There are no *Alcea* species monographs in the European Pharmacopoeia published by the European Directorate for the Quality of Medicines (EDQM). There are no known licensed or registered herbal medicinal products in the European Community that contain an *Alcea* species ingredient.

**India**

**Food:** There are no quality standards published for any species of *Alcea*, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for any species of *Alcea* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

**Switzerland**

**Medicine:** The dried, fully developed flowers with calices of *Alcea rosea* L. are listed in the Anthroposophical Pharmaceutical Codex (APC), Second Edition, 2007, in Appendix 2.2.: Starting materials of botanical origin. However there is no quality standards monograph for this species in the Swiss Pharmacopoeia (PhHelv).

**United States of America**

**Food:** There are no standards published for any species of *Alcea* neither in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF).

**Dietary Supplement:** There are no standards published for any species of *Alcea* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for any species of *Alcea* neither

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Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” proposed innovative value-added products for *Alcea damascena* as a tisane or herbal tea or as a component of herbal tea formulations. The consultant also proposed the development of geographic origin and trademarks for Lebanese quality and country of origin designation.

The present estimated annual demand of only 3 tons for *Alcea damascena* is quite low for consideration of developing innovative new products. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it would make sense to consider the development of innovative value-added products. If sustainable scaling up is deemed possible, new innovative products for the local market as well as for export promotion to neighboring countries could be envisaged.

In that scenario, it could be interesting to develop and brand finished herbal tea products that contain *Alcea damascena* as a component of identified folk- or traditional (Unani) medicinal herbal teas, but with a Lebanese geographic origin designation. As an example to model from, the Unani herbal tea that is presently marketed in Syria by the name of “Zahraa”, which can contain anywhere from 6 to 14 medicinal plants, among them *Alcea damascena* as a main component. “Zahraa” herbal teas in Syria may contain *Alcea damascena* plant parts in combination with plant parts of five or more of the following listed species:

- *Aloysia triphylla* (L’Herit.) Britt. (Malvaceae);
- *Astragalus cf. amalecitanus* Boiss.;
- *Cercis siliquastrum* L. subsp. *hebecarpa* (Bormm.) Yalt. and subsp. *siliquastrum*. (Leguminosae);
- *Colutea ciliicola* Boiss. et Bal. in Boiss. (Leguminosae);
- *Crataegus aronia* (L.) Bosc. ex DC. (Rosaceae);
- *Cytisopsis pseudocytisus* (Boiss.) Fertig. (Leguminosae);
- *Eleagnus angustifolia* L. (Elaeagnaceae);
- *Equisetum telmateia* Ehrh. (Equisetaceae);
- *Helichrysum stoechas* (L.) Moench. subsp. *barrelieri* (Ten.) Nyman. (Compositae);
- *Matricaria recutita* L. (Compositae);
- *Menjtha longifolia* L. subsp. *noeana* (Boiss. ex. Briq.) Briq. (Labiatae);
- *Menjtha spicata* L. subsp. *condensata* (Briq.) Greuter and Burdet (Labiatae);
- *Micromeria myrtifolia* Boiss. and Hohen (Labiatae);
- *Paronychia argentea* Lam. (Caryophyllaceae);
- *Philomis syriaca* Boiss. (Labiatae);
- *Rosa damascena* Mill. (Rosaceae);
- *Salvia fruticosa* Mill. (Labiatae);
- *Sambucus nigra* L. (Caprifoliaceae);
- *Spartium junceum* L. (Leguminosae); and
- *Zea mays* L. (Gramineae).

Three of the medicinal plant species typically found in the Syrian-made Unani herbal tea mixtures are also mentioned or prioritized for the Lebanon project; *Alcea damascena, Micromeria myrtifolia* and *Salvia fruticosa*. Thus it would seem conceivable to develop a Lebanese brand of this traditional Unani herbal tea, possibly among other traditional combinations, to label and market not only in Lebanon but for export to nearby countries or regions where Unani herbal teas may have a market potential, for example Egypt, Iraq, Jordan, Occupied Palestinian Territory, and Syria. Marketing authorization for Unani medicinal herbal teas in the European Community would be costly and extremely difficult for a Lebanese enterprise under the current regulatory framework for traditional herbal medicinal products in the EC. Such herbal tea formulations however could have a
better chance of obtaining marketing authorization in certain Commonwealth Nations that have a less complicated regulatory pathway for the authorization of traditional Unani medicinal products, for example in Bangladesh, Canada, India, Kenya, Malaysia, Pakistan, Singapore, South Africa, Sri Lanka, and Tanzania, possibly among other countries where Unani medicine is practiced.
Cyclotrichium origanifolium (Labill.) Manden. & Scheng. (Lamiaceae)

Definitions

*Cyclotrichium origanifolium* (Labill.) Manden. & Seng. (Fam.: Lamiaceae)

Synonyms: *Calamintha origanifolia* (Labill.) Boiss., *Clinopodium origanifolium* Labill.

Common names:

- English name: Marjoram-leaved calamint
- French name: Calamenthe; Feuilles d’origan
- German name: Bergminze
- Lebanese vernacular names: Hashishet El-Basha; Hashishet El-Jabal; Hashishet El-Bahsa; Na’ana’iyé; Hashishat-al-daght; Ishbet sannine; Ishbet mar Simaan; عشبه صنين، حشيشة البحصة
- Turkish vernacular names: Kizotu; Köpekkanesi; Karabaşotu; Naneruhu; Eşekkirildi.

Assessment of current Lebanese export trade data current main importers

According to the national consultant's report "Monographs of the 7 targeted species," there are no data on the import or export trade of *Cyclotrichium origanifolium* in Lebanon. Furthermore, the size of the Lebanese market for *Cyclotrichium origanifolium* was estimated at only about 4 tons with a wholesale market value of about USD $40,500. Therefore it is difficult to make any determination concerning who the main importers might be, if any. Some assumptions can be made based on the regulatory status of *Cyclotrichium origanifolium* in other countries. If a regulatory framework were to exist in any countries for the import and use of *Cyclotrichium origanifolium*, the possibility could then exist for Lebanese exports to the identified countries.

This review found that *Cyclotrichium origanifolium* does not appear on any national positive lists of any of the selected counties. Almost no evidence was found to demonstrate that any ingredients made from *Cyclotrichium origanifolium* are commercially traded or actively used outside of its limited range of Lebanon and Turkey. There is a small but growing body of scientific literature investigating the chemistry composition and pharmacological properties of the essential oil obtained from the aerial parts of the plant. This would suggest that, depending on the totality of evidence compiled on its safety and efficacy, an export market for the distilled essential oil could be developed. This would also be dependent on the existence of a quantity and quality sufficient to satisfy export demand requirements that can also be produced sustainably.

Regulatory framework, market access requirements and requirements for use in selected destination countries

**Australia**

**Cosmetic use:** No information found.

**Food use:** *Cyclotrichium origanifolium* is not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.\(^22\)

**Medicinal use:** *Cyclotrichium origanifolium* is not listed as a substance that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia.\(^23\) This suggests that it could require a petition to amend and expand the list of substances


used in listed medicines in order to achieve marketing authorization for this species in medicinal products.

Canada

Cosmetic use: *Cyclotrichium origanifolium* is not listed in the Health Canada “Cosmetic Ingredient Hotlist” 24 which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor does *Cyclotrichium origanifolium* appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.” 25 This suggests that while there is no express prohibition against use in cosmetic products, it is possible that *Cyclotrichium origanifolium* could be classified as new or novel.

Food use: *Cyclotrichium origanifolium* is not listed in the Canada Food and Drugs Regulations (2010) 26 which suggests that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products.

Medicinal use: There are no monographs for *Cyclotrichium origanifolium* in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No *Cyclotrichium origanifolium* products are found in the Licensed Natural Health Products Database (LNHPD).

European Community

Cosmetic use: *Cyclotrichium origanifolium* is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. 27

Food use: *Cyclotrichium origanifolium* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. 28 *Cyclotrichium origanifolium* is not listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” 29 Absence of this species in the EHIA list means that this plant is not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions.

Medicinal use: The European Medicines Agency (EMEA) has no plans to publish a European Community Herbal (therapeutic) Monograph for *Cyclotrichium origanifolium* nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM). Such monographs would only be prioritized for development in the event that marketing authorization was granted by one or more of the EC Member States.

India

Medicinal use: *Cyclotrichium origanifolium* is not listed in any of the pharmcopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in

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27 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: http://ec.europa.eu/enterprise/cosmetics/cosing

28 European Food Safety Authority (EFSA). EFSA Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. EFSA Journal 2009; 7(9):281. Available at: http://www.efsa.europa.eu/en/scdocs/doc/280rax1.pdf

India 2008, which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT).

The absence of Cyclotrichium origanifolium in the checklists and/or pharmacopoeias of the Indian Systems of Medicine would suggest that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India.

South Africa

Medicinal use: Cyclotrichium origanifolium is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa. However, some related species are listed in the Aromatherapy Schedule 2 as follows:

- Approved name: Calamintha nepeta; Common name: Wild basil.
- Approved name: Calamintha officinalis (syn.: Calamintha clinopodium, Melissa calaminta); Common names: Calamintha, Calamint, Common calamint, Mill mountain, Mountain balm, Mountain mint, Basil thyme, Nepeta (oil), French marjoram (oil), Wild basil (oil), Catnip (oil);
- Approved name: Calamintha sylvatica; Common names: Calamintha, Calarnint, Common calamint, Mill mountain, Mountain balm, Mountain mint, Basil thyme, Nepeta (oil), French marjoram (oil), Wild basil (oil), Catnip (oil).

This inclusion of these three related species in the Aromatherapy Schedule of substances could imply that there would be a chance for the listing and authorization of the essential oil of aerial parts of Cyclotrichium origanifolium.

Switzerland

Cosmetic use: No information found.

Dietary supplement use: Cyclotrichium origanifolium is not included on the list of substances that may be used in dietary or food supplement products in Switzerland.

Food use: Cyclotrichium origanifolium is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products.

Medicinal use: Cyclotrichium origanifolium is not included on the “Stoffliste” (List of Substances used in medicinal products). This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species.

United States of America

Cosmetic use: Cyclotrichium origanifolium is not known to be used in cosmetic products in the U.S.

Dietary supplement use: Cyclotrichium origanifolium is not listed in the Herbs of Commerce, 2nd edition, which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a

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New Dietary Ingredient (NDI) notification to the FDA.

**Food use:** None. *Cyclotrichium origanifolium* is not listed as “Generally Recognized as Safe” (GRAS) for use in food products. Its use in foods could require the submission of a pre-marketing GRAS notification to the FDA.

**Medicinal use:** *Cyclotrichium origanifolium* is not listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

**Australia**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Cyclotrichium origanifolium* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

**European Community**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Cyclotrichium origanifolium* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species.

**India**

**Food:** There are no quality standards published for *Cyclotrichium origanifolium*, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for *Cyclotrichium origanifolium* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

**Switzerland**

**Cosmetic, Food, Medicine:** There are no known quality standards or trade specifications for *Cyclotrichium origanifolium* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

**United States of America**

**Food:** There are no standards published for *Cyclotrichium origanifolium* neither in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF).

**Dietary Supplement:** There are no standards published for *Cyclotrichium origanifolium* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for *Cyclotrichium origanifolium* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

**Proposed innovative value-added MAP products using this ingredient**

The national consultant’s report “Monographs of the 7 targeted species” proposed innovative value-added products for the dried aerial parts of *Cyclotrichium*
*origanifolium* as a component of tisanes or herbal teas. Also suggested was to develop an international market for the essential oil. This would require a significant scale-up due to the high quantities of fresh aerial parts that would be necessary for a commercial oil distillation operation for export promotion. The consultant also proposed the development of geographic origin and trademarks for Lebanese quality and country of origin designation.

The current estimated annual demand of only 4 tons for *Cyclotrichium origanifolium* is quite low for consideration of developing innovative new products. Outside of micro- or small enterprises, there would hardly be an economy of scale to justify new product development at this annual level of raw material availability. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products, including the essential oil for food uses (e.g. flavor component in liqueurs) and/or medicinal uses (e.g. for aromatherapy inhalant use or topical application in creams or ointments).

If a market for the essential oil fraction were to develop this could cause a significant strain on the available supply due to the large amount of fresh plant material that is necessary for production of oil.

If sustainable scaling up is deemed possible, new innovative products for the local market as well as for export promotion could be envisaged. In that scenario, it could be interesting to develop and brand finished herbal tea products as well as essential oils for aromatherapy with a Lebanese geographic origin designation. If external market demand should arise as a result of positive results from published research, the importation and use of *Cyclotrichium origanifolium* in countries outside of the region could require the submission of a notification or petition to the regulatory authorities for the approval or authorization of a new substance in commerce for human use. The availability of safety, efficacy and quality data, providing a sufficient strength of evidence, would be necessary for assessment by the relevant national authorities of each target destination market. The levels of evidence required would vary depending on the intended use (cosmetic, dietary supplement, food or medicine).
Micromeria sps including (Micromeria libanotica Boiss., Micromeria myrtifolia Boiss. et Hohen and Micromeria juliana L.)

Definitions

Micromeria barbata Boiss. et Ky (Fam. Lamiaceae)
- English name: Bearded savory

Micromeria juliana (L.) Bentham ex Reichb. (Fam.: Lamiaceae)

Micromeria libanotica Boiss. (Fam. Lamiaceae)
- English name: Lebanon savory
- French name: Micromerie libanaise
- German name: Lebanischer Ysop
- Lebanese vernacular names: Zoufa lubnan; Shummaysah lubnāniyyah

Micromeria myrtifolia Boiss. et Hohen (Fam. Lamiaceae)
- Turkish vernacular names: bogumlu çay; dağ çay; kaya; yarpuzu; sümbül çiçeği; viks çiçeği; keklik otu; kaya kekiği; kekik; topuk çayi; haydar otu.

Assessment of current Lebanese export trade data current main importers

According to the national consultant’s report “Monographs of the 7 targeted species,” imports of Micromeria species come mainly from Syria. No Lebanese exports were detected. Furthermore the size of the Lebanese market for Micromeria libanotica was estimated at about 5 tons with a wholesale market value of about USD $26,900. Therefore it is difficult to make any determination concerning who the main importers of this species might be, if any. Some assumptions can be made based on the regulatory status of Micromeria libanotica in other countries. If a regulatory framework were to exist in any countries for the import and use of Micromeria libanotica, the possibility could then exist for Lebanese exports to the identified countries.

This review found that Micromeria libanotica does not appear on any national positive lists of any of the selected counties. Almost no evidence was found to demonstrate that any ingredients made from Micromeria libanotica are commercially traded or actively used outside of its limited range of Lebanon and Syria. There is a small amount of published literature investigating the chemistry composition and pharmacological properties of the essential oil obtained from the aerial parts of the plant. This could suggest that, depending on the totality of evidence compiled on its safety and efficacy, an export market for the distilled essential oil could be developed. This potentiality would be dependent on the existence of a quantity and quality sufficient to satisfy prospective export demand requirements that can also be produced sustainably.

Regulatory framework, market access requirements and requirements for use in selected destination countries

Australia

Cosmetic use: No information found.

Food use: Micromeria libanotica is not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.35


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**Medicinal use:** *Micromeria libanotica* is not listed as a substance that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia. This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products.

### Canada

**Cosmetic use:** *Micromeria libanotica* is not listed in the Health Canada “Cosmetic Ingredient Hotlist” which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor does *Micromeria libanotica* appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.” This suggests that while there is no express prohibition against use in cosmetic products, it is possible that *Micromeria libanotica* could be classified as new or novel.

**Food use:** *Micromeria libanotica* is not listed in the Canadian Food and Drugs Regulations (2010) which suggests that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products.

**Medicinal use:** There are no monographs for *Micromeria libanotica* in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No *Micromeria libanotica* products are found in the Licensed Natural Health Products Database (LNHPD).

### European Community

**Cosmetic use:** *Micromeria libanotica* is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. One other species of *Micromeria* is listed in CosIng, an extract of the flowers, leaves and stems of *Micromeria chamissonis* (Benth.) Greene which is used as a skin conditioning ingredient in cosmetics.

**Food use:** *Micromeria libanotica* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. *Micromeria libanotica* is not listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” Absence of this species in the EHIA list means that this plant is not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions.

**Medicinal use:** The European Medicines Agency (EMEA) has no plans to publish a European Community Herbal (therapeutic) Monograph for *Micromeria libanotica* nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM). Such monographs would only be prioritized for development in the event that marketing authorization was granted by one or more of the EC Member States.

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40 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: http://ec.europa.eu/enterprise/cosmetics/cosing

41 European Food Safety Authority (EFSA). EFSA Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. EFSA Journal 2009; 7(9):281. Available at: http://www.efsa.europa.eu/en/scdocs/doc/281radx1.pdf

India

Medicinal use: *Micromeria libanotica* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). One other species of *Micromeria* is included in the FRLHT survey, *Micromeria biflora* (Buch.-Ham. ex D.Don) Benth, Indian wild thyme, which is used in Indian folk medicine but not in the codified Indian Systems of Medicine.

The absence of *Micromeria libanotica* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine would suggest that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India.

South Africa

Medicinal use: *Micromeria libanotica* is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa.

Switzerland

Cosmetic use: No information found.

Dietary supplement use: *Micromeria libanotica* is not included on the list of substances that may be used in dietary or food supplement products in Switzerland.

Food use: *Micromeria libanotica* is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products.

Medicinal use: *Micromeria libanotica* is not included on the “Stoffliste” (List of Substances used in medicinal products). This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species.

Syria

Medicinal use: The dried aerial parts of *Micromeria libanotica* are reportedly used as a component of a Unani Medicine herbal tea formulation known as "Zahraa" commercially available in Damascus.

United States of America

Cosmetic use: *Micromeria libanotica* is not known to be used in cosmetic products in the U.S.

Dietary supplement use: *Micromeria libanotica* is not listed in the Herbs of Commerce, 2nd edition, which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a

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New Dietary Ingredient (NDI) notification to the FDA.

Food use: None. *Micromeria libanotica* is not listed as “Generally Recognized as Safe” (GRAS) for use in food products. Its use in foods could require the submission of a pre-marketing GRAS notification to the FDA.

Medicinal use: *Micromeria libanotica* is not listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

Australia

Cosmetic, Food or Medicine: There are no known quality standards or trade specifications for *Micromeria libanotica* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

European Community

Cosmetic, Food or Medicine: There are no known quality standards or trade specifications for *Micromeria libanotica* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species.

India


Medicine: There are no quality standards monographs or therapeutic compendial monographs published for *Micromeria libanotica* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

Switzerland

Cosmetic, Food, Medicine: There are no known quality standards or trade specifications for *Micromeria libanotica* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

United States of America

Food: There are no standards published for *Micromeria libanotica* neither in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF).

Dietary Supplement: There are no standards published for *Micromeria libanotica* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).


Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” proposed innovative value-added products for the dried aerial parts of *Micromeria libanotica* as a component of tisanes or herbal teas. The consultant also proposed
the development of geographic origin and trademarks for Lebanese quality and country of origin designation.

The current estimated annual demand of 5 tons for dried aerial parts of *Micromeria libanotica* is quite low for consideration of developing innovative new products. Outside of micro- or small enterprises, there would hardly be an economy of scale to justify new product development at this annual level of raw material availability. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products.

If sustainable scaling up is deemed possible, new innovative products for the local market as well as for export promotion to neighboring countries could be envisaged. In that scenario, it could be interesting to develop and brand finished herbal tea products that contain *Micromeria libanotica* as a component of identified folk- or traditional (Unani) medicinal herbal teas, but with a Lebanese geographic origin designation. As an example to model from, the Unani herbal tea that is presently marketed in Syria by the name of “Zahraa”, which can contain anywhere from 6 to 14 medicinal plants, among them a different *Micromeria* species (Micromeria myrtifolia Boiss. and Hohen). Perhaps a Lebanese version of the Syrian Unani herbal tea known as “Zahraa” could be developed using the Lebanese species of *Micromeria* in place of the Syrian species. Lebanese “Zahraa” herbal tea could contain aerial parts of *Micromeria libanotica* in combination with plant parts of five or more of the following listed species:

- Alcea *damascena* (Mouterde) Mouterde
- Aloysia *triphyllo* (L’Herit.) Britt. (Malvaceae);
- Astragalus cf. amalecitanus Boiss.;
- *Cercis siliquastrum* L. subsp. *hebecarpa* (Bornm.) Yalt. and subsp. *siliquastrum*. (Leguminosae);
- Colutea *cilicina* Boiss. et Bal. in Boiss. (Leguminosae);
- Crataegus *aronia* (L.) Bosc. ex DC. (Rosaceae);
- *Cytisopsis pseudocytisus* (Boiss.) Fertig. (Leguminosae);
- *Eleagnus angustifolia* L. (Elaeagnaceae);
- *Equisetum telmateia* Ehrh. (Equisetaceae);
- *Helichrysum stoechas* (L.) Moench. subsp. *barrelieri* (Ten.) Nyman. (Compositae);
- *Matricaria recutita* L. (Compositae);
- *Mentha longifolia* L. subsp. *noeana* (Boiss. ex Briq.) Briq. (Labiatae);
- *Mentha spicata* L. subsp. *condensata* (Briq.) Greuter and Burdet (Labiatae);
- *Paronychia argentea* Lam. (Caryophyllaceae);
- *Phlomis syriaca* Boiss. (Labiatae);
- *Rosa damascena* Mill. (Rosaceae);
- *Salvia fruticosa* Mill. (Labiatae);
- *Sambucus nigra* L. (Caprifoliaceae);
- *Spartium junceum* L. (Leguminosae); and
- *Zea mays* L. (Gramineae).

