


NAHA  The National Association for Holistic Aromatherapy

Aromatherapy Journal

The Green Issue

- **The Scent of Green**
- **Green Carrier Oils**
- **Can Chemistry Be Green?**
- **Leafy, Green Cilantro**
- **Humble, Holy Hyssop**
- **Where Scent Meets Art**

Aromatherapy E-Journal
Spring 2022. I



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Cover Image and Above: Hyssop (*Hyssopus officinalis*)

Back Cover: Hyssop (*Hyssopus officinalis*)

Franklin Health Research Center Presents:

CLARY SAGE ESSENTIAL OIL SAFETY STUDY

NAHA is pleased to announce that we have partnered again with Franklin Health Research to conduct a valuable essential oil study. This study will focus on clary sage essential oil use in pregnancy.

Please donate toward this exciting research project.

Your donation is tax deductible and any amount will help! Those donating \$100 or more will receive a beautiful Aromatree poster (\$50.00 value) as our thanks to you! (Remember to email us at info@naha.org with your shipping information after donating!)

Background:

Clary sage essential oil has been called "natural pitocin" due to claims which indicate that the oil possesses estrogen-like effects in the body and has potential to induce labor. Aromatherapy reference books claim that these uterine stimulant effects are so powerful that unspecified exposures to the oil can result in serious adverse events including hypertonic uterine contractions, preterm labor, fetal distress, postpartum hemorrhage, and even stillbirth. These warnings have created fear among essential oil users regarding the use of clary sage during pregnancy, despite a lack of evidence indicating that clary sage produces any measurable effect on the childbirth process.

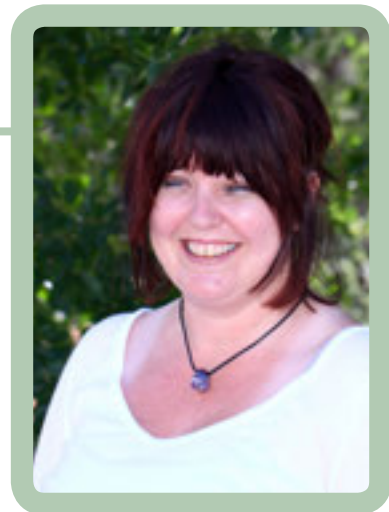
Project Objective:

Quantify the effects of prolonged topical exposure to Clary Sage essential oil on estriol levels, oxytocin levels, and length of pregnancy.

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Editor's Note



Spring 2022: Green

The world at large has suffered immensely in the past couple of years. On a personal level, the chaos of disease, war, environmental disaster, and social division, makes it oftentimes difficult to define purpose in our daily lives.

Yet, each spring green shoots start to emerge in the garden, barely noticeable at first, as the ground is still rock-hard from frosty mornings. Then birdsong starts to fill the air as the sun rises earlier each morning. Bees dozily wake from their slumber and busy themselves with emerging buds and blooms. Birds splash happily in an unfrozen birdbath. The scent of hyacinth (*Hyacinthus* spp.), lilac (*Syringa* spp.), and narcissus (*Narcissus* spp.) fragrance the air. The garden has become vibrant and green, offering hope for the season ahead. Mother Nature has done it again. New life has surfaced from a dark world.

So, what do we mean by *green*? When I gave the spring journal theme to some of our regular writers, I was inspired by the interpretation that several came up with within their area of expertise! For example, *Can Chemistry be Green?* And what does green mean in a biological sense? Or, how about spring green carrier oils, a reference to the color of many carrier oils that you may not have thought about? Our business article has also gone green this issue, expanding on the popular topic of digital marketing. And what does green mean in the world of perfumery? How about a combination of a fougère scent with art?

We also take a deep dive into some “green” plants and oils such as cilantro (*Coriandrum sativum* L.) and hyssop (*Hyssopus officinalis*). Other topics covered in this issue include an introduction to CO₂ extracts and a fascinating look into the world of cuckoo bees. Finally, our team of NAHA Directors never fail to deliver on some wonderful recipes, this time with a focus on green.

So, although darkness might be enveloping some corners of the world at present, know that green is there and offering the hope of new life, even if on a minute level.

