

Interreg
Alpine Space



Alp Bio Eco

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Output for D.T1.2.2 LAB ANALYSIS OF INGREDIENT

Evaluation of the potential use of floral waters

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ARTEMISIA ABSINTHIUM THUJONIFERA

The components are mainly sesquiterpenic lactones. The composition of the essential oil varies greatly depending on the origin and the chemotype of the plant, but there are mainly beta and alpha thujone (toxic compounds that act on the central nervous system causing excitement, euphoria, delirium). There are also absintin and anabsintin (giving bitter taste), artabsin, anabsin, anabsinin and camphor.

Widely used as aromatic, eupeptic (facilitates the digestive function), choleric and cholagogue (facilitates bile secretion to the intestine and secretion of the bile by the liver cells), useful in the lack of appetite or inflammation of the gastro-intestinal mucosa.

It can also act as an emmenagogue (menstrual flow regulator) due to the presence of the thujone.

ACHILLEA MILLEFOLIUM

The main components are azulene (quickly restores the normal degree of permeability of the tissues, reabsorbing the outbreak of infection; azulenes can also promote a bacteriostatic action) and 1,8-cineol, alpha-thujone, beta-thujone and camphor.

It has a composition similar to the chamomile, in fact the same uses are recommend. Achillea can be used as an antispasmodic and anti-inflammatory specific for the digestive system, but there are no certain studies that confirm its effectiveness.

For external use, Achillea is used for cosmetic and dermofunctional applications: anti-inflammatory, astringent, firming, reddening and anti-seborrheic properties.

ARTEMISIA VULGARIS

The main chemical compounds are alpha and beta thujone, beta pyrene, 1,8-cineol, crisantenyl acetate, caryophyllene, germacene D, sabinene and camphor.

A. vulgaris is known not only as an edible plant (especially as a spice) but is also used in folk medicine. Artemisia essential oils are used for their insecticidal, antimicrobial and antiparasitic properties. The essential oils of *A. vulgaris* have a significant fumigating and repellent effect on *Musca domestica*.

The artemisia extracts indicate hepatoprotective activity.

In oriental medicine, *A. vulgaris* has been used as an analgesic and in acupuncture.

The emmenagogic properties of this plant are related to estrogenic flavonoids.

Artemisia leaves and stems contain traces of alkaloids.

CENTAUREA CYANUS

Flavonoids, anthocyanins, pectins.

Properties slightly astringent, anti-inflammatory, diuretic, anti-tussive. He has an employment in the field of ophthalmology. Its distilled water is used as astringent eyewash for reddened eyes; it is possible to use the infusion for an external decongestant treatment for bleaching the eyelids and the areas around the eyes. A similar anti-inflammatory action is exerted on the mucous membranes of the mouth and throat.

For internal use, cornflower can be used as a bland anti-tussive, diuretic, and intestinal astringent. The astringent and anti-inflammatory action is mainly

due to the presence of polyphenols, including flavonoids and anthocyanins; the latter are responsible for the blue color of the petals.

JUNIPERUS OXYCEDRUS

Main constituents: meta-cresol, para-cresol, delta and gamma cadinene, beta caryophyllene and alpha-cedrene.

From the fruits and from the wood of the red juniper, an essential oil, called Cade oil, is obtained by distillation, which has important properties in the treatment of many skin affections. It is a remedy for eczema, for psoriasis, for acne characterized by a strong greasiness of the skin.

A liquid is extracted from the first distillation and it separates into 3 layers and the upper one (brown color) is constituted by Cade oil. The oil can then be rectified by steam distillation.

DAUCUS CAROTA SSP. MAXIMUS

Numerous substances have been reported in the Daucus: acetone, beta-sasarone, elemicin, methylisoeugenol, choline, ethanol, formic acid, sucrose, glucose, glutathione, asparagine, carotene, vitamins B1, B2, C, PP, E, D. The plant also contains glucides, provitamin A, vitamin B and C, mineral salts.

The oil is used in perfumery and anti-wrinkle creams mixed and combined with other oils from vegetable origin. The roots are used in the industry for the extraction of carotene and dyes. Also used for the preparation of beauty masks.

In phytotherapy the essential oil is known as vitaminic, remineralizing, stimulating immune defenses, ophthalmic, diuretic and healing. For dermatological applications, an essential oil is extracted from the seeds and it is very useful for the treatment of psoriasis, eczema and dermatitis. The

seeds and fruits of the wild carrot have diuretic properties. The wild carrot infusion is effective in case of difficulty in urinating.

CÈDRUS ATLANTICA

The main components are sesquiterpenes (alpha and beta-cedrene, caryophyllene, cadinene, imacalene, tujopsene).

Applications for oily skin, fungal infections, inflammatory skin, seborrhea and dandruff.

CUPRESSUS SEMPERVIRENS

The essential oil is rich in camphene, pyrene, cupressene.

The plant has various properties and it can be found in various preparations or food supplements, with indications for the treatment of microcirculation disorders and airway disorders.

Vasoconstrictive, astringent and antispasmodic properties are attributed to the cypress extracts, due to the presence of polyphenols.

Essential oil of cypress has anti-inflammatory in the respiratory tract, balsamic, cough sedatives and expectorants properties.

JUNIPERUS COMMUNIS

The main components of the essential oil are: pinene, sabinene, candinene, myrcene, terpinene-4-olo, alpha and beta thujone.