Three of the medicinal plant species typically found in the Syrian-made Unani herbal tea mixtures are also mentioned or prioritized for the Lebanon project; *Alcea damascena*, *Micromeria myrtifolia* and *Salvia fruticosa*. Thus it would seem conceivable to develop a Lebanese brand of this traditional Unani herbal tea, possibly among other traditional combinations, to label and market not only in Lebanon but for export to nearby countries or regions where Unani herbal teas may have a market potential, for example Egypt, Iraq, Jordan, Occupied Palestinian Territory, and Syria.

Marketing authorization for Unani medicinal herbal teas in the European Community would be costly and extremely difficult for a Lebanese enterprise under the current regulatory framework for traditional herbal medicinal products in the EC. Such herbal tea formulations however could have a better chance of obtaining marketing authorization in certain Commonwealth Nations that have a less complicated regulatory pathway for the authorization of
traditional Unani medicinal products, for example in Bangladesh, Canada, India, Kenya, Malaysia, Pakistan, Singapore, South Africa, Sri Lanka, and Tanzania, possibly among other countries where Unani medicine is practiced.
**Origanum ehrenbergii Boiss**

**Definitions**

*Origanum ehrenbergii* Boiss (Fam. Lamiaceae)

- English name: Ehrenberg’s marjoram
- French name: Origan d’Ehrenberger
- German name: Ehrenbergerischer Majoram
- Lebanese vernacular names: Al Zouwayba’a; Za’atar-al-snawbar; Za’atar jordi; Za’aytri

**Assessment of current Lebanese export trade data and current main importers**

According to the national consultant’s report “Monographs of the 7 targeted species,” there are no Lebanese exports except possibly in cases of species misidentification where *Origanum ehrenbergii* might be labeled as *Origanum syriacum*. The size of the Lebanese market for *Origanum ehrenbergii* was estimated at about 173 tons with a wholesale market value of about USD $0.72 million. Since this species is not presently known to be exported, it would be difficult to make any determination concerning who the main importers of this species might be, if any. Some assumptions can be made based on the regulatory status of *Origanum ehrenbergii* in other countries. If a regulatory framework were to exist in any countries for the import and use of *Origanum ehrenbergii*, the possibility could then exist for Lebanese exports to the identified countries.

This review found that *Origanum ehrenbergii* does not appear on any national positive lists of any of the selected counties, although some lists non-specifically allow *Origanum* spp. which would indicate allowance to import and use in products. Almost no evidence was found to demonstrate that any ingredients made from *Origanum ehrenbergii* are commercially traded or actively used outside of its limited range of Lebanon. There is a small amount of published literature investigating the chemistry composition and pharmacological properties of the essential oil obtained from the aerial parts of the plant. This could suggest that, depending on the totality of evidence compiled on its safety and efficacy, an export market for the distilled essential oil could be developed and possibly also for other forms such as oleoresin. This potentiality would be dependent on the existence of a quantity and quality sufficient to satisfy prospective export demand requirements that can also be produced sustainably.

**Regulatory framework, market access requirements and requirements for use in selected destination countries**

**Australia**

**Cosmetic use:** No information found.

**Food use:** *Origanum ehrenbergii* is not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.\(^{49}\)

**Medicinal use:** *Origanum ehrenbergii* is not listed as a substance that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia.\(^{50}\) This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products. Two other species of *Origanum* are listed for use in therapeutic

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products in Australia. They are *Origanum majorana* and *Origanum vulgare*.

**Canada**

**Cosmetic use:** *Origanum ehrenbergii* is not listed in the Health Canada “Cosmetic Ingredient Hotlist” 51 which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor does *Origanum ehrenbergii* appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.” 52 This suggests that while there is no express prohibition against use in cosmetic products, it is possible that *Origanum ehrenbergii* could be classified as new or novel.

**Food use:** *Origanum ehrenbergii* is not specifically listed in the Canada Food and Drugs Regulations (2010), 53 suggesting that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products. However, Division 7, Section B.07.028 [S] of the regulations for Spices, Dressings and Seasonings, should, in principle, permit any species of *Origanum* to be imported, labeled and used under the common name “oregano.” The Canadian regulation defines “oregano” as the whole or ground dried leaves of *Origanum vulgare* L. or *Origanum* spp.

**Medicinal use:** There are no monographs for *Origanum ehrenbergii* in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No *Origanum ehrenbergii* products are found in the Licensed Natural Health Products Database (LNHPD). Using the search field “Ingredient Name” and the criteria “Origanum” there were 36 results found in the LNHPD showing licensed products that contain either dried leaf, extracts of dried leaf or essential oils of the leaves of *Origanum vulgare*. 54 If sufficient evidence of safety and efficacy could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization of a Natural Health Product (NHP) containing *Origanum ehrenbergii* as a medicinal ingredient.

**European Community**

**Cosmetic use:** *Origanum ehrenbergii* is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. 55 However, cosmetic ingredients made from other species of *Origanum* are listed in CosIng including:

- extract obtained from the herbs of the Spanish Marjoram, *Origanum cretium*;
- essential oil obtained from the herbs of the Spanish Marjoram, *Origanum cretium*;
- volatile oil obtained from the flowers of *Origanum heracleoticum*;
- volatile oil obtained from the flowers of Sweet Marjoram, *Origanum majorana* L.;
- extract obtained from the herbs of the Sweet Marjoram, *Origanum majorana* L.;
- essential oil obtained from the herbs of the Sweet Marjoram, *Origanum majorana* L.;
- extract of the leaves of the Sweet Marjoram, *Origanum majorana* L.;
- volatile oil distilled from the leaves of the Sweet Marjoram, *Origanum majorana* L.;
- extract of the flowering end of the Wild Marjoram, *Origanum vulgare* L.;

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55 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: [http://ec.europa.eu/enterprise/cosmetics/cosing](http://ec.europa.eu/enterprise/cosmetics/cosing)
extract of the flowers, leaves and stems of the Wild Marjoram, *Origanum vulgare* L.;

- dried, shredded leaves of the Wild Marjoram, *Origanum vulgare* L.;

- extract of the leaves of the Wild Marjoram, *Origanum vulgare* L.;

- volatile oil distilled from the leaves of the Wild Marjoram, *Origanum vulgare* L.;

- volatile oil obtained from the whole plant of Wild Marjoram, *Origanum vulgare* L.

The CosIng listings of cosmetic ingredients made from four other species of *Origanum* suggests that, in principle, with sufficient evidence of safety, the additional listing of ingredients made from *Origanum ehrenbergii* should be possible.

Food use: *Origanum ehrenbergii* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. However, two other species of *Origanum* are listed as follows (see next page for definition of codes):

![Table](https://example.com/table.png)

**SOURCES OF INFORMATION FOR ORIGANUM IN THE TABLE**

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</tr>
</tbody>
</table>

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infusions. Two other species of *Origanum* are listed, *Origanum majorana* (herb) and *Origanum vulgare* (herb).

**Medicinal use:** The European Medicines Agency (EMEA) has no plans to publish a European Community Herbal (therapeutic) Monograph for *Origanum ehrenbergii* nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM). Such monographs would only be prioritized for development in the event that marketing authorization was granted by one or more of the EC Member States. EMEA monographs for *Origanum majorana* (herb and fruit) are scheduled for assessment but have a low priority. There is a European Pharmacopoeia (PhEur) quality standards monograph for the dried leaves and flowers, separated from the stems, of *Origanum onites* L. or *Origanum vulgare* L. subsp. *hirtum* (Link) Ietsw., or a mixture of both species.

**India**

**Medicinal use:** *Origanum ehrenbergii* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). Only one species of *Origanum* is included in the FRLHT survey, *Origanum majorana* L., Sweet marjoram herb, which is used in codified Indian Systems of Medicine of Ayurveda, Siddha and Unani, as well as in the Homoeopathic System of Medicine.

The absence of *Origanum ehrenbergii* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India.

It may be possible for *Origanum ehrenbergii* to enter Indian commerce however as a food flavor, spice or seasoning ingredient under the common name of oregano.

**South Africa**

**Medicinal use:** *Origanum ehrenbergii* is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa.

**Switzerland**

**Cosmetic use:** No information found.

**Dietary supplement use:** *Origanum ehrenbergii* is not included on the list of substances that may be used in dietary or food supplement products in Switzerland.

**Food use:** *Origanum ehrenbergii* is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products. However, *Origanum vulgare* L. ssp. *vulgare* is listed well as *Origanum majorana* L. (syn. *Majorana hortensis* Moench.).

**Medicinal use:** *Origanum ehrenbergii* is not included on the “Stoffliste” (List of Substances used in medicinal products).


This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species. However, “Origani aetheroleum” (essential oil of oregano) is classified as an approved active substance of complementary and phytotherapy products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff). For test and release of active ingredients of licensed medicines, the pharmacopoeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv). Additionally, both *Origanum majorana* and *Origanum vulgare* are included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances) for oral and/or parenteral use at various specified homoeopathic dilutions.62

**United States of America**

**Cosmetic use:** *Origanum ehrenbergii* is not known to be used in cosmetic products in the U.S.

**Dietary supplement use:** *Origanum ehrenbergii* is not listed in the *Herbs of Commerce*, 2nd edition,63 which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Two other species of *Origanum* are listed in the *Herbs of Commerce*. They are sweet marjoram (*Origanum majorana* L.) and oregano (*Origanum vulgare* L. *ssp. hirtum*; syn.: *Origanum heracleoticum* auct. non. L.).

**Food use:** *Origanum ehrenbergii* is not specifically listed as “Generally Recognized as Safe” (GRAS) for use in food products. However, essential oils, oleoresins (solvent-free), and natural extractives (including distillates) of the non-species-specific “Origanum” (*Origanum* spp.) are classified as GRAS for their intended use as food ingredients.64 Additionally, natural ingredients made from “Dittany of Crete” (*Origanum dictamnus* L.) are classified as natural flavoring substances and natural adjuvants that may be safely used in food products.65 Thus, it would appear to be permitted for U.S. buyers to import *Origanum ehrenbergii* and to use the dried herb or essential oil as a food flavoring ingredient.

**Medicinal use:** *Origanum ehrenbergii* is not listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

**Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries**

**Australia**

Cosmetic, Food or Medicine: There are no known quality standards or trade specifications for *Origanum ehrenbergii* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

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64 United States Food and Drug Administration. Essential oils, oleoresins (solvent-free), and natural extractives (including distillates). In: *Code of Federal Regulations*, Title 21, Part 182, Section §182.20. Washington, DC: National Archives and Records Administration. 01 April 2009.

Canada

Food: Title 7, Section B.07.028 [S] of the Food and Drug Regulations defines “Oregano” as the whole or ground dried leaves of *Origanum vulgare* L. or *Origanum* spp. Thus it would appear that *Origanum ehrenbergii* could conceivably be imported and traded under the common name “oregano” so long as it meets the following Canadian Oregano standard. Oregano shall contain not-more-than 10 per cent total ash, two per cent ash insoluble in hydrochloric acid, and 10 per cent moisture; and not less than 2.5 milliliters volatile oil per 100 grams of spice.66

European Community

Cosmetic, Food or Medicine: There are no known quality standards or trade specifications for *Origanum ehrenbergii* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species.

India

Food: There are no quality standards published specifically for *Origanum ehrenbergii* neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

Medicine: There are no quality standards monographs or therapeutic compendial monographs published for *Origanum ehrenbergii* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

Switzerland

Cosmetic, Food, Medicine: There are no known quality standards or trade specifications for *Origanum ehrenbergii* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

United States of America

Food: There are no standards published specifically for the species *Origanum ehrenbergii* in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF). However, there is an FCC monograph for “Origanum Oil, Spanish Type,” for use as a flavoring agent. Spanish Type Origanum Oil FCC is the volatile oil obtained by steam distillation from the flowering herb *Thymus capitatus* Hoffm. et Link and various species of *Origanum* (Fam. Labiatae).67 The FCC also lists the non-species-specific “Oleoresin Origanum,” which is obtained by the solvent extraction of the dried flowering herb *Origanum* spp. (Fam. Labiatae) as a dark brown-green semisolid. Based on the fact that both the CFR and FCC allow food ingredients (in the forms of essential oils and oleoresins) to be made from *Origanum* spp. would suggest that it should be possible for a U.S. buyer to import, process and use *Origanum ehrenbergii* as a food ingredient.

Dietary Supplement: There are no standards published for *Origanum ehrenbergii* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

Medicine: There are no standards published for *Origanum ehrenbergii* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).


Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” proposed innovative value-added products for the dried aerial parts of *Origanum ehrenbergii* as a component of tisanes or herbal teas. Also suggested was to develop an international market for the essential oil. This would require a significant scale-up due to the high quantities of fresh aerial parts that would be necessary for a commercial oil distillation operation for export promotion. The consultant also proposed carvacrol production from the leaves and flowers as well as the potential importance of the species for honey production. Finally, the development of geographic origin and trademarks for Lebanese quality and country of origin designation for all aforementioned products.

The current estimated annual demand of 173 tons for dried aerial parts of *Origanum ehrenbergii* is considerable. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products for export promotion with a Lebanon geographical brand. However, since this species does not expressly appear on any known positive lists, it may be classified as a new or novel ingredient that would require the submission of a petition to the regulatory authorities to gain market access. It is also possible that this species is being exported but mislabeled as another *Origanum* species. If there is evidence that this species has been exported for some time to American and European buyers, it might not be exceptionally difficult to petition for an expansion of the positive list definitions for *Origanum* species food or dietary supplement ingredients.
**Origanum syriacum L.**

**Definitions**

*Origanum syriacum* L. (syn.: *Majorana syriaca* (L.) Rafin; *Origanum maru* auct.; Fam. Lamiaceae)

- English names: Lebanese oregano, Syrian oregano, Wild marjoram; Bible hyssop
- German names: Echter Staudenmajoram; Syrischer Ysop
- Lebanese vernacular names: زَعَتر، Za'atar
- Turkish vernacular name: Kekik

**Assessment of current Lebanese export trade data current main importers**

According to the national consultant’s report “*Monographs of the 7 targeted species,*" Lebanese exports of ground oregano (Za’atar) are considerable at an estimated at 636 tons per year corresponding to an estimated FOB value of USD $712,000 with the main importers being Bahrain, Canada, the United States, France, the United Arab Emirates, and Qatar. Total annual estimated quantity was estimated at 1,753 tons with an estimated wholesale market value of USD $7,247,531. The World Customs Organization (WCO) assigns a general 6-digit Harmonized System Tariff Code (HS Code) of HS 121190 for oregano (*Origanum* spp), but this code is shared by literally hundreds of other medicinal plant species. Lebanese Customs has not assigned a specific 8- or 10- digit HS Code for oregano but presumably Lebanese exports of *Origanum* species are included within their 8-digit HS 12119090 (“other” medicinal plants). Lebanese Customs states that HS 12119090 includes, as examples, cannabis, chamomile, dried mint and sage. Based on the WCO 6-digit classifications, Lebanese Customs should be including *Origanum* spp. and *Salvia* spp. under their HS12119090. The Turkish Customs Tariff 2010 utilizes a specific 10-digit HS 1211908535 for tracking exports of “Wild Marjoram (Oregano).”

Even though evidence of significant domestic use and export exist, this review found that *Origanum syriacum* does not expressly appear on any national positive lists of any of the selected counties. Some lists, however, non-specifically allow *Origanum* spp. which would indicate the allowance to import and use this species as generic "oregano" in food products. This is indeed the case for Canada and the United States, both of which permit any species of *Origanum* to be used under the common name “oregano.” Since it is known that a significant amount is presently exported, the assumption is made here that it is being exported generically as “oregano” without clear species differentiation on export documents, labels and markings. Since Canada and the United States are known to be importers, a reasonable assumption that this species is presently in use as a food flavor and seasoning ingredient in certain North American countries.

In any case, the national consultant stated that limited quantities available from wild collection are, in and of themselves, a limiting factor for increasing exports beyond the current level. Almost all of the supply is wild harvested. Thus, developing new innovative value-added products for the domestic and export markets should be dependent on the outcomes of the resource assessments followed by implementation of a rigorous management plan. If it should be determined that significantly greater annual quantities can be sustainably harvested, then the decision to create new demand with new products should be considered. Additionally, as part of the resource management plan, species differentiation should be mastered and correct labeling and marking of the harvests should result in better data and greater transparency. Indeed, while some target destination countries may permit the import and use of multiple species under a single common name, there may be other legislative and/or non-legislative market requirements for accurate botanical identification.
Regulatory framework, market access requirements and requirements for use in selected destination countries

Australia

Cosmetic use: No information found.

Food use: Origanum syriacum is not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code. 68

Medicinal use: Origanum syriacum is not listed as a substance that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia. 69 This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products. Two other species of Origanum are listed for use in therapeutic products in Australia. They are Origanum majorana and Origanum vulgare.

Canada

Cosmetic use: Origanum syriacum is not listed in the Health Canada “Cosmetic Ingredient Hotlist” 70 which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor does Origanum syriacum appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.”

Food use: Origanum syriacum is not specifically listed in the Canada Food and Drugs Regulations (2010), 72 suggesting that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products. However, Division 7, Section B.07.028 [S] of the regulations for Spices, Dressings and Seasonings, should, in principle, permit any species of Origanum to be imported, labeled and used under the common name “oregano.” The Canadian regulation defines “oregano” as the whole or ground dried leaves of Origanum vulgare L. or Origanum spp. Since it is know that Lebanon is exporting this species to Canada it must be assumed that it is entering the Canadian market as per this food regulation as the non-specific Origanum spp.

Medicinal use: There are no monographs for Origanum syriacum in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No Origanum syriacum products are found in the Licensed Natural Health Products Database (LNHPD). Using the search field “Ingredient Name” and the criteria “Origanum” there were 36 results found in the LNHPD showing licensed products that contain either dried leaf, extracts of dried leaf or essential oils of the leaves of Origanum vulgare. 73 If sufficient evidence of safety and efficacy could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization

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71 This suggests that while there is no express prohibition against use in cosmetic products, it is possible that Origanum syriacum could be classified as new or novel.


of a Natural Health Product (NHP) containing *Origanum syriacum* as a medicinal ingredient.

**European Community**

**Cosmetic use:** *Origanum syriacum* is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. However, cosmetic ingredients made from other species of *Origanum* are listed in CosIng including:

- extract obtained from the herbs of the Spanish Marjoram, *Origanum cretium*;
- essential oil obtained from the herbs of the Spanish Marjoram, *Origanum cretium*;
- volatile oil obtained from the flowers of *Origanum heracleoticum*;
- volatile oil obtained from the flowers of Sweet Marjoram, *Origanum majorana* L.;
- extract obtained from the herbs of the Sweet Marjoram, *Origanum majorana* L.;
- essential oil obtained from the herbs of the Sweet Marjoram, *Origanum majorana* L.;
- extract of the leaves of the Sweet Marjoram, *Origanum majorana* L.;
- volatile oil distilled from the leaves of the Sweet Marjoram, *Origanum majorana* L.;
- extract of the flowering end of the Wild Marjoram, *Origanum vulgare* L.;
- extract of the flowers, leaves and stems of the Wild Marjoram, *Origanum vulgare* L.;
- dried, shredded leaves of the Wild Marjoram, *Origanum vulgare* L.;
- extract of the leaves of the Wild Marjoram, *Origanum vulgare* L.;
- volatile oil distilled from the leaves of the Wild Marjoram, *Origanum vulgare* L.;
- volatile oil obtained from the whole plant of Wild Marjoram, *Origanum vulgare* L.

The CosIng listings of cosmetic ingredients made from four other species of *Origanum* suggests that, in principle, with sufficient evidence of safety, the additional listing of ingredients made from *Origanum syriacum* should be possible.

**Food use:** *Origanum syriacum* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. However, two other species of *Origanum* are listed as follows (see next page for definition of codes):

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Parts of plants of possible concern</th>
<th>Chemical of concern / toxic effect</th>
<th>Remarks</th>
<th>Specific References</th>
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<tr>
<td><em>Origanum majorana</em> L.</td>
<td>1Q: plant fruits, herb (EHIA list) 1L: herb essential oil</td>
<td>1Q: estragol e content: 96-550 ppm 1L: Herb essential oil: camphor, 2%. (CoE, 2005)</td>
<td>leaf (1X)</td>
<td>Active principles (constituents of chemical concern) contained in natural sources of flavouring s, Council of Europe, 2005.</td>
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<tr>
<td><em>Origanum vulgare</em> L.</td>
<td>1P: herba</td>
<td>leaf of O. vulgare L. ssp. vulgare (1X)</td>
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<td></td>
</tr>
</tbody>
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74 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: [http://ec.europa.eu/enterprise/cosmetics/cosing](http://ec.europa.eu/enterprise/cosmetics/cosing)

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</table>

Origanum syriacum is not listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” Absence of this species in the EHIA list means that this plant is not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions. Two other species of Origanum are listed, Origanum majorana (herb and fruit) and Origanum vulgare (herb).

**Medicinal use:** The European Medicines Agency (EMEA) has no plans to publish a European Community Herbal (therapeutic) Monograph for Origanum syriacum nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM). Such monographs would only be prioritized for development in the event that marketing authorization was granted by one or more of the EC Member States. EMEA monographs for Origanum majorana (herb and fruit) are scheduled for assessment but have a low priority. There is a European Pharmacopoeia (PhEur) quality standards monograph for the dried leaves and flowers, separated from the stems, of Origanum onites L. or Origanum vulgare L. subsp. hirtum (Link) letsw., or a mixture of both species.