Focus on the green and step forth into the vibrancy of the season,

Sharon Falsetto

Sharon Falsetto, BA (Hons), NAHA Certified Professional Aromatherapist®

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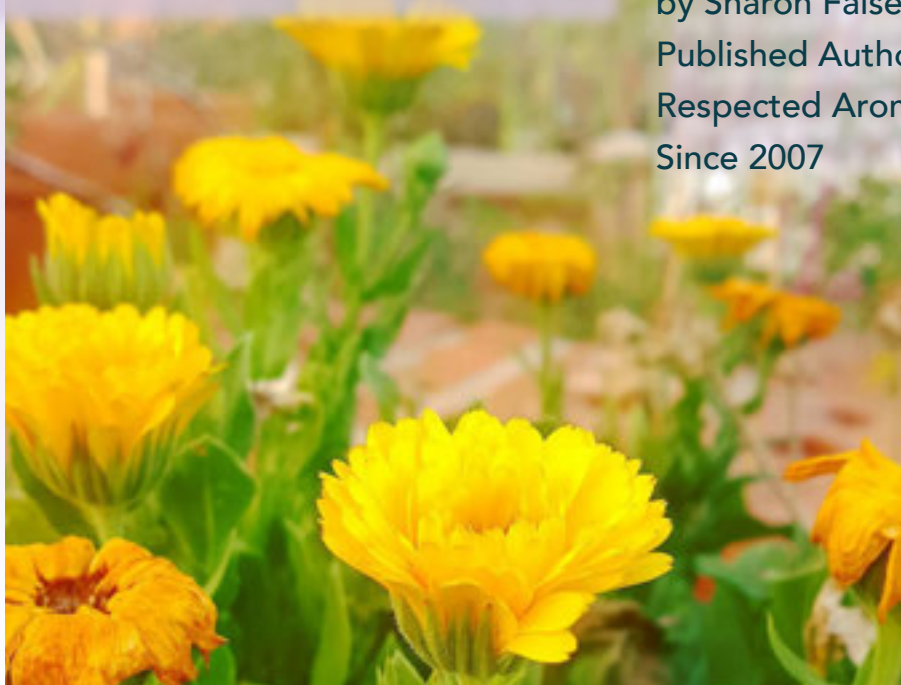
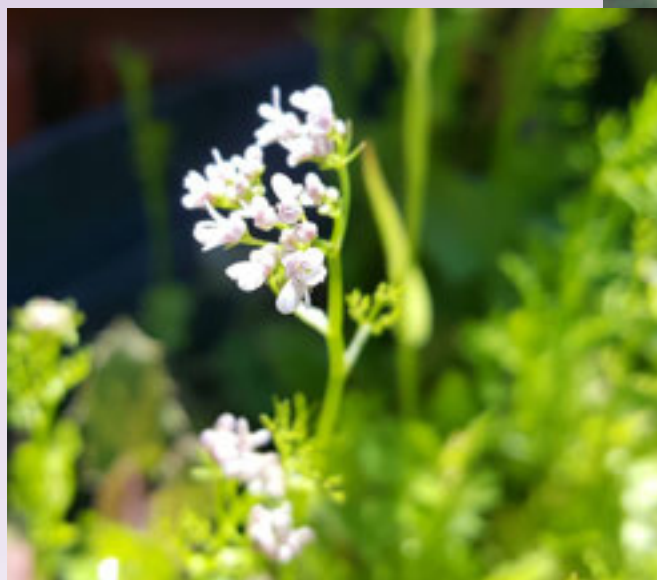
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Leafy, Green Cilantro (*Coriandrum sativum* L.)

By Sharon Falsetto, BA (Hons)
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Cilantro (*Coriandrum sativum* L.),

Cilantro (*Coriandrum sativum* L.), which also goes by the names of *coriander leaf* or *herb*, is the lesser-known leafy part of an ancient plant revered for its spicy seed. Yet, the leaf of coriander (*Coriandrum sativum* L.) has some important constituents and therapeutic uses, both in herbal and aromatic medicine. It is also one of the few true “green” notes of the natural perfumer’s palette.

Finding verifiable information on the leaf of coriander in comparison to the seed is challenging, but I managed to collate some evidence of promising therapeutic properties for this leafy, green, bright herb just as spring arrives! Discover some little-known facts about cilantro (*Coriandrum sativum* L.) in this review of the current research and texts.

Botanical Profile

Botanical Name: *Coriandrum sativum* L.¹

Synonyms: Chinese parsley,⁵ coriander herb,⁶ coriander leaf.⁷

Botanical Family: *Apiaceae* (Parsley): Previously known as the *Umbelliferae* plant family.⁴

Plant Zones: Annual.⁸

Plant Profile

In the words of Keville, cilantro (*Coriandrum sativum* L.) is a plant which is “too small, wispy, and short-lasting to do much for garden design.”⁸ However, although short-lived, this dual-purpose plant gives up both seed and leaf for use in aromatherapy, herbalism, and perfumery.