The use of juniper has been officially approved only for the treatment of dyspeptic disorders, thanks to the carminative and stomachic action carried out by the essential oil and, probably, also by the resinous substances contained in the fruits of the plant. The essential oil has indeed shown to possess diuretic and anti-inflammatory activity. In particular, the main

responsible of the diuretic effect seems to be the terpinene-4-ol, contained in the essential oil of the plant. Juniper has also been shown to possess hypoglycemic, hypotensive, antiseptic and antiviral properties against Herpes simplex virus. However, further clinical studies are needed before any therapeutic applications of juniper can be approved.

HELICHRYSUM ITALICUM

Main components: α -pinene, α -cedrene, 1,8-cineole, aromadendrene, β -caryophyllene and limonene, neryl acetate, 2-methylcyclohexyl pentanoate, 2-methylcyclohexylcanoate and geranyl acetate.

This plant is known for its anti-inflammatory, antiallergic and antimicrobial activity. Essential oil is widely used in the perfume industry.

HYSSOPUS OFFICINALIS

The essential oil contains: 1,8-cineole, alpha and beta thujone, estragole, pinene, camphene, pinocanphone, isopinocanphone and methyleugenol.

Bronchodilator and expectorant properties are attributed to the hyssop; for this reason - although its use has not been officially approved for any type of therapeutic application - it is not uncommon for this plant to be included in the composition of food supplements recommended to promote well-being and functionality of the airways.

In addition, the hyssop also has stimulating, tonic and eupeptic properties. Most of these activities are due to the essential oil contained in the plant; however, essential oil should be used with caution because it contains neurotoxic ketones with epileptogenic and convulsive activity.

Finally, extracts of hyssop leaves have proven to possess antibacterial, antiviral (in particular against Herpes simplex) and mild spasmolytic activity.

In folk medicine, hyssop is used internally to stimulate appetite and promote digestive processes, to stimulate circulation and as a remedy for cooling diseases and for respiratory tract diseases. Internally, however, traditional medicine uses hyssop as a disinfectant remedy to be used in case of wounds or in case of sore throat.

Hyssop is also used in the homeopathy, where it can be found in the form of granules, mother tincture or oral drops. Homeopathic medicine uses this plant in case of bronchial diseases accompanied by abundant secretions, fatty cough, minor digestive disorders, flatulence and digestive colic.

LAVANDULA ANGUSTIFOLIA

The main components of the essential oil are linalool (present in percentages of 20-50%) and linalyl acetate (present in percentages of 20-30%). In addition to these substances, there are also: 1,8-cineol, 3-Ottanone, Camphor, limonene, Terpinen-4-olo, lavandulolo, Terpeneol alpha, alpha e beta thujone.

Compared to all other components, linalool and linalyl acetate are present in larger quantities.

The essential oil of lavender has a good antibacterial activity (even if lower than the essential oil of rosemary), associated with antifungal activity. In detail, this oil proved to be effective against methicillin-resistant *Staphylococcus aureus* (MRSA) and against vancomycin-resistant *Enterococcus faecium* strains; it has proved effective against fungi such as *Malassezia furfur* and *Trichophyton rubrum*. For this reason, lavender oil is often used as an external remedy to counteract skin disorders such as acne and dandruff.

Essential oil seems to exert an action on the nervous system, with sedative properties. Moreover, essential oil seems to have anti-inflammatory properties, which exerts through the inhibition of phospholipase C.

Several studies have shown that lavender oil is able to exert various beneficial effects in the gastrointestinal tract. More precisely, it has antispastic activity and carminative properties that make it particularly useful in cases of gastric disorders, colic and flatulence.

LAVANDULA ANGUSTIFOLIA CL. MAILETTE

Same characteristics of *Lavandula angustifolia*. It is excellent for the production of essential oil.

LAVANDULA HYBRIDA ABRIALIS

The main components of the essential oil are linalol, linalyl acetate and camphor.

The properties are the same of *Lavandula angustifolia*.

LAVANDULA HYBRIDA SUPER

Same components of the *Lavandula hybrida abralis* essential oil.

ORIGANUM MAJORANA

Main compounds: terpinenes, 4-terpineol, sabinene, linalool, carvacrol, cis-sabinene hydrate (responsible for the typical aroma), linalyl-acetate, ocimene, cadinene, genaryl-acetate, citral, estragol, eugenol and 3-carene.

As for the nutritional aspect, the most important molecules present in the drug are: flavonoid glycosides, tannins, vitamin A, vitamin C, and some

minerals. The compounds have antioxidant properties, therefore anti-cancer, anti-cholesterolemic and protective vessel.

N.B. compared to oregano (same family and same kind) and thyme (same family), marjoram does not contain thymol and carvacrol, two antioxidant phenols and disinfectants of the oral cavity (oregano and thyme are considered toothpaste plants).

In general, the primary function of marjoram is the alimentary one, but it has different phytotherapeutic properties. In Italy, marjoram is not particularly used for medicinal purposes, while German monographs mention the drug (dried leaves and inflorescences) and essential oil.

At a domestic level, the marjoram drug, in addition to having an extremely widespread culinary use, can be used in the formulation of infusions with digestive, diuretic, carminative tonic, sweat, emmenagogical and antispasmodic properties.