**India**

Medicinal use: *Origanum syriacum* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). Only one species of *Origanum* is included in the FRLHT survey, *Origanum majorana* L., Sweet marjoram herb, which is used in codified Indian Systems of Medicine of Ayurveda, Siddha and Unani, as well as in the Homoeopathic System of Medicine.

The absence of *Origanum syriacum* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India. It may be possible for *Origanum syriacum* to enter Indian commerce however as a food flavor, spice or seasoning ingredient under the common name of oregano.

**South Africa**

Medicinal use: *Origanum syriacum* is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa.

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**Notes:**


Switzerland

Cosmetic use: No information found.

Dietary supplement use: Origanum syriacum is not included on the list of substances that may be used in dietary or food supplement products in Switzerland.

Food use: Origanum syriacum is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products.79 However, Origanum vulgare L. ssp. vulgare is listed well as Origanum majorana L. (syn. Majorana hortensis Moench.).

Medicinal use: Origanum syriacum is not included on the “Stoffliste” (List of Substances used in medicinal products).60 This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species. However, “Origan aetheroleum” (essential oil of oregano) is classified as an approved active substance of complementary and phyto medicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff). For test and release of active ingredients of licensed medicines, the pharmacopoeial standards in force for Switzerland are both homoeopathic and anthroposophic. Additionally, both Origanum majorana and Origanum vulgare are included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances) for oral and/or parenteral use at various specified homoeopathic dilutions.81

United States of America

Cosmetic use: Origanum syriacum is not known to be used in cosmetic products in the U.S.

Dietary supplement use: Origanum syriacum is not listed in the Herbs of Commerce, 2nd edition,82 which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Two other species of Origanum are listed in the Herbs of Commerce. They are sweet marjoram (Origanum majorana L.) and oregano (Origanum vulgare L. ssp. hirtum; syn.: Origanum heracleoticum auct. non. L.).

Food use: Origanum syriacum is not specifically listed as “Generally Recognized as Safe” (GRAS) for use in food products. However, essential oils, oleoresins (solvent-free), and natural extractives (including distillates) of the non-species-specific “Origanum” (Origanum spp.) are classified as GRAS for their intended use as food ingredients.83 Additionally, natural ingredients made from “Dittany of Crete” (Origanum dictamnus L.) are classified as natural flavoring substances and natural adjuvants that may be safely used in food products.84 Thus, it would appear to be permitted for U.S. buyers to import Origanum syriacum and to use the dried

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83 United States Food and Drug Administration. Essential oils, oleoresins (solvent-free), and natural extractives (including distillates). In: Code of Federal Regulations, Title 21, Part 182, Section §182.20. Washington, DC: National Archives and Records Administration. 01 April 2009.
herb or essential oil as a food flavoring ingredient.

**Medicinal use:** *Origanum syriacum* is not listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

**Australia**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Origanum syriacum* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

**Canada**

**Food:** Title 7, Section B.07.028 [S] of the Food and Drug Regulations defines “Oregano” as the whole or ground dried leaves of *Origanum vulgare* L. or *Origanum spp.* Thus it would appear that *Origanum syriacum* could conceivably be imported and traded under the common name “oregano” so long as it meets the following Canadian Oregano standard. Oregano shall contain not-more-than 10 per cent total ash, two per cent ash insoluble in hydrochloric acid, and 10 per cent moisture; and not less than 2.5 milliliters volatile oil per 100 grams of spice.85

**European Community**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Origanum syriacum* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species.

**India**

**Food:** There are no quality standards published for *Origanum syriacum*, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for *Origanum syriacum* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

**Switzerland**

**Cosmetic, Food, Medicine:** There are no known quality standards or trade specifications for *Origanum syriacum* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

**United States of America**

**Food:** There are no standards published specifically for the species *Origanum syriacum* in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF). However, there is an FCC monograph for “Origanum Oil, Spanish Type,” for use as a flavoring agent. Spanish Type Origanum Oil FCC is the volatile oil obtained by steam distillation from the flowering herb *Thymus capitatus* Hoffm. et Link and various species of *Origanum* (Fam. Labiatae).86 The FCC also

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86 Food Ingredients Expert Committee. *Origanum Oil, Spanish Type*. In: *Food Chemicals Codex*, Seventh
lists the non-species-specific “Oleoresin Origanum,” which is obtained by the solvent extraction of the dried flowering herb *Origanum* spp. (Fam. Labiatae) as a dark brown-green semisolid. Based on the fact that both the CFR and FCC allow food ingredients (in the forms of essential oils and oleoresins) to be made from *Origanum* spp. would suggest that it could be possible for a U.S. buyer to import, process and use *Origanum syriacum* as a food ingredient.

**Dietary Supplement:** There are no standards published for *Origanum syriacum* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for *Origanum syriacum* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

**Proposed innovative value-added MAP products using this ingredient**

The national consultant’s report “Monographs of the 7 targeted species” proposed innovative value-added products for the dried aerial parts of *Origanum syriacum* as a component of tisanes or herbal teas. Also suggested was to develop an international market for the essential oil. This would require a significant scale-up due to the high quantities of fresh aerial parts that would be necessary for a commercial oil distillation operation for export promotion. The consultant also proposed carvacrol production from the leaves and flowers as well as the potential importance of the species for honey production. Scaling up for carvacrol production (obtained from the essential oil fraction) would also require a significant quantity of starting material. Scaling up essential oil and/or carvacrol production would require such a significantly increased amount of starting raw material that this innovative new product suggestion should be viewed very cautiously until solid resource assessment data is available.

Finally, the development of geographic origin and trademarks for Lebanese quality and country of origin designation for all aforementioned products. If sustainable scaling up is deemed possible, new innovative products such as those suggested by the national consultant for the regional markets as well as for export promotion could be envisaged. It would seem necessary to first determine what additional quantities of this species could be sustainably harvested annually, above and beyond the current harvest levels, before new product development and export market promotion should ensue. A really interesting product concept could be a Lebanese brand of the Za’atar mix using *Origanum syriacum*, among other local herbs special to Lebanon (e.g. *Satureja thymbra* or *Thymbra spicata*), with sesame seeds and Mediterranean sea salt. If the condiment mix carried Organic Wild and FairTrade or FairWild logo designations along with a Lebanese geo-authentic branding, this could be very interesting for the natural, organic and ethical trade markets of Europe and North America.
**Salvia fruticosa Miller** *(Lamiaceae)*

**Definitions**

Botanical name: *Salvia fruticosa* Miller

Synonym: *Salvia triloba* L. fil.; *S. libanotica* Boiss. et gaill.)

Pharmacopoeial name: *Salviae trilobae folium*

**Common names:**

- **English names:** Three-lobed sage; Three-lobe sage; Greek Sage; Turkish Sage
- **French name:** Sauge trilobee; Feuille de sauge à trois lobes
- **German name:** Dreiappiger Salbei; Griechischer Salbei
- **Greek names:** Phaskos; Alyphaskia
- **Lebanese vernacular names:** Kassiin, Maryamiyeh, Kouwaysseh, Ayzakan, عيزقان، مريمية، قريصة، قسعين
- **Spanish names:** Hoja de salvia triloba; Salvia real; Sabia real
- **Turkish vernacular names:** Adacayi; Adacay of Izmir; Elma yagi

**Assessment of current Lebanese export trade data current main importers**

According to the national consultant’s report “*Monographs of the 7 targeted species,*” there are significant exports of *Salvia fruticosa*. The size of the Lebanese market for *Salvia fruticosa* plant parts is estimated at 100 tons valued at USD $0.2 million. But the majority of Lebanon’s three-lobed sage leaf is exported. The annual total quantity estimated to be wild collected and sold is about 1000 tons with and estimated market size of USD $4 million.

Because there is no specific Harmonized System Tariff Code (HS Code) established for three-lobed sage leaf (or for other processed forms prepared from the leaf), it is difficult to know precisely the main destinations of Lebanon’s sage exports. The World Customs Organization (WCO) lumps three-lobed sage leaf under a general 6-digit code HS 121190 that is shared by hundreds of other species. In any case, we do have export trade data for Lebanese exports of “other” medicinal plants classified under the 8-digit HS Codes 12119000 and 12119090. In 2009, Jordan was the main importer of Lebanese “other” medicinal plants exported under HS 12119090 at a trade volume of 223 tons, followed by Saudi Arabia at 85 tons, Kuwait 19 tons, Yemen 17 tons, and Turkey at 16 tons. This would appear to correspond to some amount of the three-lobed sage exports from Lebanon. However, it must also be considered that Lebanese Customs use of HS 12119090 should also include exports of *Origanum* species.

Concerning other potential export markets, some assumptions can be made based on the regulatory status of *Salvia fruticosa* in other countries. If a regulatory framework were to exist in any countries for the import and use of *Salvia fruticosa*, the possibility could then exist for additional Lebanese exports to the identified countries.

This review found that *Salvia fruticosa* appears on many national positive lists of the selected counties. Thus the ability of Lebanon to reach new markets beyond its current main customers of Jordan, Saudi Arabia, Kuwait, Yemen and Turkey, could be possible but dependant on a range of factors including:

- the ability to sustainably scale-up beyond current annual demand;
- whether the Lebanese material would test in compliance with the standards in the other countries (e.g. Does it meet or exceed the European Pharmacopoeial quality standard established for three-lobed sage leaf?); and
- what the competitive landscape looks like. Several other countries harvest and export this species including Albania, Greece, Italy, Russian Federation, Turkey, and
Regulatory framework, market access requirements and requirements for use in selected destination countries

Australia

Cosmetic use: No information found.

Food use: Salvia spp. are not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.87

Medicinal use: Salvia fruticosa is listed as a substance that may be used as an active or excipient ingredient in 'Listed' medicines for supply in Australia.88 Additionally, seven other species of Salvia are listed for use in therapeutic products in Australia. They are Salvia chinensis, Salvia hispanica, Salvia hispanorum, Salvia lavandulaefolia, Salvia miltiorrhiza, Salvia officinalis, and Salvia sclarea. Therefore, it would appear that Australia could be a destination market for Lebanese Salvia fruticosa, so long as it meets the British Pharmacopoeia (BP) quality standard. Australia requires medicinal substances to test in compliance with the corresponding BP monograph. There is a BP monograph for three-lobed sage leaf. Note: The BP 2010 monograph is identical to the European Pharmacopoeia (PhEur) monograph.

Canada

Cosmetic use: Salvia species ingredients are not listed in the Health Canada “Cosmetic Ingredient Hotlist” 89 which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada.

While Salvia fruticosa does not expressly appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001,” many sage ingredients are listed which could conceivably include this species.90 Several other “Sage” or “Salvia” ingredients are found on the list which suggests that a correlation could be made to this species. For example, the list includes Tincture of Salvia, Infusion of Sage, Salvia hispanica, Root of Red Rooted Salvia (Radix Salviae Miltiorrhizae), Salvia sclarea (Clary) Sage Extract, Salvia lavandulaefolia, Sage flower, Sage powder, Essential Oil of Medicinal Sage, Sage Essence, and Sage Glycolic Extract.

Food use: Three-lobed sage leaf is listed in the Canada Food and Drug Regulations (2010), 91 which confirms that there is current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products. Title 7 Section B.07.034. [S] of the regulations defines “Sage” as the whole or ground dried leaves of the sage plant Salvia officinalis L., Salvia triloba L. or Salvia lavandulaefolia Vahl.

Medicinal use: There are not yet any monographs for any Salvia species ingredients in the Natural Health Products Directorate (NHPD) Compendium of Monographs. However, several products containing various Salvia species

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90 Health Canada. Substances in cosmetics and personal care products regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 2987, and September 13, 2001. Ottawa, Ontario: Health Canada. Available at: http://www.hc-sc.gc.ca/ewh-senvet/contaminants/person/impact/list/person-no-cas-eng.php

ingredients are found in the Licensed Natural Health Products Database (LNHPD). Using the search field “Ingredient Name” and the criteria “Salvia” there were 82 results found in the LNHPD.92 If sufficient evidence of safety and efficacy could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization of a Natural Health Product (NHP) containing Salvia fruticosa as a medicinal ingredient, so long as the Salvia fruticosa conformed to the quality standard of the European Pharmacopoeia (PhEur). The NHPD accepts the standards of the PhEur, as well as of the BP and USP, for the test and release of medicinal ingredients of NHPs in Canada.

European Community

Cosmetic use: Salvia triloba is listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database.93 Here below is the CosIng listing for “Salvia Triloba Leaf Extract” which list the cosmetic ingredient functions of antimicrobial, astringent and oral care:

The CosIng definitions for the three listed functions for Salvia Triloba Leaf Extract are as follows:

Food use: Salvia fruticosa is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern.94 However other species of Salvia are listed including entire plant of Salvia divinorum Epling et Jativa (due to psychotropic activity), herb of Salvia lavendulifolia Vahl (due to no history of use in the EU prior to 1997), dried herb and leaves of Salvia officinalis L., and flowers and herb of Salvia sclarea L. (due to toxic activity of some components of the essential oil). Salvia triloba (leaf) is listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.”95 Presence of this species in the EHIA list means that this plant is currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions. Two other species of Salvia are also listed, Salvia officinalis (leaf) and Salvia sclarea (flower and leaf).

Medicinal use: The European Medicines Agency (EMEA) currently has no plans to develop and publish a European Community Herbal (therapeutic) Monograph on Salvia fruticosa. There are EMEA monographs published for Salvia officinalis L., folium (Sage Leaf) and Salvia officinalis L., aetheroleum (Sage Oil). However there is already a European Pharmacopoeia (quality standards) Monograph for “Three-Lobed Sage Leaf” published by the European Directorate for the Quality of

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93 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: http://ec.europa.eu/enterprise/cosmetics/cosing
94 European Food Safety Authority (EFSA). EFSA Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. EFSA Journal 2009; 7(9):281. Available at: http://www.efsa.europa.eu/en/scdocs/doc/280rax1.pdf
The existence of an official quality standards monograph for use of the dried leaf in the European Community would indicate that eventually a corresponding therapeutic monograph could become prioritized for development by the EMEA.

India

**Medicinal use:** *Salvia fruticosa* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). However, five other species of *Salvia* are found in the FRLHT survey, fruit of *Salvia aegyptiaca* L., known as “Balangoor,” which is used in the Ayurvedic and Siddha Systems of Medicine, fruit of *Salvia haematodes* L., known as “Behman,” which is used in the Unani system of medicine but also in folk medicine, fruit and leaf of *Salvia moorcroftiana* Wall. ex Benth., known as “Tuk marian” or as “Tuth,” which is used only in folk medicine, fruit of *Salvia plebeia* R.Br., known as “Kachora,” which is used in the Ayurvedic and Siddha Systems of Medicine, and fruit of *Salvia sclarea* L., known as “Behman safed,” used in the Unani System of Medicine.

The absence of *Salvia fruticosa* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India. Possibly this species could enter Indian commerce as a non-medical spice or seasoning component for use in food products.

South Africa

**Medicinal use:** *Salvia fruticosa* is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa. However, other species of *Salvia* are listed. Since the dried leaf of *Salvia fruticosa* has an official quality standards monograph published in the European Pharmacopoeia, it seems likely that it should be permitted for use as a medicinal ingredient also in South Africa.

Switzerland

**Cosmetic use:** No information found. However, since “Salvia Triloba Leaf Extract” is used as a cosmetic ingredient within the European Union it is conceivable that some cosmetic products in Switzerland might also contain this ingredient even though Switzerland is not a European Union Member State.

**Dietary supplement use:** *Salvia triloba* is included on the list of substances that may be used in dietary or food supplement products in Switzerland. However, there are content (maximum) limits for the levels of estragole (I), alpha-thujone, beta-thujone, eucalyptol, camphor, and carvacrol that may occur in the dietary supplement product.

**Food use:** *Salvia triloba* is included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medical herbal tea products. However, there are content limits...
(maximum) limits for the levels of estragole (l), alpha-thujone, beta-thujone, eucalyptol, camphor, and carvacrol that may occur in the food product.

**Medicinal use:** “Salviae trilobae folium” is included on the “Stoffliste” (List of Substances used in medicinal products). This means that marketing authorization as a medicinal substance in Switzerland is possible. Three-lobed sage leaf is classified as an approved active substance of complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Depending on the indications for use, retail distribution is limited to either Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff) or Category E (available in both pharmacies and drugstores, without prescription and without consultation with pharmacy staff). For test and release of active ingredients of licensed or registered medicines, the pharmacopoeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv).

**United States of America**

**Cosmetic use:** Salvia fruticosa is not known to be used in cosmetic products in the U.S.

**Dietary supplement use:** Three-lobed sage (Salvia fruticosa Mill.; Syn: Salvia triloba L. f.) is listed in the *Herbs of Commerce, 2nd edition*, which indicates that it appeared in U.S. commerce prior to 1994 and therefore would not require pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Eleven other species of *Salvia* are also listed in the *Herbs of Commerce*.

**Food use:** Greek sage (*Salvia triloba*) is listed as a spice or other natural seasoning and flavoring that is generally recognized as safe (GRAS) for its intended use in food products. Additionally, essential oils, oleoresins (solvent-free), and natural extractives (including distillates) of Greek sage leaf (*Salvia triloba L.*) are classified as GRAS for their intended use as food ingredients.

**Medicinal use:** No ingredients made from any *Salvia* species are listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

In addition to the Lebanese standards for dried sage leaf, quality standards were found in the Canadian Food and Drug Regulations 2010, the British Pharmacopoeia 2010 (BP 2010), and in the European Pharmacopoeia 6th Edition 2010 (PhEur 6.0). The BP 2010 monograph however is identical to that of the PhEur 6.0 monograph. The table here below compares the Canadian, European and Lebanese standards that would apply to the dried leaf of *Salvia fruticosa*.

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<table>
<thead>
<tr>
<th>Standard</th>
<th>Canadian Food and Drug Regulations</th>
<th>European Pharmacopoeia</th>
<th>Lebanonese Standard</th>
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<tr>
<td><strong>Identification tests:</strong></td>
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<td>Macroscopic</td>
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<td>No standard</td>
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<td></td>
<td></td>
<td>Thin-layer chromatography</td>
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<tr>
<td><strong>Characteristics:</strong></td>
<td>No standard</td>
<td>Spicy odour when ground, similar to eucalyptus oil</td>
<td>Distinctive, strong and aromatic smell and odour</td>
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<tr>
<td><strong>Foreign matter:</strong></td>
<td>Max 12% stems excluding petioles and foreign material of plant origin</td>
<td>Max 8.0% of stems</td>
<td>Max 3% of coarse woody stems; Max 5% brown leaves; Max 1% other foreign organic material; Free of insect parts and rodent feces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max 2.0% of other foreign matter</td>
<td></td>
</tr>
<tr>
<td><strong>Water:</strong></td>
<td>Max 10.0%</td>
<td>Max 100 ml/kg</td>
<td>Max 12% (m/m)</td>
</tr>
<tr>
<td><strong>Total ash:</strong></td>
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<td>Max 10.0%</td>
<td>Max 11.0%</td>
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<tr>
<td><strong>Acid-insoluble ash:</strong></td>
<td>Max 1.0%</td>
<td>No standard</td>
<td>Max 2.0%</td>
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<tr>
<td><strong>Essential oil:</strong></td>
<td>Min one mL volatile oil per 100 g of spice</td>
<td>Min 18 ml/kg in the whole drug (anhydrous drug) and min 12 ml/kg in the cut drug (anhydrous oil)</td>
<td>Min 1.5% (ml/100g, dry basis)</td>
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<td><strong>Heavy metals:</strong></td>
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<tr>
<td><strong>Pesticide residues:</strong></td>
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<td>Meets the requirements PhEur General Chapter 2.8.13</td>
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</table>

**Australia**

**Medicine:** *Salvia fruticosa*, if used as an active ingredient of a Listed or Registered medicinal product, must test and comply with the quality standard of the British Pharmacopoeia (BP) as published in the BP 2010 monograph “Three-lobed Sage Leaf.”

**Canada**

**Food:** *Salvia triloba* is included within the statutory definition of “Sage” and is therefore permitted for use as a seasoning or spice of food products, as per Title 7, Section B.07.034, [S] of the Canadian Food and Drug Regulations, which defines “Sage” as the whole or ground dried leaves of the sage plant *Salvia officinalis L.*, *Salvia triloba L.* or *Salvia lavandulaefolia Vahl.*, and shall contain:

(a) not more than

(i) 12 per cent stems excluding petioles and foreign material of plant origin,

(ii) 10 per cent total ash,

(iii) one per cent ash insoluble in hydrochloric acid, and

(iv) 10 per cent moisture; and

(b) not less than one milliliter volatile oil per 100 grams of spice.

**Medicine:** If *Salvia triloba* is used as a medicinal ingredient of a license Natural Health Product (NHP) in Canada, the quality of the *Salvia triloba* leaf must test in compliance with the European Pharmacopoeia (quality standards) Monograph for “Three-Lobed Sage Leaf”

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published by the European Directorate for the Quality of Medicines (EDQM).\textsuperscript{106}

\textbf{European Community:}

\textbf{Cosmetic, Food or Medicine:} There is a European Pharmacopoeia (quality standards) Monograph for “Three-Lobed Sage Leaf” published by the European Directorate for the Quality of Medicines (EDQM).\textsuperscript{107} Here below are the quality requirements for use in a medicinal product in the European Community:

\textbf{DEFINITION}

Whole or cut, dried leaves of \textit{Salvia fructicosa} Mill. (\textit{S. triloba} L. fil).