In general, cilantro (*Coriandrum sativum* L.) has the following recognizable traits. Pay particular attention to the leaves, for the purpose of this profile:

Overall Appearance: Grows up to a height of 20 inches,⁹ with a uniquely, strong aroma (more on that in the *Aroma Profile*).

Leaves: Green, usually tri-pinnate, narrow, and more dissected as they reach the umbel at the top of the plant stalk.¹⁰ The young leaves are harvested for cilantro.

Flowers: Flowers are arranged in typical *Apiaceae* plant family pattern as a compound umbel. Elpel compares an umbel to the shape of an “umbrella,” where “at the end of each

flower stem there is [another] umbel of smaller stems, making a compound umbel.”⁴ Minute flowers are white or pink in color,⁹ resembling the characteristics of lace.¹¹

Fruit: The fruit (or seeds) of *Coriandrum sativum* L., start green and then turn to brown. These are the seeds which are extracted to make coriander (seed) (*Coriandrum sativum* L.) essential oil. Seeds mature from the flowers as they die and are plentiful but tiny. Keville recommends cutting the umbel from the plant, before the seeds mature, and placing inside a paper bag. Once the seeds mature, they will fall off and you will have safely collected the seeds.⁸

Plant Distribution

Chevallier writes that cilantro (*Coriandrum sativum* L.) is indigenous to southern Europe and western Asia,⁹ while Mabey adds eastern Europe to its native ancestry.¹² It’s worth remembering that cilantro (*Coriandrum sativum* L.) is widely cultivated around the world today, so any ideal climate will accommodate it quite happily. Cilantro (*Coriandrum sativum* L.) is also naturalized in North America.⁵

Garden Profile

How to Grow Cilantro: Cilantro (*Coriandrum sativum* L.) can easily be grown from direct seeding in the garden, or a garden pot, while the soil (and weather) is still cool. Although it loves full sun, cilantro (*Coriandrum sativum* L.) is a cool-season plant, so it is best started early and harvested before the height of summer heat. It likes to be kept moist. As Keville comments, it is quick to mature and will bolt as soon as the heat arrives.⁸ If you are harvesting for the leaves,

Cilantro Botanically Translated

Coriandrum sativum L.¹

- *Coriandrum* (kor-ee-AN-drum): Taken from the Greek word *korios*, meaning “bedbug.”²
- *sativum* (sa-TEE-vum): Translates to “cultivated.”²
- L.: An abbreviation of Linnaeus, referring to Carl Linnaeus (synonym, Carl von Linné). Botanical names require the name of the original author of a plant species, hence the abbreviation L. after *Coriandrum sativum*.³
- *Apiaceae* (ay-pee-YA-see-ee): *Apiaceae*, or parsley family, members consist mostly of herbs.⁴

Identification of Cilantro (*Coriandrum sativum* L.)

In most instances, you will probably be growing cilantro (*Coriandrum sativum* L.) in your garden from seed, so you should be able to correctly identify the plant as it grows. However, be aware that the *Apiaceae* plant family has many similar looking plants, including deadly species such as water hemlock (*Cicuta douglasii*) and hemlock (*Conium maculatum* L.), enticingly, yet fatally, similar to carrot (*Daucus carota*).⁴

you need to harvest while they are still young and fresh, before bolting (and flowering) happens.¹³ Harman recommends succession planting to maintain a longer time span of cilantro (*Coriandrum sativum* L.) leaves.¹³

Garden Pollinators: Bees are attracted to the flowers of cilantro (*Coriandrum sativum* L.).⁸

Historical Profile

Cilantro (*Coriandrum sativum* L.) is a plant of antiquity, dating back to ancient civilizations such as Egypt, China, the Roman Empire, and Greece for its medicinal uses. Archaeobotanical discoveries have found that it may date back much further than this and was one of the first cultivated (medicinal) plants (alongside wheat (*Triticum* spp.), flax (*Linum usitatissimum*), and lentil (*Lens culinaris*)) to arrive in Egypt from Palestine “in prehistoric times.”¹⁴ Chevallier writes that it “has been used throughout Asia, northern Africa, and Europe for well over 2,000 years.”⁹ In fact, several sources,^{9,12} cite the listing of *Coriandrum sativum* L. in the Egyptian Ebers Papyrus (c. 1550 BC). Lawless also adds that the seeds of *Coriandrum sativum* L. were found in the tomb of the ancient Egyptian pharaoh of Rameses II (c. 1303 BC – 1213 BC).¹¹

According to Keville, cilantro (*Coriandrum sativum* L.) was thought to be the “secret of happiness,”⁸ although it was mixed into an aromatic brew and combined with wine!