Essential oil is used mainly in the food industry, in cosmetics and in the pharmaceutical sector. In the food industry, the essential oil and the marjoram oleo-resin are necessary components for: some superalcoholic drinks (such as vermouth, bitters and certain liqueurs), some non-alcoholic drinks, desserts, candied fruit, cooked food, jellies, puddings, sauces and salami. In the pharmaceutical industry, on the other hand, it is part of sedative and antispastic compositions; the galenic derivatives of the drug favor intestinal motility and gastric secretion (eupeptic and carminative function).

MENTHA X PIPERITA

In the essential oil there is a high quantity of free or esterified menthol, menthon, mentil acetate, pulegone, mentofuran, piperitone, cineole, pyrene, fellandrene, limonene. Tannins, flavonoids, triterpenes and phenolic acids are also present in the leaves.

It is widely used in cosmetic, pharmaceutical and food industry. It has stimulating, tonic, stomachic, sedative and anesthetic properties.

Menthol is a monoterpenic alcohol and is used in the medical field to relieve sore throat and it is used as an analgesic because it is a weak κ -opioid receptor antagonist. Menthol also has a vasodilatory function and it stimulates the dilatation of the vessels and therefore the blood supply in the affected area.

Another constituent of the essential oil of peppermint is the menthon, a ketone obtainable from the oxidation of menthol, which has stimulating, antiseptic and analgesic properties and it is used in various pesticides because it's a natural insecticide.

The third typical component of peppermint essential oil is mentil acetate. This compound has an effect on the cold-sensitive receptors present in the skin, mouth and throat and it has the property of giving a cooling sensation.

HYPERICUM PERFORATUM

Hypericins, a group of naphthodyandronic derivatives, are present and they include hypericin, psuedohypericin, isohypericin, protohypericin, cyclopseudohypericin, xanthone derivatives. In the oil there are n-alkanes, a and b-pyrene and sesquiterpens. There is also an antibiotic principle (hyperforin) which, however, is destroyed during drying.

Anti-inflammatory, cicatrizing, antidepressive and anxiolytic properties are attributed to hypericum.

In particular, the anti-inflammatory action seems to be due to hypericine and amentoflavone (a flavonoid). The researchers showed that the hypericum extract is able to inhibit leukocyte infiltration (studies conducted on animals) and that hypericin, on the other hand, is capable of inhibiting the release of arachidonic acid (studies conducted in vitro).

The anxiolytic activity is exerted through the activation of the benzodiazepine receptor. However, this activity is not performed by a single molecule. In fact, the studies have demonstrated that the extract of hypericum is able to exert an anxiolytic action, but that the individual compounds that constitute it - once isolated and administered - do not have the same efficacy. Therefore, it is believed that the anxiolytic activity is due to the set of various molecules present in the composition.

A similar situation occurs for the antidepressive activity possessed by the plant. In fact, this action is exerted through different mechanisms that include the inhibition of norepinephrine reuptake, the inhibition of some types of serotonin and dopamine receptors and the inhibition of presynaptic GABA reuptake. All these activities are due to different molecules contained in the hypericum extract, such as hyperforin, hypericin, amentoflavone and rutin. Thanks to the synergic actions exerted by the various molecules included in the composition of the hypericum extract, the use of this plant has obtained official approval for the treatment of anxiety and minor depressive disorders. Furthermore, anti-bacterial properties are ascribed to hyperforin. In fact, several studies conducted in vitro have highlighted its antimicrobial action against *Staphylococcus aureus* strains, including methicillin-resistant strains.

ORIGANUM HERACLEOTICUM CARVACROLIFERUM

No data found

PERILLA FRUTESCENS

Main constituents: perillaketone and perillaldehyde, myristicin.

The main polyphenolic compounds such as anthocyanidin, luteolin, apigenin, catechin and rosmarinic acid have been isolated from the red and

green varieties. They have antioxidant activity, notoriously useful in cancer for the prevention and fight against cancer.

Perilla has several properties, including immunomodulatory, anti-inflammatory, sedative and antibacterial properties. The anti-inflammatory and immunomodulatory actions are mainly attributed to the perilla leaves. The antibacterial and sedative properties, on the other hand, are ascribed above all to the perillic aldehyde contained in the essential oil.

The perilla ketone, always contained in the essential oil, has shown to exert a propulsive effect at the level of the gastrointestinal tract. However, this compound has some toxicity, so it cannot be used in therapy. Perilla seed oil, on the other hand, is widely used in the culinary field and is a source of unsaturated fatty acids (linolenic and linoleic acid) and phytosterols. These latter compounds are particularly useful in decreasing the absorption of cholesterol and this action has been confirmed by several studies conducted on animals. Moreover, perilla seed oil is also ascribed anti-reactive properties, exerted through an action mechanism that involves the reduction of allergic inflammation, the inhibition of lipoxygenase and the inhibition of IgE. However, the use of this plant has not been officially approved for any kind of therapeutic indication.

In Japan, oil is used in paints for its siccative properties.

PINUS SYLVESTRIS

The chemical constituents of *Pinus sylvestris* buds are: oleoresin (the essence of turpentine is obtained by distillation), essential oil, coniferoside and bitter substances (pinicrina).