\textbf{CONTENT}

Minimum 18 ml/kg of essential oil in the whole drug (anhydrous drug) and minimum 12 ml/kg of essential oil in the cut drug (anhydrous drug).

\textbf{CHARACTERS}

Spicy odour when ground, similar to eucalyptus oil.

\textbf{IDENTIFICATION}

\textbf{A.} The lamina of the whole three-lobed sage leaf is about 8-50 mm long and about 4-20 mm wide, and oblong-ovate or lanceolate. The margin is finely crenate and undulate but indistinct owing to the dense hairy covering on both surfaces. The base is obtuse and sometimes bears 1 or 2 more or less developed lobes. The upper surface is grey-tomentose pubescent, the lower surface is densely white-tomentose pubescent; the venation is indistinct. The densely white-tomentose pubescent petiole is about 1 mm in diameter.

\textbf{B.} Reduce to a powder (355) (2.9.12). The powder is greyish-green and tomentose. Examine under a microscope using chloral hydrate solution R. The powder shows the following diagnostic characters: very numerous, whole or fragmented, covering and glandular trichomes, scattered and attached to fragments of the epidermis; covering trichomes articulated, uniseriate, thick-walled and bluntly tapering, those on the upper epidermis straight, those on the lower epidermis longer, tortuous and more densely packed; glandular trichomes, some with a unicellular or bicellular head and a stalk consisting of from 1-4 cells, the majority having a short, unicellular stalk and a head composed of 8 radiating cells with a raised common cuticle; the upper epidermis with pitted and beaded cells, somewhat polygonal, with a few diacytic stomata (2.8.3); the lower epidermis with sinuous or wavy-walled cells and numerous diacytic stomata.

\textbf{C.} Examine the chromatogram obtained in the test for thujone.

\textbf{Results:} The chromatogram obtained with the test solution shows a blue zone due to cineole, equal or greater in size and intensity to the zone in the chromatogram obtained with the reference solution. Further zones are present.

\textbf{TESTS}

\textbf{Thujone.} Thin-layer chromatography (2.2.27):

\textbf{Test solution:} Shake 0.3 g of the freshly powdered drug (355) (2.9.12) with 5.0 ml of anhydrous ethanol R for 5 min.

\textbf{Reference solution:} Dissolve 20 \(\mu\)l of thujone R and 25 \(\mu\)l of cineole R in 20 ml of anhydrous ethanol R.

\textbf{Plate:} TLC silica gel plate R.

\textbf{Mobile phase:} Ethyl acetate R, toluene R (5:95 V/V).

\textbf{Application:} 20 \(\mu\)l, as bands.

\textbf{Development:} Over a path of 15 cm.


Drying: In air.

Detection: Spray with a 200 g/l solution of phosphomolybdic acid R in anhydrous ethanol R and heat at 100-105 °C for 10 min. Examine in daylight.

Results: The chromatogram obtained with the reference solution shows in the middle part a blue zone (cineole) and in the upper part a pink-blue zone (thujone). The chromatogram obtained with the test solution shows no zone or a very faint pink-blue zone due to thujone.

Foreign matter (2.8.2): Maximum 8 per cent of stems and maximum 2 per cent of other foreign matter.

Water (2.2.13): Maximum 100 ml/kg, determined on 20.0 g.

Total ash (2.4.16): Maximum 10.0 per cent.

ASSAY

Carry out the determination of essential oils in herbal drugs (2.8.12). Use 20.0 g of drug, if necessary cut immediately before the assay, a 500 ml flask, 250 ml of water R as the distillation liquid. Add 0.50 ml of xylene R in the graduated tube. Distil at a rate of 2-3 ml/min for 2 h.

India


Medicine: There are no quality standards monographs or therapeutic compendial monographs published for Salvia fruticosa in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

Switzerland

Cosmetic, Food, Medicine: There are no known quality standards or trade specifications for Salvia fruticosa for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv), however Switzerland does accept the quality standards of the European Pharmacopoeia, for which there is a monograph for Three-lobed Sage Leaf. There are no licensed or registered herbal medicinal products that contain this species in Switzerland. However, there are licensed products in Switzerland that contain ingredients made from other species of Salvia.

United States of America

Food: There are no standards published for Salvia fruticosa in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF). The FCC does contain monographs for three other Salvia species ingredients:

- Clary Oil FCC: Essential oil obtained by steam distillation from the flowering tops and leaves of the clary sage plant, Salvia sclarea L.
- Dalmatia Type Sage Oil FCC: Essential oil obtained by steam distillation from the partially dried leaves of the plant Salvia officinalis L.
- Spanish Type Sage Oil FCC: Essential oil obtained by distillation from the plants of Salvia lavandulaefolia Vahl. or Salvia hispanorium Lag.

Dietary Supplement: There are no standards published for any species of Salvia in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

Medicine: There are no standards published for any species of Salvia in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).
Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” stated that there are significant exports of *Salvia fruticosa* from Lebanon and suggested a number of ideas for value-adding potential. Proposed innovative value-added products for the *Salvia fruticosa* could include:

- Cut dried leaf as a component of tisanes or herbal tea products;
- Cut or whole dried leaf as a component of Lebanese seasonings or spice mixes;
- Essential oil for use as a component of aromatherapy, bath, cosmetic or food products;
- Steam distillate water;
- Extract of the leaf as a component of cosmetic products.

The current estimated annual wild collection and sales of approximately 1000 tons is significant. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products for international export promotion with a Lebanese quality and country of origin designation.
Satureia sps including (Satureia thymbra L. & Satureia cuneifolia Ten.)

Definitions

*Satureia cuneifolia* Ten. (syn. *Satureja cuneifolia* Ten.)
- Turkish vernacular names: Dağ kekiği, kekik, sivri kekik, klc kekik, yayla kekigi, ar kekigi, seytan kekik

*Satureia thymbra* L. (syn. *Satureja thymbra* L.)
- Turkish vernacular names: Girit sateri, sahil sivrisi, kara kekik

Assessment of current Lebanese export trade data current main importers

*Satureja* spp. was not included national consultant’s report “Monographs of the 7 targeted species.” It would be difficult to make any determination concerning who the main importers of this species might be, if any. Some assumptions can be made based on the regulatory status of *Satureja cuneifolia* and/or *Satureja thymbra* in other countries. If a regulatory framework were to exist in any countries for the import and use of either species, the possibility could then exist for Lebanese exports to the identified countries.

This review found that neither species appears on any national positive lists of any of the selected countries. Almost no evidence was found to demonstrate that either of these species are commercially traded or actively used outside of Lebanon. Thus, before export promotion can be recommended, it would be wise to consider the submission of human safety and quality data to selected national regulatory agencies in an effort to get these species officially listed and recognized as safe for use in cosmetic, dietary supplement or food products. Without their appearance on national positive lists, it will be difficult to find interested buyers and to develop new markets.

Regulatory framework, market access requirements and requirements for use in selected destination countries

**Australia**

**Cosmetic use:** No information found.

**Food use:** Neither *Satureja cuneifolia* (*Satureja cuneifolia*) nor *Satureja thymbra* (*Satureja thymbra*) are listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.\(^{108}\)

**Medicinal use:** Neither *Satureja cuneifolia* (*Satureja cuneifolia*) nor *Satureja thymbra* (*Satureja thymbra*) are listed as substances that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia.\(^{109}\) This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products. Two other species of *Satureja* are listed for use in therapeutic products in Australia. They are summer savory (*Satureia hortensis*) and winter savory (*Satureia montana*).

**Canada**

**Cosmetic use:** Neither *Satureja cuneifolia* (*Satureja cuneifolia*) nor *Satureja thymbra* (*Satureja thymbra*) are listed in the Health Canada “Cosmetic Ingredient Hotlist” \(^{110}\)

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which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor do these species appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.” 111 This suggests that while there is no express prohibition against use in cosmetic products, it is possible that these species could be classified as new or novel.

Food use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are specifically listed in the Canada Food and Drugs Regulations (2010), 112 suggesting that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products. Two other species of Satureja, however, are listed in Division 7, Section B.07.035 [S] of the regulations for Spices, Dressings and Seasonings. The Canadian regulation defines “savory” as the whole or ground dried leaves of Satureja hortensis L. or Satureja montana L.

Medicinal use: There are no monographs for either Satureja cuneifolia (Satureja cuneifolia) or Satureja thymbra (Satureja thymbra) in the Natural Health Products Directorate (NHPD) Compendium of Monographs. No products containing either of these species are found in the Licensed Natural Health Products Database (LNHPD). Using the search field “Ingredient Name” and the criteria “Satureja” there was 1 result found in the LNHPD, but this was for an herbal tea product that contains Satureja montana.113 If sufficient evidence of safety and efficacy could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization of a Natural Health Product (NHP) containing Satureja cuneifolia and/or Satureja thymbra as a medicinal ingredient.

European Community

Cosmetic use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database.114 However, cosmetic ingredients made from other species of Satureja / Satureja are listed in CosIng including:

- extract of the Savory, Satureja hortensis L.;
- extract of the leaves of the Savory, Satureja hortensis L.;
- essential oil obtained from the whole plant of the Savory, Satureja hortensis L;
- volatile oil obtained from the herb of the Summer Savory, Satureja montana L.,

The CosIng listings of cosmetic ingredients made from four other species of Satureja / Satureja suggests that, in principle, with sufficient evidence of safety, the additional listing of ingredients made from either Satureja cuneifolia (Satureja cuneifolia) or Satureja thymbra (Satureja thymbra) should be possible.

Food use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern.115 However, one other species of

111 Health Canada. Substances in cosmetics and personal care products regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 2987, and September 13, 2001. Ottawa, Ontario: Health Canada. Available at: http://www.hc-sc.gc.ca/ewh-smt/contaminants/person/impact/list/person-no-cas-eng.php


114 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: http://ec.europa.eu/enterprise/cosmetics/cosing

115 European Food Safety Authority (EFSA). EFSA Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. EFSA Journal 2009; 7(9):281. Available at: http://www.efsa.europa.eu/en/scdocs/doc/280rax1.pdf
**Satureja** is listed as follows (see next page for definition of codes):

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Parts of plants of possible concern</th>
<th>Chemical of concern/toxic effect</th>
<th>Specific References</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Satureja montana</em> L.</td>
<td>1T: plant, 1H: Herb, leaves</td>
<td>1T: methyleugenol content: 25-415 ppm, 1H: Herb and leaves essential oil: carvacrol 30-40%, eucalyptol 0.59%, camphor 0.21%, thujones. (CoE, 2008)</td>
<td>Natural sources of flavourings (Rep No 3), Council of Europe, (2008)</td>
</tr>
</tbody>
</table>

**SOURCES OF INFORMATION FOR SATUREJA MONTANA IN THE TABLE**

<table>
<thead>
<tr>
<th>Code</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H</td>
<td>Plants assessed as flavourings by the Council of Europe in 2000 and 2004 belonging to Category 3 or 4 (restrictions recommended for use) (H1 and H2 respectively) or as Category 5 (restrictions recommended and further data required) (H3) or Category 6 (considered not appropriate for human consumption) (H4)</td>
</tr>
<tr>
<td>1T</td>
<td>Final Public Statement on the use of herbal medicinal products containing methyleugenol, Committee on Herbal Medicinal Products (HMPC), London 23 November 2005</td>
</tr>
</tbody>
</table>

Neither *Satureia cuneifolia* (*Satureja cuneifolia*) nor *Satureia thymbra* (*Satureja thymbra*) are listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, neither species are found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008”, which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT).

The absence of these species in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India.

**South Africa**

**Medicinal use:** Neither *Satureia cuneifolia* (*Satureja cuneifolia*) nor *Satureia thymbra* (*Satureja thymbra*) are listed in any of the Schedules on Complementary and

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**Notes:**


Alternative Medicines for therapeutic use in South Africa.118

Switzerland

Cosmetic use: No information found.

Dietary supplement use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are included on the list of substances that may be used in dietary or food supplement products in Switzerland.

Food use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are listed. Satureja hortensis and Satureja montana are permitted for food use but with upper maximum limits for some of their constituents including estragole, eucalyptol, and thujone.

Medicinal use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are included on the “Stoffliste” (List of Substances used in medicinal products).120 This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species. However, “Saturejae montanae aetheroleum” (essential oil of winter savory) is classified as an approved active substance of complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff).

For test and release of active ingredients of licensed medicines, the pharmacopoeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv). Additionally, Satureja hortensis included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances) for oral use at various specified homoeopathic dilutions.121

United States of America

Cosmetic use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are known to be used in cosmetic products in the U.S.

Dietary supplement use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are listed in the Herbs of Commerce, 2nd edition,122 which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Three other species of Satureja are listed in the Herbs of Commerce. They are yerba buena (Satureja douglasii), summer savory (Satureja hortensis) and winter savory (Satureja montana).

Food use: Neither Satureja cuneifolia (Satureja cuneifolia) nor Satureja thymbra (Satureja thymbra) are specifically listed as “Generally Recognized as Safe” (GRAS) for use in food products. However, both Satureja hortensis and Satureja montana are classified as spices and other natural


seasonings and flavorings that GRAS for their intended use in food products.¹²³

**Medicinal use:** Neither *Satureia cuneifolia* (*Satureja cuneifolia*) nor *Satureia thymbra* (*Satureja thymbra*) are listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

**Australia**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

**European Community**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) for any use. There is no monograph in the European Pharmacopoeia. There are no licensed or registered herbal medicinal products that contain this species.

**India**

**Food:** There are no quality standards published for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*), neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

**Switzerland**

**Cosmetic, Food, Medicine:** There are no known quality standards or trade specifications for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

**United States of America**

**Food:** There are no standards published specifically for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF). However, there is an FCC monograph for “Savory Oil (Summer Variety),” for use as a flavoring agent. Summer Variety Savory Oil FCC is the volatile oil obtained by steam distillation from the whole dried plant *Satureja hortensis* L.¹²⁴

**Dietary Supplement:** There are no standards published for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) in the Dietary Ingredients Expert Committee. Savory Oil (Summer Variety). In: *Food Chemicals Codex*, Seventh Edition (FCC 7). Rockville, MD: United States Pharmacopeial Convention. 2010;911.


Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for either *Satureia cuneifolia* (*Satureja cuneifolia*) or *Satureia thymbra* (*Satureja thymbra*) in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

**Proposed innovative value-added MAP products using this ingredient**

Neither *Satureia cuneifolia* (*Satureja cuneifolia*) nor *Satureia thymbra* (*Satureja thymbra*) are included in national consultant’s report “Monographs of the 7 targeted species.” Without access to average annual harvest, production, domestic consumption and export trade data, it is difficult to make any suggestions for new products for these species.

If their intended use is closely comparable or near identical to that of other species of *Satureja*, for example as flavor and seasoning condiments like summer savory and winter savory, then the recommendations would likely lean towards the types of food ingredients typical for summer and winter savory, albeit with a special Lebanese geo-authentic branding. If these species are presently being exported under a general common name of savory, without species differentiation, this would need to be clarified in order to promote a distinct point of differentiation from other savory seasoning mixes or products. But it is not known whether a quantity high enough to justify new product development and export promotion is available through sustainable harvesting practices.

Concerning domestic consumption, it is known that these species are sometimes used as components of “Za’atar” mix, either in combination with or in place of *Origanum syriacum*. Thus, an interesting product concept could be a Lebanese brand of the Za’atar mix using *Satureja thymbra* with *Origanum syriacum*, possibly among other local herbs special to Lebanon (e.g. *Thymbra spicata*), with sesame seeds and Mediterranean sea salt. If the condiment mix carried Organic Wild and FairTrade or FairWild logo designations along with a Lebanese geo-authentic branding, this could be very interesting for the natural, organic and ethical trade markets of Europe and North America.
**Thymbra spicata L.**

**Definitions**

*Thymbra spicata* L. (Fam. Lamiaceae)

**Common names:**

- Lebanese vernacular name:

**Assessment of current Lebanese export trade data current main importers**

*Thymbra spicata* was not included in the national consultant’s report “Monographs of the 7 targeted species.” It would be difficult to make any determination concerning who the main importers of this species might be, if any. Some assumptions can be made based on the regulatory status of *Thymbra spicata* in other countries. If a regulatory framework were to exist in any countries for the import and use of either species, the possibility could then exist for Lebanese exports to the identified countries.

This review found that this species does not appear on any national positive lists of any of the selected counties. Almost no evidence was found to demonstrate that *Thymbra spicata* is commercially traded or actively used outside of Lebanon. Thus, before export promotion can be recommended, it would be wise to consider the submission of human safety and quality data to selected national regulatory agencies in an effort to get this species officially listed and recognized as safe for use in cosmetic, dietary supplement or food products. Without its appearance on national positive lists, it will be difficult to find interested buyers and to develop new markets.

**Regulatory framework, market access requirements and requirements for use in selected destination countries**

**Australia**

**Cosmetic use:** No information found.

**Food use:** *Thymbra spicata* is not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.\(^{125}\)

**Medicinal use:** *Thymbra spicata* is not listed as a substance that may be used as an active or excipient ingredient in “Listed” medicines for supply in Australia.\(^{126}\) This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products.

**Canada**

**Cosmetic use:** *Thymbra spicata* is not listed in the Health Canada “Cosmetic Ingredient Hotlist,”\(^{127}\) which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor does *Thymbra spicata* appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.”\(^{128}\) This suggests that while there is no express prohibition against use in cosmetic products, it is possible that *Thymbra spicata* could be classified as new or novel.

**Food use:** *Thymbra spicata* is not listed in the Canada Food and Drugs Regulations

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suggesting that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products.

**Medicinal use:** There are no monographs for *Thymbra spicata* in the Natural Health Products Directorate (NHPD) Compendium of Monographs. Furthermore, no *Thymbra spicata* products are found in the Licensed Natural Health Products Database (LNHPD).

**European Community**

**Cosmetic use:** *Thymbra spicata* is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database.

**Food use:** *Thymbra spicata* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. *Thymbra spicata* is not listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” Absence of this species in the EHIA list means that this plant is not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions.

**Medicinal use:** The European Medicines Agency (EMEA) has no plans to publish a European Community Herbal (therapeutic) Monograph for *Thymbra spicata* nor is there a European Pharmacopoeia (quality) Monograph published by the European Directorate for the Quality of Medicines (EDQM). Such monographs would only be prioritized for development in the event that marketing authorization was granted by one or more of the EC Member States.

**India**

**Medicinal use:** *Thymbra spicata* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT).

The absence of *Thymbra spicata* in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India.

**South Africa**

**Medicinal use:** *Thymbra spicata* is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa.

**Switzerland**


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131 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: [http://ec.europa.eu/enterprise/cosmetics/cosing](http://ec.europa.eu/enterprise/cosmetics/cosing)


**Cosmetic use:** No information found.

**Dietary supplement use:** *Thymbra spicata* is not included on the list of substances that may be used in dietary or food supplement products in Switzerland.

**Food use:** *Thymbra spicata* is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products.

**Medicinal use:** *Thymbra spicata* is not included on the “Stoffliste” (List of Substances used in medicinal products) in Switzerland. This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species.

**United States of America**

**Cosmetic use:** *Thymbra spicata* is not known to be used in cosmetic products in the U.S.

**Dietary supplement use:** *Thymbra spicata* is not listed in the *Herbs of Commerce, 2nd edition*, which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA.

**Food use:** *Thymbra spicata* is not listed as “Generally Recognized as Safe” (GRAS) for use in food products.

**Medicinal use:** *Thymbra spicata* is not listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

**Australia**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Thymbra spicata* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia.

**European Community**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Thymbra spicata* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species.

**India**

**Food:** There are no quality standards published for *Thymbra spicata*, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for *Thymbra spicata* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

**Switzerland**

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Cosmetic, Food, Medicine: There are no known quality standards or trade specifications for *Thymbra spicata* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species.

**United States of America**

Food: There are no standards published specifically for the species *Thymbra spicata* in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF).

Dietary Supplement: There are no standards published for *Thymbra spicata* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

Medicine: There are no standards published for *Thymbra spicata* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

Proposed innovative value-added MAP products using this ingredient

*Thymbra spicata* was not included in national consultant’s report “Monographs of the 7 targeted species.” Without access to average annual harvest, production, domestic consumption and export trade data, it is difficult to make any suggestions for new products for this species.

If their intended use is closely comparable or near identical to that of other “za’atar” type seasoning components, then the recommendations would likely lean towards similar types of food ingredients typical, albeit with a special Lebanese geo-authentic branding. But it is not known whether a quantity high enough to justify new product development and export promotion is available through sustainable harvesting practices.

Concerning domestic consumption, it is known that this species is sometimes used as component of “Za’atar” mix, either in combination with or in place of *Origanum syriacum*. Thus, an interesting product concept could be a Lebanese brand of the Za’atar mix using *Thymbra spicata* with *Origanum syriacum*, possibly among other local herbs special to Lebanon (e.g. *Satureja thymbra*), with sesame seeds and Mediterranean sea salt. If the condiment mix carried Organic Wild and FairTrade or FairWild logo designations along with a Lebanese geo-authentic branding, this could be very interesting for the natural, organic and ethical trade markets of Europe and North America.
Thymus sps including (Thymus hirsutus Bieb. & Thymus syriacus Boiss.)

Definitions

Botanical name: *Thymus hirsutus* Bieb. (Lamiaceae)

- English name: Thyme
- Botanical name: *Thymus syriacus* Boiss. (Lamiaceae)

Assessment of current Lebanese export trade data current main importers

No species of the genus *Thymus* were included in the national consultant’s report “Monographs of the 7 targeted species.” Based on the Export trade data that was provided for this report from Lebanese Customs, Lebanon applies the 8-digit Harmonized System Tariff Code (HS Code) 09109910 for tracking its exports of thyme herb. However, it is not clear which species of *Thymus* are exported by Lebanon under this HS Code. In 2009, Lebanon exported 37,525 kg of thyme. The main importers were United Arab Emirates (20 tons), Paraguay (4 tons), Qatar (3 tons), and France (2 tons). It should be noted however that the United Nations Commodity Trade Statistics Database (COMTRADE) utilizes a 6-digit HS Code 091040 for tracking of thyme herb exports, but COMTRADE lumps thyme together with bay leaf under the same code. The most recent COMTRADE data is listed for 2006. The COMTRADE 2006 total for Lebanese exports of thyme (and bay) under HS 091040 is 37,297 kg whilst the 2006 total from Lebanese Customs under HS 09109910 is 45,161 kg. The main destinations according to COMTRADE, in 2006, were UAE, USA, Canada and Bahrain. Table 1 shows COMTRADE data for Lebanese exports of Thyme & Bay 2002 through 2006. Table 2 shows Lebanese Customs export trade data for Thyme 2007 through 2009.

<table>
<thead>
<tr>
<th>Period</th>
<th>Trade Flow</th>
<th>Commodity</th>
<th>Trade Value (USD)</th>
<th>Net Weight (kg)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Export</td>
<td>Thyme; bay leaves [HS as reported code 091040]</td>
<td>$126,437</td>
<td>155,717</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2003</td>
<td>Export</td>
<td>Thyme; bay leaves [HS as reported code 091040]</td>
<td>$59,354</td>
<td>42,788</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2004</td>
<td>Export</td>
<td>Thyme; bay leaves [HS as reported code 091040]</td>
<td>$54,000</td>
<td>49,765</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2005</td>
<td>Export</td>
<td>Thyme; bay leaves [HS as reported code 091040]</td>
<td>$86,000</td>
<td>69,278</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2006</td>
<td>Export</td>
<td>Thyme; bay leaves [HS as reported code 091040]</td>
<td>$71,927</td>
<td>37,297</td>
<td>Weight in kilograms</td>
</tr>
</tbody>
</table>

SOURCE: UN Comtrade Database
Table 2: Lebanese Exports of Thyme 2007-2009 (Lebanese Customs)

<table>
<thead>
<tr>
<th>Period</th>
<th>Trade Flow</th>
<th>Commodity</th>
<th>Trade Value (USD)</th>
<th>Net Weight (kg)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>Export</td>
<td>Thyme: [HS as reported code 09109910]</td>
<td>$126,557</td>
<td>45,116</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2008</td>
<td>Export</td>
<td>Thyme: [HS as reported code 09109910]</td>
<td>$114,200</td>
<td>49,246</td>
<td>Weight in kilograms</td>
</tr>
<tr>
<td>2009</td>
<td>Export</td>
<td>Thyme: [HS as reported code 09109910]</td>
<td>$101,494</td>
<td>37,488</td>
<td>Weight in kilograms</td>
</tr>
</tbody>
</table>

SOURCE: Lebanese Customs

Concerning other potential export markets, beyond Lebanon’s current main trade partners, some assumptions can be made based on the regulatory status of *Thymus hirsutus* and/or *Thymus syriacus* in other countries. If a regulatory framework were to exist in any countries for the import and use of these other *Thymus* species the possibility could then exist for additional Lebanese exports to the identified countries. This review found that neither *Thymus hirsutus* nor *Thymus syriacus* appear on any national positive lists of the selected countries. Although it is possible that these species are being imported under a general non-specific listing of “Thyme (Thymus species).

The current average annual exports of thyme by Lebanon are relatively low, ranging between 37 to 69 tons in total. Thyme herb is a widely traded commodity globally and there are many competitors from Mediterranean countries of Africa, Europe and western Asia. Thus if a sustainable scale-up were possible for Lebanon to pursue a larger market share beyond the current main customers, it would be advisable to associate a specific geographical brand and quality to the Lebanese species in order to differentiate them in the market place from ordinary grades of thyme. Since these species of *Thymus* do not appear on any known positive lists, there may be some market access barriers until safety and quality data are submitted for these specific species to the various national authorities. In the event, that certain countries have already been importing these species (must unidentified or mislabeled as other *Thymus* species), then it might be possible to request an amendment to the national positive lists to expand the list of permissible species associated with the common name “Thyme.”

The regulatory framework, market access requirements and requirements for use in selected destination countries

**Australia**

**Cosmetic use:** No information found.

**Food use:** *Thymus* spp. are not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code.

**Medicinal use:** Neither *Thymus hirsutus* nor *Thymus syriacus* are listed as substances that may be used as an active or excipient ingredient in ‘Listed’ medicines for supply in Australia. This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for these species in medicinal products. However, several other species of *Thymus* are listed with certain restrictions, which is informative. Table 3 shows the thyme ingredients that are presently permitted for use as either active

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substances (A) at therapeutic dosage levels or as excipients (E) at sub-therapeutic dosage levels as components of Listed Medicines in Australia.

Table 3: Thyme ingredients allowed for use in Listed Medicines in Australia

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>USE</th>
<th>RESTRICTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thyme herb dry</td>
<td>A, E</td>
<td>Permitted without restriction in preparations containing 50% or less. When the concentration is greater than 50%, the nominal capacity of the container must be 25 mL or less, a RFI must be fitted on the container and the label must include the statement CHILD.</td>
</tr>
<tr>
<td>Thyme oil</td>
<td>A, E</td>
<td>Permitted without restriction in preparations containing 50% or less of thyme oil. When the concentration of thyme oil is more than 50%, the nominal capacity of the container must be 25 mL or less, a RFI must be fitted on the container and the label must include the statement CHILD.</td>
</tr>
<tr>
<td>Thymus capitatus</td>
<td>A, E</td>
<td>As per Thymus capitatus (see above).</td>
</tr>
<tr>
<td>Thymus masticina</td>
<td>A, E</td>
<td>As per Thymus capitatus (see above).</td>
</tr>
<tr>
<td>Thymus serpyllum</td>
<td>A, E</td>
<td>As per Thymus capitatus (see above).</td>
</tr>
<tr>
<td>Thymus vulgaris</td>
<td>A, E</td>
<td>As per Thymus capitatus (see above).</td>
</tr>
<tr>
<td>Thymus zygis</td>
<td>A, E</td>
<td>As per Thymus capitatus (see above).</td>
</tr>
</tbody>
</table>

Canada

Cosmetic use: Thymus species ingredients are not listed in the Health Canada “Cosmetic Ingredient Hotlist” 141 which is a list of substances that are restricted and prohibited for use in cosmetic products in Canada.

While neither Thymus hirsutus nor Thymus syriacus appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001,” other Thyme ingredients are listed which could conceivably include this species. 142 Several other “Thyme” or “T” ingredients are found on the list which suggests that a correlation could be made to this species. For example, the list includes Red Thyme Oil, Polyquaternary Thyme Extract, Thymus Serpyllum Oil, Wild Thyme Oil, Thymian Oil, and Thyme Leaves Extract.

Food use: Neither Thymus hirsutus nor Thymus syriacus are listed in the Canada Food and Drug Regulations (2010), 143 which suggests that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products. Title 7 Section B.07.038. [S] of the regulations defines “Thyme” as the dried leaves and flowering tops of the thyme plant Thymus vulgaris L. or Thymus zygis L.

Medicinal use: There are no monographs for these species of Thymus in the Natural Health Products Directorate (NHPD) Compendium of Monographs. There is one NHPD monograph only for the flowering tops of Thymus vulgaris L. 144 Several products that contain Thymus vulgaris ingredients are found in the Licensed Natural Health Products Database (LNHPD). In any case, if sufficient evidence of safety, efficacy and quality could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization of a Natural Health Product (NHP)


142 Health Canada. Substances in cosmetics and personal care products regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001, Ottawa, Ontario: Health Canada. Available at: http://www.hc-sc.gc.ca/ewh-smt/contaminants/person/impact/list/person-no-cas-eng.php


containing either *Thymus hirsutus* or *Thymus syriacus* as a medicinal ingredient.

**European Community**

**Cosmetic use:** Neither *Thymus hirsutus* nor *Thymus syriacus* are listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database, which suggests that there is no current use in cosmetic products within the European Union. However, many other Thyme ingredients are listed in CosIng Database as described here below:

- Thymus Capitatus Herb Extract is an extract obtained from the herbs of the Spanish Origanum, *Thymus capitatus*, Lamiaceae;
- Thymus Capitatus Herb Oil is an essential oil obtained from the herbs of the Spanish Origanum, *Thymus capitatus*, Lamiaceae;
- Thymus Citriodorus Flower/Leaf Extract is an extract of the flowers and leaves of the *Thymus citriodorus*, Lamiaceae;
- Thymus Mastichina Flower Oil is the volatile oil obtained from the flowers of the thyme, *Thymus mastichina* L., Lamiaceae;
- Thymus Mastichina Herb Extract is an extract obtained from the herbs of the thyme, *Thymus mastichina* L., Lamiaceae;
- Thymus Mastichina Herb Oil is an essential oil obtained from the herbs of the thyme, *Thymus mastichina* L., Lamiaceae;
- Thymus Quinquecostatus Extract is the extract of the whole plant, *Thymus quinquecostatus*, Labiatae;
- Thymus Serpyllum Extract is an extract of the herb of the Wild Thyme, *Thymus serpyllum* L., Lamiaceae;
- Thymus Serpyllum Leaf Extract is the extract of the leaves of the Wild Thyme, *Thymus serpyllum* L., Lamiaceae;
- Thymus Serpyllum Oil is an essential oil obtained from the herbs of the Wild Thyme, *Thymus serpyllum* L., Lamiaceae;
- Thymus Vulgaris Extract is the extract of the whole plant of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Flower/Leaf Extract is an extract of the flowers and leaves of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Flower/Leaf Oil is the volatile oil obtained from the flowers and leaves of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Flower/Leaf/Stem Extract is the extract of the leaves, flowers and stems of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Herb Extract is an extract obtained from the herbs of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- "Thyme oil". Thymus Vulgaris Herb Oil is an essential oil obtained from the herbs of the Thyme, *Thymus vulgaris* L., Lamiaceae. It contains 20-40% thymol and carvacrol, cymene, pinene, linalool, bornyl acetate;
- Thymus Vulgaris Leaf is a plant material derived from the dried, crushed leaves of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Leaf Extract is an extract of the leaves of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Vulgaris Leaf Water Extract is an aqueous solution of the steam distillate obtained from the leaves of the Thyme, *Thymus vulgaris* L., Lamiaceae;
- Thymus Zygis Flower Oil is the volatile oil obtained from the flower tips of the Thyme, *Thymus zygis* L., Lamiaceae; syn. Red thyme oil.

**Food use:** Neither *Thymus hirsutus* nor *Thymus syriacus* are listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. However,
three other species of *Thymus* are listed as follows in Table 4.

Table 4: Thymus species listed in EPSA Compendium of Botanicals of Concern

<table>
<thead>
<tr>
<th>Botanical name</th>
<th>Parts of plants of possible concern</th>
<th>Chemical of concern / toxic effect</th>
<th>Remarks</th>
<th>Specific References</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Thymus vulgaris</em> L.</td>
<td>1M: whole leaves, flowering tops</td>
<td>1H: Herb and leaves essential oil: carvacrol 9%, 60%, eucalyptol 1.15%, camphor 0.3%. (CoE, 2008)</td>
<td>Natural sources of flavourings (Rep No 3), Council of Europe, (2008)</td>
<td></td>
</tr>
<tr>
<td><em>Thymus zygis</em> L.</td>
<td>1H: Herb</td>
<td>1H: Herb essential oil (yield 0.5–1.2%) : carvacrol 25%, eucalyptol</td>
<td>Natural sources of flavourings (Rep No 3), Council of Europe, (2008)</td>
<td></td>
</tr>
</tbody>
</table>

Neither *Thymus hirsutus* nor *Thymus syriacus* are listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” 147 Absence of these species in the EHIA list means that are not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions. Three other species of *Thymus* are listed, *Thymus citriodorus* (herb), *Thymus serpyllum* (herb) and *Thymus vulgaris* (herb).

**Medicinal use:** The European Medicines Agency (EMEA) currently has no plans to develop and publish a European Community Herbal (therapeutic) Monograph on *Thymus hirsutus* and/or *Thymus syriacus*. However, there are EMEA monographs published for *Thymus vulgaris* L. and *Thymus zygis* L., Herba (Thyme Herb) 148 and for *Thymus vulgaris* L. and *Thymus zygis* L., aetheroleum (Thyme

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Additionally there are European Pharmacopoeia (quality standards) Monographs published by the European Directorate for the Quality of Medicines (EDQM) for “Thyme” (whole leaves and flowers separated from the previously dried stems of Thymus vulgaris L. or Thymus zygis L. or a mixture of both species), “Thyme Oil” (essential oil obtained by steam distillation from the fresh flowering aerial parts of Thymus vulgaris L. or Thymus zygis L. or a mixture of both species), and “Wild Thyme” (whole or cut, dried aerial parts of Thymus serpyllum L.s.l.).

For use as active substances of registered herbal medicinal products in the European Community a quality standards monograph and corresponding therapeutic compendial monograph would normally be necessary for pre-marketing authorization.

India

**Medicinal use:** Neither Thymus hirsutus nor Thymus syriacus are listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, they are not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). Only one species of Thymus is found in the FRLHT survey, Thymus serpyllum L., known as Ban Ajwain and/or Satar Farsi, which is wild collected for use in the Ayurvedic and Unani Systems of Medicine. The absence of Thymus hirsutus and Thymus syriacus in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for either as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India. Possibly this species could enter Indian commerce as a non-medicinal spice or seasoning component for use in food products.

South Africa

**Medicinal use:** Neither Thymus hirsutus nor Thymus syriacus are listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa. However, two other species of Thymus are listed. Thymus serpyllum L. and Thymus vulgaris L. are listed in the Anthroposophical Medicine Schedule and Thymus vulgaris L. is also listed in the Aromatherapy Schedule.

Switzerland

**Cosmetic use:** No information found.

**Dietary supplement use:** Neither Thymus hirsutus nor Thymus syriacus are expressly included on the list of substances that may be used in dietary or food supplement products in Switzerland. However, there is a non-species-specific listing for “Thymian” a.k.a. “Thym vral” (Thymus spec.) as well as a separate listing for Thymus satureioideis Coss. et Bal. Thus it would appear that any species of Thymus could conceivably qualify for use in supplement products in Switzerland so long as the ingredient also complied with the limits for content of camphor, carvacrol and eucalyptol.

**Food use:** Neither Thymus hirsutus nor Thymus syriacus are expressly included on the positive list of substances that may be used as flavor, spice or seasoning.


ingredients in food products or in non-medicinal herbal tea products. However, there is a non-species-specific listing for “Thymian” a.k.a. “Thym vrai” (Thymus spec.) but with content (maximum) limits for the levels of eucalyptol, camphor, and carvacrol, that may occur in the food product.

Medicinal use: Neither Thymus hirsutus nor Thymus syriacus are expressly included on the “Stoffliste” (List of Substances used in medicinal products). However, several ‘Thyme’ ingredients are listed including Thymi aetheroleum (essential oil of thyme), Thymi extractum aquosum liquidum (liquid aqueous extract of thyme), Thymi extractum aquosum siccum (dried aqueous extract of thyme), Thymi extractum ethanolicum et glycerolicum (ethanolic and glycolic extract of thyme), Thymi extractum ethanolicum liquidum (liquid ethanolic extract of thyme), Thymi extractum ethanolicum siccum (dried ethanolic extract of thyme), Thymi extractum fluidum normatum (standardized fluidextract of thyme), Thymi extractum liquidum (fluidextract of thyme), Thymi extractum succus (fresh pressed juice of thyme herb), Thymi herbae recentis succus (fresh pressed juice of thyme herb), Thymi pulvis (powdered thyme herb), and Thymi recentis extractum ethanolicum liquidum (liquid ethanolic extract of fresh thyme herb). These various thyme ingredients are classified as approved active substances of complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Depending on the indications for use, retail distribution is limited to either Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff) or Category E (available in both pharmacies and drugstores, without prescription and without consultation with pharmacy staff).

One of the listed Thyme ingredients, Thymi Extractum Siccum (dried thyme extract), is classified, however, as Category C, which means that it is available without prescription but only after consultation with a doctor or pharmacist. For test and release of active ingredients of licensed or registered medicines, the pharmacopoeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv).

United States of America

Cosmetic use: Neither Thymus hirsutus nor Thymus syriacus are known to be used in cosmetic products in the U.S.

Dietary supplement use: Neither Thymus hirsutus nor Thymus syriacus are listed in the Herbs of Commerce, 2nd edition, which indicates that neither species appeared in U.S. commerce prior to 1994 and therefore would require pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Six other species of Thymus are listed in the Herbs of Commerce; lemon thyme (Thymus × citriodorus (Pers.) Schreb. ex Schweigg. & Körte), wild thyme (Thymus praecox Opiz), lemon thyme (Thymus pulegioides L.), wild thyme (Thymus serpyllum L.), thyme (Thymus vulgaris L.), and Spanish thyme (Thymus zygis L.).

Food use: Neither Thymus hirsutus nor Thymus syriacus are listed as generally recognized as safe (GRAS) for use in food products. However, other species of Thymus are listed. “Spanish Origanum” (Thymus capitatus Hoffm. et Link.) is listed as a natural flavoring substance that may be used in food products in appropriate forms (plant parts, fluid and solid extracts, concentrates, absolutes, oils, oleoresins, and distillates). Thyme (Thymus vulgaris)


and wild thyme (Thymus serpyllum) are listed as spices or other natural seasonings and flavorings that are GRAS for an intended use in food products.\textsuperscript{157} Additionally, essential oils, oleoresins (solvent-free), and natural extractives (including distillates) of Thyme (Thymus vulgaris L. and Thymus zygis L. var. gracilis Boiss.) and wild thyme (Thymus serpyllum L.) are classified as GRAS for their intended use as food ingredients.\textsuperscript{158}

Medicinal use: No ingredients made from any Thymus species are listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

\textbf{Australia}

\textbf{Cosmetic, Food or Medicine:} There are no known quality standards or trade specifications for either Thymus hirsutus or Thymus syriacus for any use.

\textbf{European Community}

\textbf{Cosmetic, Food or Medicine:} There are no known quality standards or trade specifications for either Thymus hirsutus or Thymus syriacus for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain these species. There are monographs and registered medicines that contain other Thymus species.

\section*{India}

\textbf{Food:} There are no quality standards published for either Thymus hirsutus or Thymus syriacus, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

\textbf{Medicine:} There are no quality standards monographs or therapeutic compendial monographs published for either Thymus hirsutus or Thymus syriacus in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

\textbf{Switzerland}

\textbf{Cosmetic, Food, Medicine:} There are no known quality standards or trade specifications for either Thymus hirsutus or Thymus syriacus for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain either of these species. There are licensed products in Switzerland that contain ingredients made from other species of Thymus.

\textbf{United States of America}

\textbf{Food:} There are no standards published for either Thymus hirsutus or Thymus syriacus in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopoeia (USP-NF). The FCC does contain monographs for four other Thymus species ingredients:


\textsuperscript{158} United States Food and Drug Administration. Essential oils, oleoresins (solvent-free), and natural extractives (including distillates). In: Code of Federal Regulations, Title 21, Part 182, Section §182.20. Washington, DC: National Archives and Records Administration. 01 April 2009. Available at: \url{http://edocket.access.gpo.gov/cfr_2009/aprtr/pdf/21cfr182.20.pdf}
- Oleoresin Thyme FCC: Obtained by the solvent extraction of the dried flowering plant *Thymus vulgaris* L. or *Thymus zygis* L. and its var. *gracilis* Boissier (Fam. Labiatae).
- Spanish Type Marjoram Oil FCC: Essential oil obtained by steam distillation from the flowering plant *Thymus mastichina* L. (Fam. Labiatae).
- Spanish Type Origanum Oil FCC: Essential oil obtained by steam distillation from the flowering herb *Thymus capitatus* Hoffm. et Link and various species of *Origanum* (Fam. Labiatae).
- Thyme Oil FCC: Essential oil obtained by distillation from the flowering plant *Thymus vulgaris* L., or *Thymus zygis* L., and its var. *gracilis* Boissier (Fam. Labiatae).

**Dietary Supplement:** There are no standards published for any species of *Thymus* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for any species of *Thymus* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” did not include any *Thymus* species. Assuming that these species could be added to various positive lists beyond the current known importers, proposed innovative value-added products could include:

- Cut dried aerial parts as a component of tisanes or herbal tea products;
- Cut or whole dried aerial parts as a component of Lebanese seasonings or spice mixes;
- Essential oil for use as a component of aromatherapy, bath, cosmetic or food products;
- Oleoresin for use as a component of food products;
- Steam distillate water for use as a component of cosmetic products;
- Extract of the aerial parts as a component of cosmetic or medicinal products.

If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products for international export promotion with a Lebanese quality and country of origin designation.
Violaceae)  

Definitions  

Viola libanotica Boiss. (Fam. Violaceae)

- **English name:** Lebanon violet  
- **French name:** Violette du liban  
- **German name:** Lebanische Veilchen  
- **Lebanese vernacular names:** Banafsaj lubnānī, Banafsaj بنفسج لبناني  

Viola odorata L.