The main components of the essential oil obtained from pine needles are: alpha-pinene, carene, camphene, beta-pinene, limonene, myrcene, cineol, linalool and bornyl acetate. The main constituents of the essential oil of

turpentine are: alpha-pinene (70-87%), beta-pinene (17-27%), hulls, limonene, camphene, linalool and myrcene.

Pine buds are given different properties (diuretic, balsamic, secretory and slightly antibacterial). These activities are mainly carried out by the essential oil contained in the same buds and have been confirmed by several studies and their use has been officially approved for the treatment of disorders such as colds, coughs, bronchitis, neuralgia and inflammation of the oropharyngeal cavity.

The essential oil obtained by steam distillation of fresh pine needles has properties and therapeutic indications similar to pine buds. In addition, pine needle oil has also been shown to be effective in the treatment of rheumatism. On the other hand, essential oil of purified turpentin has balsamic, antiseptic and hyperemic properties and have also proved to be a useful remedy for rheumatic and neuralgic disorders. Moreover, from some studies conducted on animals, it has emerged that the oil of turpentine is able to increase the bronchial secretion.

PINUS NIGRA

The main chemical components are: alpha and beta pinene, delta 3-carene.

The properties seem the same as the *Pinus sylvestris*.

ROSMARINUS OFFICINALIS

The main chemical components are: 1,8-cineole (eucalyptol), alpha-pinene, camphor, pulegone, verbenone, camphene, borneol, bornil acetate, beta-caryophyllene, p-cymene, limonene, linalool, myrcene, alpha-terpineol.

For internal use, the essential oil of rosemary exerts both an anti-spastic activity on the digestive system and on the bile ducts, and a choleric

activity; if applied externally, this oil is able to exert an analgesic and slightly revulsive action.

The essential oil of rosemary has also been shown to possess antioxidant, antibacterial, antiviral and antiparasitic properties, to which are added dermopurifying, astringent, deodorant and toning properties. Given its antimicrobial, dermopurifying and astringent properties, rosemary essential oil can be useful in case of skin and fat hair.

In aromatherapy, rosemary essential oil is used to stimulate memory and improve concentration. In aromatherapy, the oil is also used in case of nervous tension and performance anxiety.

In the food industry the essential oil is used as a preservative and additive (approved by the FDA - Food and Drug Administration of United States).

SANTOLINA CHAMAECYPARIS

The main components are tannins, resins and in the essential oil there are terpene ketones.

It has emmenagogues, antispasmodic, vermifugal and digestive properties.

SATUREJA MONTANA

The main components are: carvacrol and thymol, cymene, caryophyllene, pyrene, limonene, 1,8-cineole, camphor.

It is used as a spice for food use. It is present in bakery products, sausages, sauces and soups, but the main use is in the vermouth liquor industry. It has a carnal, stomachic, tonic-digestive and antiseptic action.

SALVIA OFFICINALIS

The main compounds are: alpha and beta tujone, camphor, alpha and beta pyrene, camphene, 1,8-cineol, alpha terpineol, borneol, limonene.

Hydroxycitric acid, cathinone, globulol, guaiaretic acid, kavain, methysticin, norbracteoline, pulegone, 2-methyl-3-butanenitrile, isoelemicin, menthofuran, 1,8-dihydroxyanthraquinone derivatives, 1,25-dihydroxycholecalciferol, 1,8-dihydroxyanthraquinone derivatives, 10-demethoxyreserpiline, 10-demethoxystegane, 10-hydroxyisotrilobine, 10-methoxytetrahydroalstonine, 11-demethoxyreserpiline, 12-O-methylcurine, 16-anhydrogitoxigenin, 1H-Indole-3-acetic acid, 1-beta-D-glucopyranosyl-methyl ester, 2-Methoxyfuranodiene, 2-methyloctane, 2-nonanone, 2-O-acetyllycorine, 2-pyrone, 2-undecanone, 2,3-Dimethylcolchicine, 3-hydroxy-4-methoxybenzaldehyde, 3-methyloctane, 3-nitropropionic acid, 3-oxyangeloyl-tremetone, 3,3'-bisdemethylpinoresinol, 3,7,10-Humulatriene, 3alpha-tigloyloxytropane, 4-Hydroxy-3,5-dimethoxybenzoic acid, 5-chloropropacin, 5-hydroxy-norachronycine, 5-Hydroxytryptophan derivatives, 7-hydroxymitragynine, 8-geranoxypsoralen, 8-methoxy-peucedanin, 8-O-Acetylharpagide, 8-prenylnaringenin, Abrin, acalyphin, Acetogenins, acetyldigitoxin, acetyleugenol, Acetyllandromedol, acetyllithosenine, achilleine, Acidic arabinogalactan-protein, aconitine, acteoside, Actinidine, adlumidine, adonitoxin, aegeline, aethusin, Agamenoside H, Agamenoside I, Agamenoside J, agavegenin D, ajacine, ajaconine, Ajmalicine, Alkaloids, allamandin, allocryptopine, alloyohimbine, Allyl isothiocyanate, Aloe-emodin, aloenin, aloin A, aloin B, alpha-cedrol, alpha-chaconine, alpha-cubebene, alpha-guaiaconic acid, alpha-hederin, alpha-pinene, alpha-soladulcine, alpha-solamarine, alpha-terthienyl, alpha-thujone, Alpha-tocopherol, alpha-yohimbine, Amabiline, amaranthin, amarine, ambelline, americanol A, ammodendrine, amygdalin,

amylase inhibitors, anabasamine, anabasine, Anacardic acid, anagalloside, andrographolide, anethole, angelicin, angelitacin A, angenomalin, angiotensin I, anisatin, annocherine A, annocherine B, annonacin, anomalin, anonaine, anthracene derivatives, anthraquinones, antiarins, antofine N-oxide derivatives, apiin, apiole, apterin, arborinine, arbutin, archangelicin, arecaidine, arecoline, aristolactame, Aristolactone, aristolamide, Aristolochia, aristopyridinone A, arnifolin, artabonatine B, artemisia ketone, arvenin I, arvenin II, arvenin III, asarinin, asarone, ascaridol, asclepiadin, asclepin, asimilobine, asimin, asiminacin, asparagosome E, asparoside B, asperosid, aspidospermane, aspidospermatidine, aspidospermatin, aspidospermine, atractyloside, atratoglucoside A, atratoglucoside B, Atropine, Azadirachtin, azadirone, baldrinal, baptifoline, belamcandaquinone A, belamcandaquinone B, belamcanidin, benzoylsalicin, berbamine, berberine, Bergamottin, Bergapten, bergaptol, beta-asarone, beta-chaconine, beta-cubebene, beta-cyano-l-alanine, beta-guttiferin, beta-peltatin A, beta-phellandrene, beta-pinene, beta-soladulcine, beta-thujone, beta-yohimbine, Betulin, bicuculline, bilabol, biochanin-A, bisabolangelone, bisabolol, bisjatrorrhizine, boeravinone A, boeravinone B, boeravinone C, boldine, borneol, borneol ester, borneol acetate, brassinosteroids, bruceantin, bryophyllin A, bryophyllin C, bufadienolide glycosides, bufotenine, bulbocapnine, buxamine, buxine, Cadmium (Cd), Caffeic acid, caffeine, calarene, Calcium acetate, Calcium oxalate, caleicin, californidine, calycanthine, calycosin, calystegine A, calystegine B, calystegine C, camphor, cannabinoids, Canavanine, cancentrine, cannogenol, canthin-6-one, caranine, carboline, carboline alkaloids, carboxyatractyloside, cardanol, cardenolide glycosides, cardenolides, cardol, carolinose, carvacrol, Carvone, Caryophyllene oxide, cascarillin, cascarosides, casimiroedine, cassaine, catechin+C266, cathine, cephalomannine, cepheline, cevadine, Chalcone glycosides, chamaelirin,

chamissonolide, cheilanthifoline, cheirotoxin, chelerythrine, chelidone, cherianoine, choline, chondrocurine, chrysarobin, chrysophanol, cicutol, cicutoxin, cimipronidine, cinchonidine, cinchonine, cinnamaldehyde, cis-Calamenene, cis-chrysanthenol, cis-chrysanthenyl acetate, cis-isopulegone, clavolonine, clerodane-type diterpenes, Cocain, coccuorbiculatine A, Codeine, Colchicin, colchicinoside, Condurango glycoside A, Condurango glycoside B, Condurango glycoside C, Condurango glycoside D, Condurango glycoside E, conessin, coniine, convallatoxin, convalloside, convicine, copaene, coptisine, corchoroside A, corchoroside B, coriamyrtin, coriarin, coriatine, corilagin, coroloside, corotoxigenin, corydaline, corydine, corydione, corynantheane, corynantheine, corynanthine, costunolide, Coumarin, crambim, crinamine, crinidine, cryptolepine, cryptopine, cubebol, cucurbitacin I, cucurbitacin I-glycoside, cucurbitacine B, cucurbitacine C, cucurbitacine D, cucurbitacine E, cucurbitacins, cularidinen, cularine, curcin, curillin G, curzerenone, cuscohygrine, cuspareine, Cyanatratoside C, Cyanatratoside E, Cyanide, Cyanogenic glycosides, cyclamine, cycleanine, cyclobuxine, cycloleonurinin, cyclopamine, cycloposine, cymarine, cynoglossine, cypripedin, cytisine, D-bebeerin, D-isochochondodendrine, D-tubocurarine, daidzein, daidzin, damascenine, daphnetoxin, daphnin, daphnoretin, daucosterol, dauricine, deacetylaspidospermine, Deca-(2E,4E)-dienoic acid isobutyl-amide, deglucoacoroloside, deglucohyrcanoside, dehydroandrographolide, dehydroapocavidine, dehydrocorydaline, dehydrocorydine, dehydrocostus lactone, dehydroguaiaretic acid, dehydronanteinine, dehydrotremetone, delcosine, delta 3-carene, delta-5-dehydrolupanine, demethylcyclomikuranine, deoxyandrographolide-19-beta D glucoside, deoxymiroestrol, deoxynupharidine, deoxypodophyllotoxin, deslanoside, desmethoxyyangonin, diacetylbuxadine, dibenzocyclooctadiene lactone, dicentrine, dictamnine, dicumarol, dietamine, digitanols glycosides,