- **English name:** Sweet violet  
- **German name:** Märzveilchen

Assessment of current Lebanese export trade data current main importers

According to the national consultant’s report “Monographs of the 7 targeted species,” there are neither imports nor exports of Viola libanotica. However, there is mention of Lebanese imports of dried flowers of Viola odorata from Iran. There does not appear to be much trade for Viola libanotica although there is trade of mixed species of Viola, usually Viola odorata imported from Iran admixed with Viola libanotica. The size of the Lebanese market for Viola spp. dried flowers is estimated at 30 tons valued at USD $95,000. Since this species is not presently known to be exported, it would be difficult to make any determination concerning who the main importers of this species might be, if any. Some assumptions can be made based on the regulatory status of Viola libanotica in other countries. If a regulatory framework were to exist in any countries for the import and use of Viola libanotica, the possibility could then exist for Lebanese exports to the identified countries.

This review found that Viola libanotica does not appear on any national positive lists of any of the selected countries, although some lists allow other species of Viola. Almost no evidence was found to demonstrate that any ingredients made from Viola libanotica are commercially traded or actively used outside of its limited range of Lebanon.

Regulatory framework, market access requirements and requirements for use in selected destination countries

Australia

**Cosmetic use:** No information found.

**Food use:** Viola spp. are not listed in Standard 1.4.4 “Prohibited and Restricted Plants and Fungi” of the Australia New Zealand Food Standards Code. This suggests that it could require a petition to amend and expand the list of substances used in listed medicines in order to achieve marketing authorization for this species in medicinal products. However, three other species of Viola are listed for use in therapeutic products in Australia. They are sweet violet (Viola odorata), European wild pansy (Viola tricolor), and Tokyo violet (Viola yedoensis), two of which are reported to occur in Lebanon. Therefore, it would appear that Australia could be a destination market for at least these two Viola species (odorata and tricolor).

Canada

**Cosmetic use:** Viola species ingredients are not listed in the Health Canada “Cosmetic Ingredient Hotlist” which is a

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list of substances that are restricted and prohibited for use in cosmetic products in Canada. Nor do any Viola species appear on the list of “Substances in Cosmetics and Personal Care Products Regulated under the Food and Drugs Act (F&DA) that were in commerce between January 1, 1987, and September 13, 2001.” This suggests that while there is no express prohibition against use in cosmetic products, it is possible that Viola libanotica could be classified as new or novel.

**Food use:** Viola spp. are not listed in the Canada Food and Drugs Regulations (2010), suggesting that there is no current use in Canada for purposes of adding aromas, colors, flavors, seasonings or spices to food products.

**Medicinal use:** There are no monographs for any Viola species ingredients in the Natural Health Products Directorate (NHPD) Compendium of Monographs. However, several products containing Viola species ingredients are found in the Licensed Natural Health Products Database (LNHPD). Using the search field “Ingredient Name” and the criteria “Viola” there were 39 results found in the LNHPD. The Viola-containing medicinal products with marketing authorization in Canada contain mainly extracts of Viola odorata or Viola tricolor. Some licensed products however contain homoeopathic dilutions of mother tinctures from either of these species. Three of the 39 licensed products contain Tokyo violet herb (Viola yedoensis). As examples of approved uses in Canada for some species of Viola, one licensed product, containing a hydroalcoholic tincture of Viola odorata aerial parts [Naturtech Labs, Inc - Viola Odorata; Natural Product Number: 80007080], carries the approved label statement “Used in Traditional Western Herbalism as an expectorant to aid the treatment of coughs, colds and bronchitis.” Another licensed product, containing a hydroalcoholic tincture of Viola tricolor aerial parts [Gaia Garden Herbals Heartsease Tincture; Natural Product Number: 80015490], carries the approved label statement “Traditionally used in Western Herbalism as an alternative for the symptomatic relief of chronic skin conditions such as eczema.” If sufficient evidence of safety and efficacy could be compiled to meet the requirements, there would appear to be no restriction against a company submitting a product license application for the marketing authorization of a Natural Health Product (NHP) containing any of the Viola species as a medicinal ingredient.

**European Community**

**Cosmetic use:** Viola libanotica is not listed in the European Commission Cosmetic Ingredients and Substances (CosIng) database. However, cosmetic ingredients made from other species of Viola are listed in CosIng including:

- Hydrolyzed Viola Tricolor Extract is the hydrolysate of an extract of the Pansy, Viola tricolor L., Violaceae, derived by acid, enzyme or other method of hydrolysis;
- Viola Mandshurica Flower Extract is the extract obtained from the flowers of the plant Manchuria Violet, Viola mandshurica, Violaceae;
- Viola Odorata Flower Extract is an extract of the flowers of the Sweet Violet, Viola odorata L., Violaceae;
- Viola Odorata Flower Water is the steam distillate obtained from the flowers of the Sweet Violet, Viola odorata L., Violaceae;
- Viola Odorata Flower/Leaf Extract is an extract of the flowers and leaves of the Sweet Violet, Viola odorata L., Violaceae;

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165 European Commission. Cosmetic Ingredients and Substances (CosIng) Database. Available at: [http://ec.europa.eu/enterprise/cosmetics/cosing](http://ec.europa.eu/enterprise/cosmetics/cosing)
- Viola Odorata Leaf Cera is the wax obtained from the leaves of Sweet Violet, *Viola odorata* L., Violaceae;
- Viola Odorata Leaf Extract is an extract of the leaves of the Sweet Violet, *Viola odorata* L., Violaceae;
- Viola Odorata Oil is the volatile oil obtained from the flowers of the sweet violet, *Viola odorata*, Violaceae;
- Viola Prionantha Powder is the powder obtained from the dried, ground Grass, *Viola prionantha*, Violaceae;
- Viola Tricolor Extract is an extract of the herb and flowers of the Pansy, *Viola tricolor* L., Violaceae;
- Viola Tricolor Flower Juice is the juice expressed from the flowers of the Pansy, *Viola tricolor* L., Violaceae.
- Viola Tricolor Flower/Leaf/Stem Water is an aqueous solution of the steam distillate obtained from the flowers, leaves and stems of the Pansy, *Viola tricolor* L., Violaceae;
- Viola Yedoensis Extract is an extract of the plant, *Viola yedoensis*, Violaceae.

The CosIng listings of cosmetic ingredients made from these five other species of *Viola* suggests that, in principle, with sufficient evidence of safety, the additional listing of ingredients made from *Viola libanotica* should be possible. But, in any case, some of listed ingredients for use in European cosmetic products are obtained from species that also occur in Lebanon, *Viola odorata* and *Viola tricolor*.

**Food use:** *Viola libanotica* is not listed in the European Food Safety Authority (EFSA) Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. 

*Viola libanotica* is not listed in the European Herbal Infusions Association (EHIA) “Inventory List of Herbals Considered as Food.” Absence of this species in the EHIA list means that this plant is not currently employed by the herbal infusions trade in a European member state as food plant for making tea infusions. Two other species of *Viola* are listed, *Viola odorata* (flowers) and *Viola tricolor* (aerial parts).

**Medicinal use:** The European Medicines Agency (EMEA) plans to publish a Draft European Community Herbal (therapeutic) Monograph on “*Viola tricolor* L., herba cum flore” (EMA/HMPC/131734/2009) for public comment until 15 July 2010. There is already a corresponding European Pharmacopoeia (quality standards) Monograph for “Wild Pansy Flowering Aerial Parts” (*Viola arvensis* Murray and/or *Viola tricolor* L.) published by the European Directorate for the Quality of Medicines (EDQM).

**India**

**Medicinal use:** *Viola libanotica* is not listed in any of the pharmacopoeias of Indian Systems of Medicine (e.g. Ayurvedic Pharmacopoeia of India, Siddha Pharmacopoeia of India and/or Unani Pharmacopoeia of India). Additionally, it is not found in the comprehensive checklist of 1,289 botanicals, pertaining to 960 plant taxa, that were identified in the recent “Demand and Supply of Medicinal Plants in India 2008,” which was initiated by the National Medicinal Plants Board (NMPB), Ministry of Health & Family Welfare, Department of AYUSH, and was carried out by Drs. D.K. Ved and G.S. Goraya, of the Foundation for Revitalisation of Local Health Traditions (FRLHT). However, four

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other species of Viola are found in the FRLHT survey, flower of Viola canescens Wall., known as “Banafasha,” which is used only in folk medicine, flower, leaf and/or whole plant of Viola cinerea Boiss., known as “Banafasha phood,” which is used in the Ayurvedic system of medicine, flower of Viola odorata L., also known as “Banafasha,” which is used in Ayurvedic and Unani Systems of Medicine, as well as in the Homeopathic System of Medicine. Additionally, the flower of Viola pilosa B., also known as “Banafasha,” is listed in the survey, reportedly used in both the Ayurvedic System of Medicine as well as in folk medicine.

The absence of Viola libanotica in the checklists and/or pharmacopoeias of the Indian Systems of Medicine suggests that it could be difficult to gain marketing authorization for it as a component of an Ayurvedic, Siddha or Unani (ASU) herbal medicinal product in India. However, another Viola species which occurs in Lebanon, Viola odorata has some market demand and medical use in India. It is both cultivated and wild harvested in India.

**South Africa**

**Medicinal use:** Viola libanotica is not listed in any of the Schedules on Complementary and Alternative Medicines for therapeutic use in South Africa. However, Viola odorata is listed in both the “Aromatherapy Schedule” and the “Ayurveda & Unani Tibb Schedule.” For use in Ayurveda or Unani Medicines in South Africa, the maximum daily dosage is set as 12 g.

**Switzerland**

**Medicinal use:** Viola libanotica is not included on the “Stoffliste” (List of Substances used in medicinal products). This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species. However, several ingredients made from Viola tricolor are listed including “Viola tricoloris herba” (aerial parts of Viola tricolor), “Viola tricoloris herbea extractum ethanolicum liquidum” (ethanolic liquid extract of dried aerial parts of Viola tricolor), “Viola tricoloris herbae pulvis” (powdered aerial parts of Viola tricolor), and “Violae tricoloris herbea recentis extractum ethanolicum liquidum” (ethanolic liquid extract of fresh aerial parts of Viola tricolor). These listed ingredients are classified as approved active substances of complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff). For test and release of active ingredients of licensed medicines, the pharmacopeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv). Additionally, both Viola odorata and Viola tricolor are included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances) for oral and/or dietary supplement use.

**Cosmetic use:** No information found.

**Dietary supplement use:** Viola libanotica is not included on the list of substances that may be used in dietary or food supplement products in Switzerland. However, Viola tricolor is listed.

**Food use:** Viola libanotica is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products. However, Viola odorata is listed.

**Medicinal use:** Viola libanotica is not included on the “Stoffliste” (List of Substances used in medicinal products). This would suggest that marketing authorization as a medicinal substance in Switzerland would not be possible unless the List of Substances were amended to include this species. However, several ingredients made from Viola tricolor are listed including “Viola tricoloris herba” (aerial parts of Viola tricolor), “Viola tricoloris herbea extractum ethanolicum liquidum” (ethanolic liquid extract of dried aerial parts of Viola tricolor), “Viola tricoloris herbae pulvis” (powdered aerial parts of Viola tricolor), and “Violae tricoloris herbea recentis extractum ethanolicum liquidum” (ethanolic liquid extract of fresh aerial parts of Viola tricolor). These listed ingredients are classified as approved active substances of complementary and phytomedicine products (KPA) requiring pre-marketing authorization and product licensing through Swissmedic. Retail distribution is limited to Category D (available in both pharmacies and drugstores; without prescription but only after consultation with pharmacy staff). For test and release of active ingredients of licensed medicines, the pharmacopeial standards in force for Switzerland are both the European Pharmacopoeia (PhEur) and the Swiss Pharmacopoeia (PhHelv). Additionally, both Viola odorata and Viola tricolor are included in the Swissmedic “Liste HAS” (List of Homoeopathic and Anthroposophic Substances) for oral and/or dietary supplement use.

**Cosmetic use:** No information found.

**Dietary supplement use:** Viola libanotica is not included on the list of substances that may be used in dietary or food supplement products in Switzerland. However, Viola tricolor is listed.

**Food use:** Viola libanotica is not included on the positive list of substances that may be used as flavor, spice or seasoning ingredients in food products or in non-medicinal herbal tea products. However, Viola odorata is listed.


parenteral use at various specified homoeopathic dilutions.\textsuperscript{174}

**United States of America**

**Cosmetic use:** Viola libanotica is not known to be used in cosmetic products in the U.S.

**Dietary supplement use:** Viola libanotica is not listed in the *Herbs of Commerce, 2nd* edition,\textsuperscript{175} which indicates that it did not appear in U.S. commerce prior to 1994 and therefore would likely require the pre-marketing submission of a New Dietary Ingredient (NDI) notification to the FDA. Five other species of *Viola* are listed in the *Herbs of Commerce.* They are marsh blue violet (*Viola cuculiata* Aiton), sweet violet (*Viola odorata* L.), violet (*Viola sororia* Willd.), heartsease, a.k.a. European wild pansy (*Viola tricolor* L.), and Tokyo violet (*Viola yedoensis* Makino).

**Food use:** Viola libanotica is not listed as “Generally Recognized as Safe” (GRAS) for use in food products. However, essential oils, oleoresins (solvent-free), and natural extracts (including distillates) and absolute of flowers and leaves of *Viola odorata* L. are classified as GRAS for their intended use as food ingredients.\textsuperscript{176} Additionally, natural ingredients made from “Pansy” (*Viola tricolor* L.) and/or “Swiss violet” (*Viola calcarata* L.) are classified as natural flavoring substances and natural adjuvants that may be safely used in alcoholic beverages only.\textsuperscript{177} Thus, it would appear to be permitted for U.S. buyers to import *Origanum syriacum* and to use the dried herb or essential oil as a food flavoring ingredient.

**Medicinal use:** No ingredients made from any *Viola* species are listed as a “Generally Recognized as Safe and Effective” (GRASE) active ingredient for use in over-the-counter (OTC) or prescription drug products for human use. Its use in medicinal products would require a New Drug Application (NDA) process with FDA approval.

Information on existing quality standards, compendial standards or trade specifications of relevance to this species in selected destination countries

**Australia**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Viola libanotica* for any use. There are no listed herbal medicinal products that contain this plant for sale in Australia. There are listed medicines containing other species of *Viola.*

**European Community**

**Cosmetic, Food or Medicine:** There are no known quality standards or trade specifications for *Viola libanotica* for any use. There is no monograph in the European Pharmacopoeia. There are no known licensed or registered herbal medicinal products in the European Community that contain this species. There are monographs for, and registered medicines that contain, other *Viola* species, particularly European wild pansy flowering aerial parts (*Viola arvensis* Murray and/or *Viola tricolor* L.).
India

**Food:** There are no quality standards published for *Viola libanotica*, neither in the Bureau of Indian Standards (BIS) quality standards for spices, concentrates and oleoresins, in the 1995 Prevention of Food Adulteration (PRA) Act and Rules standards for spices, nor in the Agricultural Product Grading and Marking (AGMARK) Standards.

**Medicine:** There are no quality standards monographs or therapeutic compendial monographs published for *Viola libanotica* in any of India’s national pharmacopoeias covering botanical substances used in the Indian Systems of Medicine (Ayurveda, Siddha, and Unani).

Switzerland

**Cosmetic, Food, Medicine:** There are no known quality standards or trade specifications for *Viola libanotica* for any use. There is no monograph in the Swiss Pharmacopoeia (PhHelv). There are no licensed or registered herbal medicinal products that contain this species. There are licensed products in Switzerland that contain ingredients made from other species of *Viola*.

United States of America

**Food:** There are no standards published for any species of *Viola* in the Code of Federal Regulations (CFR), the Food Chemicals Codex (FCC) nor in the National Formulary monographs of the United States Pharmacopeia (USP-NF).

**Dietary Supplement:** There are no standards published for any species of *Viola* in the Dietary Supplements monographs of the United States Pharmacopeia (USP-DS).

**Medicine:** There are no standards published for any species of *Viola* in the Code of Federal Regulations (CFR) nor in the monographs of the United States Pharmacopeia (USP).

Proposed innovative value-added MAP products using this ingredient

The national consultant’s report “Monographs of the 7 targeted species” stated that *Viola libanotica* does not appear to offer significant value-adding opportunities and that other *Viola* species would be more marketable. Proposed innovative value-added products for the flowers of *Viola odorata* could be as a component of tisanes or herbal teas. Other valued-added products for *Viola odorata* would be the essential oil as well as steam distillate water. Finally, the development of geographic origin and trademarks for Lebanese quality and country of origin designation for all *Viola* species products.

The current estimated annual demand of 30 tons for dried flowers or aerial parts of *Viola* species is considerable. If the expert resource assessment should determine that significantly higher amounts of this species could be harvested annually under a controlled sustainable resource management plan, then it could make sense to consider the development of innovative value-added products for export promotion with a Lebanon geographical brand. If the other *Viola* species already recognized in the target export markets (e.g. sweet violet and wild pansy) can be clearly differentiated, there may be better chances for these, particularly with buyers in the European Community. It may be necessary to demonstrate and document comparable safety and efficacy of *Viola libanotica* to *Viola odorata* and/or *Viola tricolor* before it would gain acceptance in Europe as a component of herbal medicinal products.
INFORMATION ON PROCESS REQUIRED TO GAIN MARKET ACCESS IN DESTINATION COUNTRIES WHERE THE SPECIES IS NOT PRESENTLY LISTED OR PERMITTED FOR USE

Many countries publish their own negative and positive lists of substances for use in various classes of goods (cosmetics, dietary supplements, foods, medicines). There is however no comprehensive global listing or database and therefore one must check each individual list for each targeted export market. The following are a few examples of negative and positive lists from selected countries of relevance to exporters of natural medicinal ingredients and products.

**Australia:** The Therapeutic Goods Administration (TGA) maintains a list of “Substances that may be used in Listed Medicines in Australia,” which is available on-line at: [http://www.tga.gov.au/cm/listsubs.pdf](http://www.tga.gov.au/cm/listsubs.pdf). These substances are eligible for use in medicines that may be listed on the Australian Register of Therapeutic Goods for supply in Australia. The list includes the approved role of the substance (i.e. active, excipient, and/or component), and any restrictions and conditions that apply to the substance when used in Listed Medicines. Some substances are permitted as food excipients only. These substances (e.g. apple, pear) refer only to edible substances fit for human consumption as a food. Only certain preparations are permitted for most food excipients: fresh dry or powdered plant material and fresh, dried or concentrated juices. Juice preparations may only be named where the fresh plant part has a high water content.

Further details are provided in the “Herbal Substances Australian Approved Names (AAN) List” in the TGA Approved Terminology for Medicines, which is available on-line at: [http://www.tga.gov.au/docs/pdf/aan/aanherb3.pdf](http://www.tga.gov.au/docs/pdf/aan/aanherb3.pdf). The list does not include substances that may be used as homoeopathic preparations. The Office of Complementary Medicines is currently conducting a review of homoeopathic substance permitted in listed medicines. The Australian TGA also maintains a list of proprietary ingredients which have been used in Listed Medicines but which are not usable in ELF3 (Electronic Listing Facility) until further information regarding proprietary ingredient purpose, restricted ingredients and quantities of restricted ingredients have been supplied to the TGA; available on-line at: [http://www.tga.gov.au/cm/elf3pring.pdf](http://www.tga.gov.au/cm/elf3pring.pdf).

**Canada:** The Health Canada Natural Health Products Directorate (NHPD) maintains several lists of natural ingredients that may occur in natural health products (NHPs) either as medicinal ingredients or as non-medicinal ingredients. These lists are available on-line.

- **List of single ingredient and product monographs for natural health products (NHPs).** These monographs may be used to help speed up the evaluation of the safety and efficacy of medicinal ingredients commonly used in NHPs sold in Canada. They can also serve as reliable sources of product information for consumers.

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180 Therapeutic Goods Administration. *Proprietary ingredients which have been used in Listed Medicines but which are not usable in ELF3 until further information is provided.* Woden: Australian Government, Department of Health and Ageing, Therapeutic Goods Administration. 15 July 2004. Available at: [http://www.tga.gov.au/cm/elf3pring.pdf](http://www.tga.gov.au/cm/elf3pring.pdf)
The Natural Health Products Ingredients Database (NHPID) provides information on acceptable medicinal and non-medicinal ingredients used in NHPs in Canada in order to assist applicants with the submission of their product license applications. The NHPID is available on-line at: http://www.hc-sc.gc.ca/dhp-mps/prodnatur/applications/licen-prod/monograph/index-eng.php and contains the following information:

1. Medicinal ingredients;
2. Non-medicinal ingredients;
3. Non-Natural Health Product (NHP) ingredients (not allowed as medicinal ingredients in natural health products or under specific restrictions);
4. Selected single-ingredient NHPD monographs;
5. Ingredient details relevant to their type (for example, Chemical Abstracts Service (CAS) numbers for chemical substances, organism parts and preparations for organism substances, etc.);
6. Medicinal, non-medicinal, and non-NHP ingredient restriction details; and
7. Controlled vocabularies that represent a standard for the electronic transmission of core sets of natural health product information (e.g. lists for dosage forms, route of administrations, ingredient categories, organism parts, organism preparations, non-medicinal purposes, etc.)