digitonine, digitoxigenin, digitoxin, digoxin, Dihydroajugapitin, dihydrocorynantheine, dihydrokavain, dihydromethysticin, dihydrosanguinarine, Dillapiole, dimyrcene, dioscin, dioscorine, diosgenin, Diterpene alkaloids, diterpene lactones, Diterpenes, , domesticine, donasine, dopamine, duartin, eburnamonine, eburnan, echimidine, echinopsine, elemicin, eleostearic acid, Ellagic acid, Ellagitannins (hydrolysable tannins), eluterin A, eluterin B, eluterin C, eluterin D, eluterin E, eluterin F, eluterin H, eluterin I, eluterin J, embelin, emetine, emodin, emodin anthron, ephedrine, epi-lupinine, epigallocatechin gallate, epivincamine, eranthin, ergoline alkaloids, erysimoside, Esculetin, eseramine, estragole, Ethyl acetate, eugenol, eurycomalactone, eurycomanol, eurycomanone, evatromonoside, evodiamine, evonine, evozine, excoecarins, falcarindiol, fangchinoline, fatty acid 16:0 (palmitic acid), fenchone, ferutinin, flavone, Flavonoids, flavopereirine, forskolin, fraxinellon, Free gossypol, fructose, frugosid, frutescinol isovalerate, fumaritine, furan, furan derivatives, Furanocoumarins, furanoelemene, Furoquinoline alkaloid, galanthamine, galegine, galipeine, galipine, galipinine, gallic acid, gallocatechin, gallotannins, gambogic acid, gamma fagarine, gamma-elemene, gamma-terpinene, geissoschizoline, gelsemicine, gelsemine, geneserine, genistein, genistin, geranine, geraniol, germacrene-B, gingerols, ginkgotoxin, gitaloxin, githagin, gitoxigenin, gitoxin, Glanduloside A, Glanduloside B, Glanduloside C, Glanduloside D, glaucine, glauidine, glucobrassicin, glucoerucin, glucoevatromonoside, Glucofrangulin A, Glucofrangulin B, Glucomannan, gluconapin, gluconasturtiin, glucoraphenin, Glucosins, glucose, glucoside scillaine (or scillitoxin), Glucosinolates, glucoverodoxin, Glutamic acid, glycine, glycitin, glycyrrhizin, golceptine, gramine, gratioside, graveoline, guaiacin, gynocardin, gypsogenin, haemanthamine, harmaline, harman, harmane alkaloids, harmine, harpagide, harunmadagascarin A, harunmadagascarin B, hayatidine, hayatine,

hecogenin, hederacine A, hederacine B, hederagenin, helenalin, heliotridine, Heliotrine, heloside A, heloside B, helveticoside, hexadecanal, hippamine, hippeastrine, hiptagin, hirundicoside B, hirundicoside C, hirundicoside D, Histamine, homocastasterone, homolycorine, homopiperonylamine, homostachydrine, honokiol, hoodigoside W, hoodigoside Z, hoodistanalosite A, hoodistanalosite B, hordenine, huperzine A, huperzine B, huperzidine, huratoxin, hydnocarpic acid, hydrastine, Hyoscyamine, hyperforin, hypericin, hyrcanogenin, hyrcanoside, ibogaine, icariin, imperatorin, imperialine, indole alkaloids, indole-3-acetic acid, ingenol esters, Intermedine, iridoids, irigenin, ismine, iso-pinocamphone, isoamericanin A, isoamericanol A, isoapocavidine, isobergaptin, isoboldine, isoconessimine, isocorydine, isoflavones, isogambogenin, isoguaiacin, isoimperatorin, isomillettone, isomorellic acid, isomorellinol, isonicotine, isooxypeucedanin, isopavine, isopilocarpine, Isopimpinellin, isoquassin, Isoquinoline alkaloids, isoreserpiline, isosafrole, isotetrandrine, isothebaine, isotussilagine, ivaide A, ivain I, ivain II, ivain III, ivain IV, jaeschkeanadiol, jalapin, jatrorrhizine, jervine, joannesialactone, juglone, junenol esters, K-strophanthidin, kaurenoic acids, khellin, kokusaginine, kosotoxin, kurchessine, l-borneol, L-Hypaphorine, L-isococlaurin, labdane diterpenes, lactucin, lactucopicrin, lambertianin C, lanatoside A, lanatoside B, lanatoside D, lapachenole, lapachol, Lawsone, Lectins, leosibiricin, lepidiline A, lepidiline B, leurosidine, lignans, ligustilide, limonoids, linalool, linalyl acetate, linamarin, Linustatin, liriodenine, litebamine, Lithosene, lobeline, lobivine, lophophine, lotaustralin, lucidin, lupanine, lupeol, lupinine, lycodine, lycopodine, Lycopsamine, lycoramine, lycorenine, lycorine, lysergic acid, Macrocyclic spermidinic alkaloids, maculosidine, magnocurarine, magnoflorine, magnoflorine iodide, magnolol, malic acid, malonyldaidzin, malonylgenistin, malonylglucitin, mansonin, margaspidin, marmesin, masonine, matrine, mecambaine,