For any non-medicinal ingredient not contained in the NHPID or used outside of the stated limitations, the Natural Health Products Directorate (NHPD) may require a safety assessment. If there is a particular safety concern with a non-medicinal ingredient, the NHPD may request additional information. The applicant should provide information supporting its non-medicinal use for all proposed non-medicinal ingredients when submitting an application for a product license.

- **Food ingredients and food additive ingredients** are listed in the Canada Food and Drug Regulations. at: http://laws.justice.gc.ca/PDF/Regulation/C/C.R.C., c. 870.pdf

**European Union:** The European Medicines Agency (EMEA) is developing Community Herbal Monographs and a Community List of Herbal Substances for the registration, marketing authorization and labeling of Traditional Herbal Medicinal Products (THMPs) and Well Established Use Herbal Medicinal Products (WEU-HMP). These lists and monographs are available on-line.

- **Community Herbal Monographs.** These monographs provide a harmonized approach to the scientific assessment of herbal medicinal products in the EU, and the Member States shall take them into account when they examine an application relating to a product for which a Community monograph has been established. Available at: http://www.emea.europa.eu/htms/human/hmpc/hmpcmonographsdraft.htm

- **Community List of Herbal Substances, preparations and combinations thereof for use in traditional herbal medicinal products (THMPs).** This list is established by the Committee on Herbal Medicinal Products (HMPC), in accordance with Directive 2001/83/EC. The list is being developed through entries of structured information relating to individual herbal substances or preparations. Available at: http://www.ema.europa.eu/htms/human/hmpc/hmpcmonographs.htm

The principle underlying the development of the positive list is to remove the need for many companies each to have to produce similar evidence of traditional use...
and safety where this has already been clearly accepted. There will be an agreed list of herbal substances accompanied by the therapeutic indication, specified strength, route of administration and any relevant safety information. An applicant seeking to register a product containing a substance on the list in the form and for the indications as specified on the list could then refer to this list rather than have to demonstrate traditional use and safety. The applicant would still need to demonstrate quality.181

- **Inventory of Herbal Substances for Assessment.**182 This list shows the status (as of March 2010) of all herbal substances that have been prioritized for the development of a Community Herbal (therapeutic) Monograph. Available at: [http://www.ema.europa.eu/pdfs/human/hmpc/49407907en.pdf](http://www.ema.europa.eu/pdfs/human/hmpc/49407907en.pdf)

**United States of America:** Whether a natural botanical ingredient may be present in a product is dependent on the regulatory framework for the finished product, i.e. cosmetic, dietary supplement, drug or food product. Some information is available on-line to help determine the status and framework for natural ingredients:

- **Cosmetic ingredients:** For natural ingredients used in cosmetic products, the FDA provides guidance on basic requirements for color additives and cosmetics at: [http://www.cfsan.fda.gov/~dms/cos-col.html](http://www.cfsan.fda.gov/~dms/cos-col.html). The list of ingredients that are prohibited and restricted for use in cosmetics is available at: [http://www.cfsan.fda.gov/~dms/cos-210.html](http://www.cfsan.fda.gov/~dms/cos-210.html).

- **Dietary Supplement ingredients:** For a natural ingredient to be permitted for use in a dietary supplement product there must be documentary evidence that such species was marketed in the United States prior to 15 October 1994. It is also the responsibility of finished product manufacturers and distributors to ensure that the particular natural ingredients that they use as components of dietary supplement products are safe for human consumption, do not contain contaminants, are properly identified on the label, are legally marketed, and conform to all governing regulations. Although the FDA does not endorse the American Herbal Products Associations’ (AHPA) publication "Herbs of Commerce," 2nd Edition (2000),183 for the purpose of determining whether a botanical was in U.S. commerce prior to 1994, the *Herbs of Commerce* does provide a very good indication that the ingredient was likely in commerce prior to 1994. If a natural ingredient was not marketed in the USA prior to 1994, it is classified as New Dietary Ingredient (NDI) and is subject to the 1997 regulation “Premarket Notification for a New Dietary Ingredient”:
  - Additional information on the NDI process is available on-line at: [http://www.fda.gov/Food/DietarySupplements/ucm109764.htm](http://www.fda.gov/Food/DietarySupplements/ucm109764.htm)
  - Information on how to submit an NDI notification is available on-line at: [http://www.fda.gov/Food/DietarySupplements/NewDietaryIngredientsNoti](http://www.fda.gov/Food/DietarySupplements/NewDietaryIngredientsNoti)


Drug ingredients: For a natural ingredient to be permitted for use in an over-the-counter (OTC) or prescription drug product, the ingredient, if the active pharmaceutical ingredient, must be classified by the FDA as Generally Recognized as Safe and Effective (GRASE) and included in a positive therapeutic monograph published in Title 21 of the Code of Federal Regulations (21 CFR) which are available on-line. Some ingredients, however, are not yet entered in the current edition of the CFR and can only be found listed in a tentative final monograph. These monographs are posted on-line at the “Rulemaking History for Non-prescription Products: Drug Category List,” available at: http://www.fda.gov/Drugs/DevelopmentApprovalProcess/DevelopmentResources/Over-the-CounterOTCDrugs/StatusofOTCRulemakings/default.htm

Natural ingredients that are classified as GRASE active ingredients in the CFR monographs have corresponding quality standards monographs published in the United States Pharmacopeia – National Formulary (USP-NF).

Food ingredients: For a natural ingredient to be permitted for use in a food product in the United States it must be classified by the FDA as Generally Recognized as Safe (GRAS) for use in foods. The FDA Center for Food Safety and Applied Nutrition (CFSAN) maintains a food additive database known as the "Everything Added to Food in the United States (EAFUS)," available on-line at: http://www.fda.gov/Food/FoodIngredientsPackaging/ucm115326.htm

The EAFUS list of substances contains ingredients added directly to food that FDA has either approved as food additives or listed or affirmed as GRAS. Nevertheless, it contains only a partial list of all food ingredients that may in fact be lawfully added to food, because under federal law some ingredients may be added to food under a GRAS determination made independently from the FDA. The list contains many, but not all, of the substances subject to independent GRAS determinations. For information about the GRAS notification program please consult the Inventory of GRAS Notifications at: http://www.cfsan.fda.gov/~rdb/opa-gras.html

Additional information on the status of Food and Color Additives can be obtained from the Food Additive Status List at: http://www.cfsan.fda.gov/~dms/opa-appa.html or from the Color Additive Status List, available at: http://www.fda.gov/ForIndustry/ColorAdditives/ColorAdditiveInventories/ucm106626.htm


Wholesale distributors, processors and importers of natural ingredients in selected destination countries potentially interested in these species

The catalogues of the following selected major importers, processors and distributors of botanical ingredients were surveyed. The listed companies are mostly situated in European countries (France, Germany, Italy, Spain, United Kingdom), North American countries (Canada, United States), Northern African countries (Egypt), and Western Asian countries (Turkey). Below each entry it is noted whether any ingredients of the ten genera are offered, what form, if known, and what country of origin, if known.

ADECO (Egypt) http://www.adecoherbs.com

*Origanum* ingredients offered:

- Sweet marjoram herb (*Origanum majorana*), certified organic
- Sweet marjoram root (*Origanum majorana*), certified organic

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*), certified organic

*Thymus* ingredients offered:

- Thyme leaf (*Thymus vulgaris*), certified organic

Agromisr (Egypt) http://www.agromisr.org

*Origanum* ingredients offered:

- Sweet marjoram herb (*Origanum majorana*), crushed, fine-cut or powder, certified organic

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*), crushed or powdered, certified organic

Alfred Galke GmbH (Germany) http://www.galke.com

*Salvia* ingredients offered:

- Dalmatian sage leaf, PhEur-grade, whole, cut or powdered
- Greek (three-lobed) sage, food-grade, whole or cut, certified organic

*Satureja* ingredients offered:

- Savory wort, DAB-grade (Erg.B6), rubbed, cut or powdered

*Thymus* ingredients offered:

- Thyme herb, PhEur-grade, rubbed
- Thyme herb, food-grade, rubbed, certified organic
Viola ingredients offered:

- Sweet violet flowers (*Viola odorata*), whole
- Sweet violet herb (*Viola odorata*), whole or cut
- Sweet violet root (*Viola odorata*), whole or cut

**Algart International (Canada)**  
[http://www.algart.ca](http://www.algart.ca)

*Origanum* ingredients offered:

- Oregano herb (*Origanum vulgareis*)

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*)

*Thymus* ingredients offered:

- Thyme herb (*Thymus vulgaris*)

**AMD Verde (Egypt)**  
[http://www.amd-verde.com](http://www.amd-verde.com)

*Origanum* ingredients offered:

- Sweet marjoram herb (*Origanum majorana*), crushed, certified organic

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*). certified organic

*Thymus* ingredients offered:

- Thyme leaf (*Thymus vulgaris*), certified organic

**Arcotrade (Egypt)**  
[http://www.arcotrade-eg.com](http://www.arcotrade-eg.com)

*Alcea* ingredients offered:

- Hollyhock flower (*Alcea rosea*), whole, dried

*Origanum* ingredients offered:

- Sweet marjoram herb (*Origanum majorana*), rubbed

**BDS Natural Products (USA):**  
[http://www.bdsnaturals.com](http://www.bdsnaturals.com)

*Origanum* ingredients offered:

- Turkish Oregano herb

*Salvia* ingredients offered:
• Sage leaf (*Salvia officinalis*), whole or ground

*Satureja* ingredients offered:

• Savory

*Thymus* ingredients offered:

• Thyme herb (*Thymus vulgaris*), whole or ground

**Bi Nutraceuticals (USA)**  
http://www.botanicals.com

*Salvia* ingredients offered:

• Sage leaf (*Salvia officinalis*), whole, powdered or tea-bag-cut

*Thymus* ingredients offered:

• Thyme herb (*Thymus vulgaris*), whole, powdered or tea-bag-cut

**Bio International Organic Inc. (Canada)**  
http://www.biorganic.ca

*Origanum* ingredients offered:

• Oregano herb (*Origanum vulgare*)
• Sweet marjoram herb (*Origanum majorana*)

*Salvia* ingredients offered:

• Sage leaf (*Salvia officinalis*)

*Satureja* ingredients offered:

• Savory (species??)

*Thymus* ingredients offered:

• Lemon thyme herb (*Thymus citriodorus*)
• Thyme herb (*Thymus vulgaris* or *Thymus zygis*)

**Birlik S.A. (Turkey)**  
http://www.birlikas.com

*Origanum* ingredients offered:

• Oregano herb

*Salvia* ingredients offered:

• Sage leaf

**Blumeks Ltd (Turkey)**  
http://www.blumeks.com
Origanum ingredients offered:

- Oregano, rubbed, whole, extra quality, fancy quality, regular quality, FAQ quality

Salvia ingredients offered:

- Sage leaf, rubbed, whole, or powdered

Thymus ingredients offered:

- Thyme leaf, whole, ground or powdered

Destilaciones Bordas Chinchurreta, SA (Spain) http://www.bordas-sa.com

Origanum ingredients offered:

- Oregano leaf (Origanum vulgare)
- Oregano (Origanum vulgare) oleoresin

Salvia ingredients offered:

- Spanish sage leaf (Salvia lavandulaefolia), Spain
- Spanish sage (Salvia lavandulaefolia), essential oil and oleoresin

Thymus ingredients offered:

- Spanish marjoram (Thymus mastichina), Spain
- Spanish marjoram (Thymus mastichina) absolute, essential oil, and oleoresin
- Spanish Origanum herb (Thymus capitatus), Spain
- Spanish Origanum (Thymus capitatus) essential oil
- Spanish thyme herb (Thymus zygis), Spain
- Spanish thyme (Thymus zygis) absolute, concrete, essential oil, and oleoresin
- Thyme herb (Thymus vulgaris), Spain
- Thyme herb (Thymus vulgaris), essential oil and oleoresin

Dr. F. Elshobaki (Egypt) http://www.elshobaki.com

Origanum ingredients offered:

- Sweet marjoram herb (Origanum majorana)

Salvia ingredients offered:

- Sage leaf (Salvia officinalis)

Dixa AG (Switzerland) http://www.dixa.ch

Origanum ingredients offered:

- Oregano herb (Origanum vulgare), food-grade, cut, powdered, or rubbed and cleaned
Salvia ingredients offered:

- Clary sage leaf (Salvia sclarea), cut
- Sage leaf (Salvia officinalis), food grade, whole, selected
- Sage leaf essential oil (Salvia officinalis), PhHelv-grade
- Three-lobed sage leaf (Salvia triloba), PhEur-grade, cut or powdered
- Three-lobed sage leaf tincture 1:8 (w/v) (Salvia triloba)

Satureja ingredients offered:

- Savory herb (species??), food-grade, cut or powdered

Thymus ingredients offered:

- Thyme herb (Thymus vulgaris or Thymus zygis), PhEur-grade, powdered or rubbed and cleaned
- Thyme herb (Thymus vulgaris or Thymus zygis) essential oil, PhEur-grade
- Thyme herb (Thymus vulgaris or Thymus zygis) fluidextract, PhHelv-grade
- Thyme herb (Thymus vulgaris) tincture 1:5 (w/v)

Viola ingredients offered:

- Mountain pansy flower (Viola lutea)
- Sweet violet flower (Viola odorata), whole, cut or powdered
- Sweet violet root (Viola odorata), whole, cut or powdered
- Wild pansy herb (Viola arvensis or Viola tricolor), PhEur-grade, cut or powdered
- Wild pansy herb (Viola arvensis or Viola tricolor) tincture 1:10 (w/v)
- Wild pansy flower (Viola tricolor)

EGINTEX Co. (Egypt) http://www.egintex.com

Origanum ingredients offered:

- Sweet marjoram herb (Origanum majorana), green crushed, grey crushed or fine-cut

Egy Herbal (Egypt) http://www.egyherbal.com

Origanum ingredients offered:

- Oregano herb (Origanum vulgariis), certified organic, Egypt

Salvia ingredients offered:

- Sage leaf (Salvia officinalis), certified organic, Egypt

Thymus ingredients offered:

- Thyme herb (Thymus vulgaris), certified organic, Egypt

EPO S.r.L. (Italy) http://www.eposrl.com/eposrl

Origanum ingredients offered:
- Oregano herb (*Origanum vulgare*) fluidextract

**Salvia** ingredients offered:

- Sage leaf (*Salvia officinalis*) dry aqueous extract
- Sage leaf (*Salvia officinalis*) fluidextract
- Sage leaf (*Salvia officinalis*) glycolic extract

**Thymus** ingredients offered:

- Thyme herb (*Thymus vulgaris*) dry aqueous extract
- Thyme herb (*Thymus vulgaris*) fluidextract
- Thyme herb (*Thymus vulgaris*) glycolic extract
- Wild thyme herb (*Thymus serpyllum*) fluidextract

**Viola** ingredients offered:

- Wild pansy herb (*Viola tricolor*) dry aqueous extract
- Wild pansy herb (*Viola arvensis* or *Viola tricolor*) fluidextract

**Essential Fine Oils (Spain)**

- Clary sage flowering tops (*Salvia sclarea*) essential oil, Spain
- Sage leaf (*Salvia officinalis*) essential oil, Spain
- Spanish sage leaf (*Salvia lavandulaefolia*) essential oil, Spain

**Flavex Naturextrakte (Germany)**

**Origanum** ingredients offered:

- Oregano leaf (*Origanum vulgare*) CO2 extract

**Salvia** ingredients offered:

- Chia seed (*Salvia hispanica*) CO2 extract
- Sage leaf (*Salvia officinalis*) extract, 35% diterpene phenols
- Sage leaf (*Salvia officinalis*) CO2 extract, 5% Oleanolic / Ursolic acid
- Three-lobed sage leaf (*Salvia triloba*) extract, 35% diterpene phenols
- Three-lobed sage leaf (*Salvia triloba*) CO2 extract, 5% Oleanolic / Ursolic acid

**Thymus** ingredients offered:

- Thyme leaf (*Thymus vulgaris*) CO2 extract
Frontier Natural Products Coop (USA)  http://www.frontiercoop.com  
*Origanum* ingredients offered:

- Oregano leaf (*Origanum vulgare* subsp. *hirtum*), cut & sifted, flakes or powder, certified organic
- Sweet marjoram leaf (*Origanum majorana*), cut & sifted, flakes or powder, certified organic

*Salvia* ingredients offered:

- Chia seed (*Salvia hispanica*), whole, certified organic
- Sage leaf (*Salvia officinalis*), Grade Prime #1, whole, ground, powdered, rubbed, certified organic

*Satureja* ingredients offered:

- Summer savory leaf (*Satureja hortensis*), cut & sifted, certified organic
- Winter savory leaf (*Satureja montana*), whole, cut & sifted, powdered, certified organic

*Thymus* ingredients offered:

- Lemon thyme herb (*Thymus × citriodorus*), certified organic
- Thyme herb (*Thymus vulgaris*), Extra Fancy Grade, certified organic, whole, flakes or powder

GfN Selco (Germany)  http://www.gfn-selco.de  
*Viola* ingredients offered:

- Wild pansy herb (*Viola arvensis* or *Viola tricolor*) extract

Giza Seeds and Herbs (Egypt)  http://www.gizaseeds.com  
*Origanum* ingredients offered:

- Sweet marjoram leaf (*Origanum majorana*)

Heinrich Klenk GmbH (Germany)  http://www.klenk-herbline.de  
*Origanum* ingredients offered:

- Oregano herb (*Origanum vulgare* subsp. *hirtum*), cut & sifted or rubbed

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*), hand-picked, whole or cut (8 mm), certified organic

*Satureja* ingredients offered:

- Savory herb (species??), rubbed

*Thymus* ingredients offered:
• Thyme herb (*Thymus vulgaris*), rubbed

**Viola** ingredients offered:

• Sweet violet flower (*Viola odorata*), whole
• Sweet violet herb (*Viola odorata*), whole,
• Wild pansy flower (*Viola arvensis* or *Viola tricolor*), whole
• Wild pansy herb (*Viola arvensis* or *Viola tricolor*) whole

**Herbes del Moli** (Spain)  
http://www.herbesdelmoli.com

**Micromeria** ingredients offered:

• White-leaved savory herb (*Micromeria fruticosa*), certified organic

**Origanum** ingredients offered:

• Oregano leaf (*Origanum vulgare*), certified organic
• Oregano leaf (*Origanum vulgare*) essential oil, certified organic
• Sweet marjoram leaf (*Origanum majorana*), certified organic
• Sweet marjoram leaf (*Origanum majorana*) essential oil, certified organic

**Salvia** ingredients offered:

• Sage leaf (*Salvia officinalis*) essential oil, certified organic
• Spanish sage (*Salvia lavandulifolia*) essential oil, certified organic

**Satureja** ingredients offered:

• Savory herb (species??), essential oil, certified organic

**Thymus** ingredients offered:

• Pebrella leaf (*Thymus piperella*), certified organic
• Thyme herb (*Thymus vulgaris*), certified organic
• Thyme herb (*Thymus vulgaris*) essential oil, certified organic

**Viola** ingredients offered:

• Wild pansy herb (*Viola arvensis* or *Viola tricolor*), certified organic

**High Quality Organics** (USA)  
http://www.hqorganics.com

**Origanum** ingredients offered:

• Oregano leaf (*Origanum vulgare*), certified organic
• Sweet marjoram leaf (*Origanum majorana*), certified organic

**Salvia** ingredients offered:

• Sage leaf (*Salvia officinalis*) certified organic
Satureja ingredients offered:

- Savory herb (species??), essential oil, certified organic

Thymus ingredients offered:

- Lemon thyme herb \((Thymus \times citriodora)\)
- Thyme herb \((Thymus vulgaris)\), certified organic

Jenaer Pflanzenrohstoffe (Germany)  
[http://jenaer-pflanzenrohstoffe.com](http://jenaer-pflanzenrohstoffe.com)

Origanum ingredients offered:

- Oregano herb \((Origanum vulgare)\), whole

Salvia ingredients offered:

- Clary sage herb \((Salvia sclarea)\), whole
- Sage leaf \((Salvia officinalis)\), whole
- Three-lobed sage leaf \((Salvia triloba)\), whole

Thymus ingredients offered:

- Thyme herb \((Thymus vulgaris)\), rubbed

Viola ingredients offered:

- Wild pansy herb \((Viola arvensis or Viola tricolor)\), whole

Jürgen Serr Herb Service (Germany)  
[http://www.herb-service.com](http://www.herb-service.com)

Alcea ingredients offered:

- Rose-mallow / hollyhock \((Alcea rosea)\), certified organic

Origanum ingredients offered:

- Oregano leaf \((Origanum vulgare\) subsp. hirtum), cut & sifted, tea-bag-cut, powder, certified organic
- Sweet marjoram leaf \((Origanum majorana)\), cut & sifted, tea-bag-cut, powder, certified organic

Salvia ingredients offered:

- Sage leaf \((Salvia officinalis)\), cut & sifted, tea-bag-cut, powder, certified organic

Satureja ingredients offered:

- Summer savory leaf \((Satureja hortensis)\), cut & sifted, tea-bag-cut, powder, certified organic
- Winter savory leaf \((Satureja montana)\), cut & sifted, tea-bag-cut, powder, certified organic
*Thymus* ingredients offered:

- Thyme herb (*Thymus vulgaris*), cut & sifted, tea-bag-cut, powder, certified organic
- Wild thyme herb (*Thymus serpyllum*), cut & sifted, tea-bag-cut, powder, certified organic

*Viola* ingredients offered:

- Sweet violet root (*Viola odorata*), cut & sifted, tea-bag-cut, powder, certified organic