melatonin, meliatoxin A1, meliatoxin A2, menisdaurin, menthofuran, mescaline, mesembrenone, mesembrine, mesembrinol, meso-dihydroguaiaretic acid, meso-nordihydroguaiaretic acid, Meta-Cresol, Methoxsalen, methyl linoleate, methyl salicylate, methylarbutin, methyleugenol, methylisoeugenol, methylisopelletierine, methyllycaconitine, methylprotodioscin, methylsalicylate, mezerein, millettone, minovincine, miroestrol, mitragynine, momordicin, momordicosides, momordin, Monocrotaline, montanol, morellic acid, morellin, moringine, Morphine, myrcene, myristicin, N-methyl-beta-phenethylamine, N-methyl-huperzine B, N-methylanabasine, N-Methylaspidospermatidine, N-Methylcytisine, N,N-Dimethyl-5-methoxytryptamine, N,N-dimethylphysoperuvine, N,N-DIMETHYLTRYPTAMINE, nandazurine, narwedine, nemorosone, neoandrographolide, neoanisatin, neolignans, Neolinustatin, neoquassin, neoruscogenin, neotigogenin, ngaione, Nicotine, nigellimine, nimbolide, nonane, nor-roecarboline, norcoclaurine, norcycleanin, nordihydroguaiaretic acid, Norditerpene alkaloids, norditerpenoid alkaloid esters, norephedrine, Norepinephrine, noreugenin, norharmane, norisoboldine, nornuciferine, Noscapine, nuphacristine, nuphamine, nupharidine, nupharin, nymphaeine, octacosanoic acid, octanal, odoroside G, odoroside H, oduline, oenanthotoxin, oleandrigenin, oleandrin, olitoriside, operculinic acid C, osthénol, osthrotol, ouabain, Oxalates, oxalic acid, oxonantenine, oxyacanthine, oxyimperatorin, oxypeucedanin hydrate, p-anisaldehyde, p-coumaric acid, pabulenol, palmatine, palmidin C, palustrine, paniculatoside A, paniculatoside B, paniculatoside C, papaverine, Para-Cresol, paradol, pareirubrine A, pareirubrine B, parillin, parrisaponin, parthenolide, pausperadine, pavine, peganine, peimisine, pelletierine, peltatin A, pennogenin tetraglycoside, pentacosanoic acid, pentacyclic triterpene glycosides, pentacyclic triterpene saponins, Pentacyclic triterpenic

derivatives, Perilla ketone, periplogenin, peucedanin, Peucenin, pfaffic acid, Pfaffosides, phasin, Phellopterin, Phenanthrene, phenylethylamines, phenylpropanoids, phlorobenzophenone, phloroglucinol derivatives, phoratoxin, phorbol, Phorbol esters, phygrine, phyllanthusiin D, physcion, physoperuvine, physostigmine, physovenine, phytic acid, phytolaccatoxin, Phytotoxins, picramnioside A, picramnioside B, picramnioside C, picrotoxin, picrotoxinin, Pierisformotoxin A, Pierisformotoxin B, Pierisformotoxin C, Pierisformotoxin D, pilocarpidine, pilocarpine, pilosine, pimpinellin, pinocamphone, pinocarvone, Pinoresinol diglucoside, Piperidine alkaloids, piperine, piperlonguminine, Platyphylline, Plectrinone A, plumbagin, podophyllotoxin, polysaccharides, non-cellulosic, water-soluble, Polyynes, populin, pratorimine, predicentrine, pregnane, pregnane derivatives, presenegenin, prestegane B, Proanthocyanidins (condensed tannins), progenin II, prosapogenin A, proscillaridin A, protease inhibitors, proteolytic enzymes, Protoanemonin, protoberberine, protodioscin, protokosin, Protolichesterinic Acid, protopine, protoveratrine A, protoveratrine B, prunasin, pseudoanisatin, pseudoephedrine, pseudohypericin, pseudolycorine, pseudopelletierine, pseudoyohimbine, psoralen, psychotrine, ptaquiloside, ptelein, pulchellin, pulegol, pulegone, punarnavine, purothionin, Pyrethrins, Pyridinium alkaloid-coupled secoiridoids, Pyrrolizidine alkaloids, quassinoids, quebrachamine, quebrachidine, quinazoline alkaloids, quinidine, quinine, Quinoline alkaloids, Quinolizidine alkaloids, rescinnamine, reserpiline, reserpine, reticuline, rein, rhodexin A, Rhodiocyanoside, ricin, roecarboline, roeharmine, romucosine H, Rotenone, rottlerin, rotundine A, rotundine B, rugosin E, runanine, ruscogenin, rutaecarpine, rutin, ryanodine, sabinene, sabinyl acetate, safrole, salicifoline, salicin, salicortin, Salicylates, salsoline, salvinorin A, salvinorin B, salvinorin C, salvinorin D, salvinorin E, salvinorin F, salvinorin G, salvinorin H, salvinorin I, sanguin H-6,

sanguinarine, saniculoside N, saniculoside R-1, santonin, sapogenins, saponarioside, saponin glycosides, Saponins, sarmentine, sarsasapogenin, sauroxine, saxalin, scammonin I, scammonin II, scammonin VIII, scillaren A, scoparone, scopolamine, scopoletin, scoulerine, Secoiridoid glucosides, sedacrine, sempervirin, Seneci(o)phylline, Senecionine, Senkirkine, sennoside A, sennoside B, serine, sesquiterpene alkaloids, sesquiterpene lactones, sesquiterpene lactones type eudesmanolide, shogaols, Sibiricasaponin A, Sibiricasaponin B, Sibiricasaponin C, Sibiricasaponin D, Sibiricasaponin E, simplexin, sinactine, sinigrin, sinoacutine, sinomenine, sitosterol, skimmianine, skimmine, soladulcidine, solamargine, solanine, solasodine, sophorine, sparteine, spermine, sphondin, spiganthine, sporidesmin, stachydrine, steganacin, steganone, stemmoside a and b, sternbergine, steroid derivatives, Steroidal alkaloids, steroidal furostan saponins, steroids, stigmast-7-en-3beta-ol, stigmasterol, strebloside, strophantidin, strophantoside, strospeptide, strychnine, stylophine, styrene, styrylpyrones, sucrose, Supinine, swainsonine, Symphytine, synephrine, tabersonine, tagetone, tannic acid, tannins, taspine, taxine, taxiphyllin, taxol, tazettine, tectorigenin, teferdin, terpinen-4-ol (4-terpineol), tetrahydroisoquinolones, tetrahydropalmatin, tetrandrine, teucrin A, Thaliporphine, thapsigargin, Thebaine, Theobromine, theophylline, thermopsine, thevetine, thiaminase, thiobinupharidine, thionin, thymoquinone, tigogenin, tigonin, tonkinensine A, tonkinensine B, toxicariosids, toxiferine, trans-caryophyllene, trans-isoasarone, trans-isopulegone, tremetone, tremulacin, tremuloidin, Trichodesmine, trichosanthin, trigonelline, Triterpene saponins, Tropane alkaloids, tropine, Trypsin inhibitors, Tryptamine, tryptamine alkaloids, tryptanthrin, turpethin, Tussilagine, tutine, tylocrebrine, tylophorine, tylophorinine, Tyramine, umbelliferone, umbelliprenin, urushiol III, usnic acid, uzarin, vanillic acid, vasicinone, vellosine, veratridine, verodoxin, verticine, vicianin, vicine,

vinblastine, vincadifformine, vincamine, vincanine, vincine, vincristine, Virol A, virol B, virol C, viscotoxin, viscumin, visnagine, voacamine, voacangine, voalfolidine, voaphylline, vobtusine, wedeloside, wisterin, wogonin, xanthatin, xanthone derivatives, xysmalorin, yangonin, yohimbine, yuanhuacine, yuanhuadine, zhebeinine, zingerone, zoapatanol.

Sage is a plant widely used in the culinary field, but it also has therapeutic properties, such as antibacterial, antifungal, astringent and anti-sweating.

Furthermore, some studies showed that sage is able to exert choleric action. So, it's possible to use the plant to treat dyspeptic symptoms.

Other studies, however, showed that the potential anti-inflammatory power is exercised by sage through an action mechanism that involves the inhibition of the synthesis of pro-inflammatory chemical mediators by macrophages.

Sage can be considered a valid aid in combating digestive disorders and can also be useful in case of loss of appetite.

The use of sage has been officially approved to counteract excessive sweating.

Thanks to its anti-inflammatory and antibacterial action, sage has obtained official approval to be used in the treatment of inflammation of the oral mucosa and pharyngeal mucosa.

SALVIA SCLARÈA

Linaliloacetate and linalool are the main components of the essential oil. There are also monoterpene hydrocarbons, pyrene, camphor, 1,8-cineole, myrcene, limonene, ocimene, terpinen-1-ol-4, α -terpineol, nerol, geraniol, citronell, borneol, sesquiterpene hydrocarbons, betacaryophyllene, germacres, curcumene. From the exhausted material of the distillation or from the rest of the plant, the "concrete" is extracted, using the hexane, the

benzene or the petroleum ether; the “sclareol” is obtained from the “concrete”, used as fixer of the perfumes.

Dried flowers are used in the liquor industry to flavor some wines.

The essential oil is used in the food sector for the preparation of food sauces, condiments and confectionery products.

In cosmetics it is a component of perfumes, soaps, detergents, creams, lotions and cologne.

In the medical sector it is recommended for circulatory disorders, depression, excessive sweating and digestive disorders.

An antibacterial and antifungal action has also been detected, especially against dermatophyte fungi.

THYMUS VULGARIS LINALOLIFERUM

Phenolic compounds are present, in particular thymol and carvacrol. There are also α and β -pinene, myrcene, camphor, limonene, terpineol, linalool, geraniol, tujanol, tannins and flavonoids.

Thymus has antispasmodic, stomachic, antimicrobial and expectorant properties. The stomachic and antispasmodic activity are due to the flavonoids present in the plant, while the antimicrobial and expectorant properties are due to the essential oil extracted from the flowering tops. The effectiveness of the thymus is consolidated, in fact its use has been officially approved for the treatment of bronchitis and cough. However, the essential oil of thyme is available in different chemotypes which, therefore, have different activities. Substantially, among the different types of thyme essential oils, it's possible to distinguish:

-Thymol Chemotype: this particular essential oil is rich in phenols (over 60%) and it has the highest antimicrobial activity. It is, however, very irritating and therefore it must be used diluted.

- Linalool chemotype: it is an essential oil that contains high levels of linalool (up to 60%) and it is less irritating than thymol chemotype. It also has antibacterial properties and it seems to be effective against *Candida albicans*.
- Tujanolo chemotype: this essential oil is rich in tujanol (up to 50%), it is not irritating to the skin and - in addition to having antibacterial properties – it seems to be able to exert an antiviral and immunostimulant action.

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