**Kekik Tarim (Turkey)**  
[http://www.oreganoft.com](http://www.oreganoft.com)

*Origanum* ingredients offered:

- Oregano leaf (*Origanum vulgare*), rubbed
- Oregano water (*Origanum vulgare*)

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*), whole or rubbed

**Kräuter Mix GmbH (Germany)**  
[http://www.kraeuter-mix.de](http://www.kraeuter-mix.de)

*Origanum* ingredients offered:

- Oregano herb (*Origanum vulgare*), dried or fresh, certified organic
- Sweet marjoram leaf (*Origanum majorana*)

*Salvia* ingredients offered:

- Sage leaf (*Salvia officinalis*)
- Three-lobed sage leaf (*Salvia triloba*)

*Satureja* ingredients offered:

- Summer savory leaf (*Satureja hortensis*)
- Winter savory leaf (*Satureja montana*)

*Thymus* ingredients offered:

- Thyme herb (*Thymus vulgaris*)
- Thyme herb water (*Thymus vulgaris*)

**L’Herbier du Diois (France)**  

*Origanum* ingredients offered:

- Oregano herb (*Origanum vulgare*), dried or fresh, certified organic
- Sweet marjoram leaf (*Origanum majorana*), dried or fresh, certified organic

**Salvia** ingredients offered:

- Clary sage leaf (*Salvia sclarea*) essential oil, certified organic
- Sage leaf (*Salvia officinalis*), dried or fresh, certified organic
- Sage leaf (*Salvia officinalis*), dried extract, certified organic
- Sage leaf (*Salvia officinalis*) essential oil, certified organic
- Spanish sage leaf (*Salvia lavandulifolia*), dried or fresh, certified organic
- Spanish sage leaf (*Salvia lavandulifolia*), essential oil, certified organic

**Satureja** ingredients offered:

- Winter savory leaf (*Satureja montana*), dried or fresh, certified organic
- Winter savory leaf (*Satureja montana*), dried extract, certified organic
- Winter savory leaf (*Satureja montana*), essential oil, certified organic

**Thymus** ingredients offered:

- Lemon thyme herb (*Thymus × citriodorus*), dried or fresh, certified organic
- Thyme herb (*Thymus vulgaris*), dried or fresh, certified organic
- Thyme herb (*Thymus vulgaris*) essential oil, certified organic
- Wild thyme herb (*Thymus serpyllum*), dried or fresh, certified organic

**Viola** ingredients offered:

- Wild pansy herb (*Viola arvensis* or *Viola tricolor*), dried or fresh, certified organic

**Liberty Natural Products (USA)**

[http://www.libertynatural.com](http://www.libertynatural.com)

**Origanum** ingredients offered:

- Moroccan oregano herb (*Origanum compactum*) essential oil, Morocco
- Oregano herb (*Origanum vulgare*), whole, dried herb, USA
- Oregano herb (*Origanum vulgare*), powdered herb, Turkey
- Oregano herb (*Origanum vulgare*) essential oil, from wild collection in Hungary and or Turkey
- Oregano herb (*Origanum vulgare*) tincture, USA
- Syrian marjoram herb (*Origanum syriacum*) essential oil
- Turkish oregano herb (*Origanum minutiflorum*) essential oil, Turkey

**Salvia** ingredients offered:

- Blue mountain sage (*Salvia stenophylla*) essential oil, South Africa
- Chia seed (*Salvia hispanica*) fixed oil
- Clary sage (*Salvia sclarea*) absolute, France
- Clary sage flower (*Salvia sclarea*), dried, USA
- Clary sage (*Salvia sclarea*) distillate water, USA
- Clary sage (*Salvia sclarea*) essential oil, Bulgaria, France, Hungary, Russia, Ukraine or USA origins
- Sage leaf (*Salvia officinalis*), dried powder, Italy
- Sage leaf (*Salvia officinalis*) essential oil, Hungary or Ukraine origins
- Spanish sage leaf (*Salvia lavandulifolia*) essential oil, Spain
Satureja ingredients offered:

- Summer savory leaf (*Satureja hortensis*) essential oil, Hungary
- Winter savory leaf (*Satureja montana*) essential oil, Albania

Thymus ingredients offered:

- Orange thyme herb (*Thymus fragrantissimus*), dried, whole, USA
- Red thyme herb (*Thymus vulgaris*) carvacrol type essential oil, Hungary
- Spanish marjoram herb (*Thymus mastichina*) essential oil, Spain
- Spanish oregano herb (*Thymus capitatus*) essential oil, Albania or Hungary origins
- Spanish thyme herb (*Thymus zygis*) essential oil, Spain
- Spanish thyme herb (*Thymus zygis*) essential oil, FCC-grade, USA
- Thyme borneol (*Thymus satureioides*) essential oil, Morocco
- Thyme herb (*Thymus vulgaris*), dried, whole, USA
- Thyme herb (*Thymus vulgaris*) tincture, USA
- Thyme leaf (*Thymus vulgaris*), dried, cut & sifted, Peru
- Wild thyme herb (*Thymus serpyllum*) essential oil, Albania

Viola ingredients offered:

- Sweet violet herb (*Viola odorata*), powdered
- Sweet violet leaf (*Viola odorata*), cut & sifted, USA
- Sweet violet leaf (*Viola odorata*) absolute, Egypt
- Sweet violet leaf (*Viola odorata*) concrete, Egypt

Long Life Herbals (Egypt)  
http://www.longlifeherbals.com

Salvia ingredients offered:

- Sage leaf (*Salvia officinalis*), ground

Satureja ingredients offered:

- Summer savory leaf (*Satureja hortensis*), ground

Thymus ingredients offered:

- Thyme leaf (*Thymus vulgaris*), ground

Mane Flavour & Fragrance (France)  
http://www.mane.com

Salvia ingredients offered:

- Clary sage (*Salvia sclarea*) absolute

Viola ingredients offered:

- Sweet violet herb (*Viola odorata*) absolute, Egypt or France origins
- Sweet violet leaf (*Viola odorata*) concrete, France

Martin Bauer GmbH (Germany)  
http://www.martin-bauer.com
**Origanum ingredients offered:**

- Oregano herb (*Origanum vulgare*), cut & sifted, tea-bag-cut, powdered
- Sweet marjoram herb (*Origanum majorana*), cut & sifted, tea-bag-cut, powdered

**Salvia ingredients offered:**

- Sage leaf (*Salvia officinalis*), cut & sifted, tea-bag-cut, powdered
- Three-lobed sage leaf (*Salvia triloba*), cut & sifted, tea-bag-cut, powdered

**Thymus ingredients offered:**

- Thyme herb (*Thymus vulgaris*), cut & sifted, tea-bag-cut, powdered
- Wild thyme herb (*Thymus serpyllum*), cut & sifted, tea-bag-cut, powdered

**Viola ingredients offered:**

- Wild pansy aerial parts (*Viola tricolor*), cut & sifted, tea-bag-cut, powdered

**Moellhausen (Italy)**

http://www.moellhausen.com

**Origanum ingredients offered:**

- Oregano leaf (*Origanum vulgare*) essential oil and oleoresin

**Salvia ingredients offered:**

- Sage leaf (*Salvia officinalis*) essential oil

**Satureja ingredients offered:**

- Summer savory leaf (*Satureja hortensis*) essential oil

**Thymus ingredients offered:**

- Spanish origanum herb (*Thymus capitatus*) essential oil and oleoresin
- Thyme leaf (*Thymus vulgaris*) essential oil

**Monteloeder (Spain)**

http://www.monteloeder.com

**Origanum ingredients offered:**

- Oregano herb (*Origanum vulgare*) extract

**Salvia ingredients offered:**

- Sage leaf (*Salvia officinalis*) extract

**Thymus ingredients offered:**

- Thyme herb (*Thymus vulgaris*) extract
Mountain Rose Herbs (USA)  http://www.mountainroseherbs.com

**Origanum** ingredients offered:
- Oregano leaf (*Origanum vulgare*), dried, certified organic, USA
- Oregano leaf (*Origanum vulgare*) essential oil, certified organic
- Sweet marjoram herb (*Origanum majorana*), dried certified organic, Egypt

**Salvia** ingredients offered:
- Chia seed (*Salvia hispanica*), whole, certified organic, Mexico
- Clary sage leaf (*Salvia sclarea*) essential oil, certified organic, USA
- Sage leaf (*Salvia officinalis*), dried, certified organic, USA
- Sage leaf (*Salvia officinalis*) essential oil, certified organic, USA
- White sage whole leaf on stem (*Salvia apiana*), dried, California

**Satureja** ingredients offered:
- Summer savory leaf (*Satureja hortensis*), dried, certified organic, Turkey
- Winter savory leaf (*Satureja montana*), dried, certified organic, Argentina
- Winter savory leaf (*Satureja montana*) essential oil, certified organic, Hungary

**Thymus** ingredients offered:
- Lemon thyme herb (*Thymus × citriodorus*), dried, certified organic, USA
- Spanish marjoram herb (*Thymus mastichina*) essential oil, certified organic, Spain
- Spanish thyme herb (*Thymus zygis*) essential oil, certified organic, Spain
- Thyme leaf (*Thymus vulgaris*), dried, certified organic, Egypt

**Viola** ingredients offered:
- Sweet violet leaf (*Viola odorata*), dried, certified organic, Hungary

Müggenburg Pflanzenliche Rohstoffe (Germany)
http://www.paulmueggenburg.de

**Origanum** ingredients offered:
- Oregano herb (*Origanum vulgare*), dried rubbed

**Salvia** ingredients offered:
- Chia seed (*Salvia hispanica*), whole
- Chinese salvia root (*Salvia miltiorrhiza*), whole
- Clary sage herb (*Salvia sclarea*), whole
- Sage leaf (*Salvia officinalis*), whole, cut or powdered

**Satureja** ingredients offered:
- Summer savory herb or leaf (*Satureja hortensis*), dried, whole
- Winter savory herb (*Satureja montana*), dried, whole or rubbed
Thymus ingredients offered:

- Thyme herb (*Thymus vulgaris*), dried, whole, rubbed or powdered

Viola ingredients offered:

- Sweet violet flower (*Viola odorata*), dried, whole
- Wild pansy aerial parts (*Viola tricolor*), dried, cut & sifted or powdered

**Naturex (France)** [http://www.naturex.com](http://www.naturex.com)

Origanum ingredients offered:

- Oregano leaf (*Origanum vulgare*) dry extract 4:1 (w/w)

Salvia ingredients offered:

- Chinese salvia root (*Salvia miltiorrhiza*) dry extract 4:1 (w/w)
- Clary sage leaf (*Salvia sclarea*) dry extract, 2.5% rosmarinic acid
- Sage leaf (*Salvia officinalis*) dry extract 4:1 (w/w)

Thymus ingredients offered:

- Thyme herb (*Thymus vulgaris*) extract, 2% essential oil
- Thyme herb (*Thymus vulgaris*) dry extract, 6% total phenolic acids and flavonoids

Viola ingredients offered:

- Wild pansy aerial parts (*Viola tricolor*) dry extract 4:1 (w/w)

**Nile Herbs (Egypt)** [http://www.nileherbs.com](http://www.nileherbs.com)

Satureja ingredients offered:

- Summer savory leaf (*Satureja hortensis*), certified organic

**Organa (Egypt)** [http://organa-egy.com](http://organa-egy.com)

**Organic Partners (UK)** [http://organicpartners.com](http://organicpartners.com)

Alcea ingredients offered:

- Hollyhock flower (*Alcea rosea*), dried whole, certified organic
Origanum ingredients offered:

- Oregano leaf (Origanum spp.), dried, whole, cut or powder, certified organic, Turkey
- Oregano leaf (Origanum spp.) essential oil, certified organic
- Sweet marjoram leaf (Origanum majorana), dried, cut or powder, certified organic, Egypt
- Sweet marjoram leaf (Origanum majorana) essential oil, certified organic

Salvia ingredients offered:

- Clary sage (Salvia sclarea) essential oil, certified organic
- Red sage tops (Salvia officinalis var purpurea), dried, cut, certified organic, UK
- Sage leaf (Salvia officinalis), dried, whole, cut or powder, certified organic, Poland
- Sage leaf (Salvia officinalis) essential oil, certified organic
- Sage leaf (Salvia officinalis) hydrosol, certified organic, France
- Three-lobed sage leaf (Salvia triloba), dried, cut, certified organic, Turkey

Satureja ingredients offered:

- Summer savory leaf (Satureja hortensis), dried, cut, certified organic, France
- Winter savory herb (Satureja montana), dried, cut certified organic

Thymus ingredients offered:

- Lemon thyme leaf (Thymus × citriodorus), dried, whole or cut, certified organic, France
- Spanish marjoram herb (Thymus mastichina) essential oil, certified organic, Spain
- Spanish thyme herb (Thymus zygis), dried, certified organic, Spain
- Thyme leaf (Thymus vulgaris), dried, whole, cut or powder, certified organic, Kenya or Turkey origins
- Thyme leaf (Thymus vulgaris) essential oil, certified organic, Kenya
- Thyme leaf (Thymus vulgaris) hydrosol, certified organic, Kenya
- Wild thyme herb (Thymus serpyllum), dried, certified organic

Viola ingredients offered:

- Sweet violet leaf (Viola odorata), dried, cut, certified organic, Bosnia & Herzegovina
- Wild pansy aerial parts (Viola tricolor), dried, cut, certified organic, Poland

Ozsoy Agroland (Turkey)  http://www.ozsoyagroland.com

Origanum ingredients offered:

- Oregano herb
- Oregano extract

Salvia ingredients offered:

- Sage leaf

Thymus ingredients offered:

- Thyme herb or leaf
Pacific Botanicals (USA)  
http://www.pacificbotanicals.com

*Origanum* ingredients offered:
- Oregano leaf (*Origanum vulgare*), dried, certified organic, USA
- Sweet marjoram leaf (*Origanum majorana*), dried, certified organic, Egypt

*Salvia* ingredients offered:
- Chia seed (*Salvia hispanica*), whole, certified organic, Mexico
- Sage leaf (*Salvia officinalis*), dried, whole, cut or powder, certified organic, USA

*Thymus* ingredients offered:
- Thyme leaf (*Thymus vulgaris*), dried, whole, cut or powder, certified organic, Turkey

Pharaonic BioHerb (Egypt)  
http://www.pharoherb.com

*Origanum* ingredients offered:
- Oregano leaf (*Origanum vulgare*), dried, certified organic
- Sweet marjoram leaf (*Origanum majorana*), dried, certified organic

*Salvia* ingredients offered:
- Sage leaf (*Salvia officinalis*), dried, certified organic

*Thymus* ingredients offered:
- Thyme leaf (*Thymus vulgaris*), dried, certified organic

Ph. Seyfried Gewürzmühle GmbH (Germany)  
http://www.seyma.de

*Origanum* ingredients offered:
- Oregano herb (*Origanum vulgare*), dried

*Salvia* ingredients offered:
- Sage leaf (*Salvia officinalis*), dried

*Satureja* ingredients offered:
- Summer savory herb or leaf (*Satureja hortensis*), dried
- Winter savory herb (*Satureja montana*), dried

*Thymus* ingredients offered:
- Thyme herb (*Thymus vulgaris*), dried

PharmaNutrients Botanical Corp (Canada)  
http://www.pharmanutrients.ca
Origanum ingredients offered:

- Oregano herb (*Origanum vulgare*), dried

Salvia ingredients offered:

- Sage leaf (*Salvia officinalis*), dried

Satureja ingredients offered:

- Summer savory herb or leaf (*Satureja hortensis*), dried
- Winter savory herb (*Satureja montana*), dried

Thymus ingredients offered:

- Thyme herb (*Thymus vulgaris*), dried

Plantex (France)  
http://www.plantex.fr

Origanum ingredients offered:

- Oregano leaf (*Origanum vulgare*) extract 4:1 (w/w)
- Sweet marjoram leaf (*Origanum majorana*) 4:1 (w/w), 2% essential oil

Salvia ingredients offered:

- Clary sage herb (*Salvia sclarea*) extract 5:1 (w/w)
- Sage leaf (*Salvia officinalis*) extract 4:1 (w/w), 1% essential oil

Thymus ingredients offered:

- Thyme leaf (*Thymus vulgaris*) extract 5:1 (w/w) 1.5% essential oil

Viola ingredients offered:

- Wild pansy whole plant (*Viola tricolor*) dry extract 8:1 (w/w), 3% rutin

Royal for Herbs (Egypt)  
http://www.royalforherbs.com

Origanum ingredients offered:

- Sweet marjoram leaf (*Origanum majorana*), crushed, certified organic

Thymus ingredients offered:

- Thyme leaf (*Thymus vulgaris*), certified organic

San Francisco Herb & Natural Food Co. (USA)  
http://www.herbspicetea.com

Origanum ingredients offered:
- Oregano leaf (*Origanum vulgare*), cut & sifted or powder, certified organic, USA; conventional from Turkey
- Sweet marjoram leaf (*Origanum majorana*), cut & sifted or powder, Egypt
- Sweet marjoram leaf (*Origanum majorana*) essential oil,

### Salvia ingredients offered:

- Chia seed (*Salvia hispanica*), whole or ground, Mexico
- Chinese salvia root (*Salvia miltiorrhiza*), whole, China
- Clary sage (*Salvia sclarea*) essential oil
- Sage leaf (*Salvia officinalis*), cut & sifted or powder, certified organic, USA; conventional from Albania
- Sage leaf (*Salvia officinalis*) essential oil
- White sage flower (*Salvia apiana*), dried, USA

### Satureja ingredients offered:

- Summer savory leaf (*Satureja hortensis*), whole, cut & sifted or powder, Poland; certified organic from USA

### Thymus ingredients offered:

- Lemon thyme leaf (*Thymus citriodorus*), cut & sifted or powder, USA
- Spanish origanum herb (*Thymus capitatus*) essential oil
- Thyme herb (*Thymus vulgaris*), whole, cut & sifted or powder, Morocco, Spain or USA; certified organic from USA
- Thyme leaf (*Thymus vulgaris*) essential oil

### Viola ingredients offered:

- Sweet violet herb (*Viola odorata*), whole, cut & sifted or powdered, Pakistan
- Wild pansy aerial parts (*Viola tricolor*), cut or powdered, Romania

**Selim Uludag (Turkey) [http://www.selimuludag.com.tr](http://www.selimuludag.com.tr)**

**Origanum ingredients offered:**

- Oregano herb

**Salvia ingredients offered:**

- Sage leaf

**Thymus ingredients offered:**

- Thyme herb or leaf

**Starwest Botanicals (USA) [http://www.starwest-botanicals.com](http://www.starwest-botanicals.com)**

**Origanum ingredients offered:**

- Oregano leaf (*Origanum vulgare*), cut & sifted or powder, certified organic, Turkey
- Oregano leaf (*Origanum vulgare*) essential oil, certified organic, Spain
- Sweet marjoram leaf (*Origanum majorana*), cut & sifted, certified organic, Egypt

*Salvia* ingredients offered:
- Chia seed (*Salvia hispanica*), whole, certified organic, Mexico
- Clary sage (*Salvia sclarea*) essential oil, France
- Sage leaf (*Salvia officinalis*), dried, cut & sifted or powder, certified organic, Croatia or Egypt origins
- Sage leaf (*Salvia officinalis*) essential oil, Republics of the Former Yugoslavia

*Satureja* ingredients offered:
- Summer savory leaf (*Satureja hortensis*), cut & sifted, certified organic, Croatia

*Thymus* ingredients offered:
- Spanish marjoram herb (*Thymus mastichina*) essential oil, Spain
- Thyme herb (*Thymus vulgaris*), cut & sifted or powder, certified organic, Egypt
- Thyme leaf (*Thymus vulgaris*) essential oil, Spain

*Viola* ingredients offered:
- Sweet violet herb (*Viola odorata*), cut & sifted or powdered, Bulgaria

Whole Herb Company (USA)  http://www.wholeherbcompany.com

*Origanum* ingredients offered:
- Oregano leaf (*Origanum vulgare*), dried
- Oregano leaf (*Origanum vulgare*) essential oil
- Sweet marjoram leaf (*Origanum majorana*), dried

*Salvia* ingredients offered:
- Chia seed (*Salvia hispanica*), whole
- Sage leaf (*Salvia officinalis*), dried
- Sage leaf (*Salvia officinalis*) essential oil

*Satureja* ingredients offered:
- Savory leaf (*Satureja capitata*), dried
- Summer savory herb (*Satureja hortensis*), dried

*Thymus* ingredients offered:
- Thyme leaf (*Thymus vulgaris*), dried
- Thyme leaf (*Thymus vulgaris*) essential oil

Worlée Naturprodukte (Germany)  http://www.worlee.de

*Origanum* ingredients offered:
- Oregano leaf (*Origanum vulgare*), dried
- Sweet marjoram leaf (*Origanum majorana*), dried

*Salvia* ingredients offered:
- Three-lobed sage leaf (*Salvia triloba*), dried

*Satureja* ingredients offered:
- Summer savory herb (*Satureja hortensis*), dried

*Thymus* ingredients offered:
- Thyme leaf (*Thymus vulgaris*), dried
This publication is an output of the project “Mainstreaming Biodiversity Management into Medicinal and Aromatic Plants (MAPs) Production Processes in Lebanon” which aims to integrate conservation objectives into gathering, processing and marketing of globally significant medicinal and aromatic plants (MAPs). Project funded by the Global Environment Facility (GEF), implemented by the United Nations Development Programme (UNDP) and the Lebanese Agriculture Research Institute (LARI).

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