Cilantro (*Coriandrum sativum* L.) found early uses in both medicine and as a culinary agent for flavoring and preserving. It was a common cultivated plant in Roman Pliny’s (AD 23/24–79) time. The ancient Romans used it as a flavoring agent for cooked meat while the ancient Greeks, under the guidance of Hippocrates (c. 460 BC–c. 370 BC), used *Coriandrum sativum* L. for skin inflammation, stomach disorders, heartburn, and fainting. Dessert adorned with its leaves was believed to provide a good night’s sleep.¹⁴

Interestingly, the Chinese have used the whole herb “for dysentery, piles, measles, nausea,

toothache and for painful hernia,” preferring not to separate seed from leaf.¹¹

Chemistry Profile

Leaf: Leung and Foster write that the “leaves [of *Coriandrum sativum* L.] contain less volatile oil than the fruits.”⁵ They further write that the essential oil of the leaves (commonly called “volatile oil” in much of the literature cited) is mainly composed of decyl and nonyl aldehydes, in addition to linalool.⁵ Other constituents of the leaf include proteins, fats, sugars, vitamin C, coumarins, flavonoid glycosides, caffeic acids and chlorogenic acids.⁵ Leung and Foster are one of the few texts which specifically separate out the fruit (seed) chemical components from the leaf chemical components.

An interesting study on the essential oil composition of cilantro, conducted by Potter,¹⁵ recorded that “Substantial quantitative differences were observed between the two cilantro samples and in the leaf isolated at different growth stages.” It concluded that the chemical composition of the leaf oil may differ due to ontogenic factors.

Essential Oil: Arctander adds that “coriander herb oil” is predominately made up of decylaldehyde (decyl aldehyde)⁶ compared to the main component of linalool in coriander seed (*Coriandrum sativum* L.).⁷

Hydrosol: Harman writes that the “likely components: [of *Coriandrum sativum* L. are] Linalool, geraniol, camphor.”¹³ In personal correspondence, Harman clarified that this information was regarding the seed vs. the leaf hydrosol. No data was available for the leaf hydrosol. ^{13a}

Comparison Between Predominant Chemical Constituents for Leaf and Seed Essential Oils of *Coriandrum sativum* L.^{5-7,9,11,16,17}

Chemical Component	Leaf	Seed
Alcohols (Linalool)	4.3%-17.5% ⁷	37.7% ¹⁶ 55%-87.5% ^{5,7,9,11}
Aldehydes (Decyl Aldehyde et al.)	Predominant ^{5,6} >70% ¹⁷	Small ¹¹ Traces ⁶ <1% ¹⁶

Aroma Profile

Herb: Keville eloquently describes coriander seed (*Coriandrum sativum* L.) as “spicy and almost fruity, combined with some sharp pepper, a dash of floral scent, and nutty aroma.” She continues “the leaves have a similar aroma, but one that is fuller and not so sharp.”⁸

Essential Oil: Although there are some similarities between the aroma of both the seed and leaf essential oil of *Coriandrum sativum* L., the leaf has a distinctly *greener* aroma than the seed. I would describe cilantro (*Coriandrum sativum* L.) essential oil as a warm, herby-green note, fresh, with a hint of carrot seed (*Daucus carota*) essential oil.¹⁸ It is most distinctly a top note essential oil.

Perfumery: Moriel¹⁹ classifies the scent of cilantro as green with a subcategory of “sharp/cut grass” from a perfumery perspective. Arctander describes it as an “interesting and powerful odor” which is why it “could very likely find use in perfumery.”⁶ Although he adds (at the time of writing in 1960) that this probably wouldn’t be an economical source due to the low cost of the synthetic production of decyl aldehyde (the main component of cilantro (*Coriandrum sativum* L.) essential oil). However, this mindset might be different today, as more and more people



Coriander seed (*Coriandrum sativum* L.)
© Sharon Falsetto

Cilantro or Coriander Essential Oil?

Cilantro is a term more commonly used by Americans. The catch-all term “coriander” is used by Europeans for both seed and leaf of *Coriandrum sativum* L. Here’s how I remember the difference with regard to aroma:

- Leafy, green cilantro
- Spicy, seed of coriander

seek true natural perfumery ingredients (not synthetically sourced).

Hydrosol: Catty states that there is a “dramatic difference between [the aroma of] the herb-and-seed variety [of hydrosol] and the seed-only variety.”²⁰ She expands on this statement by writing that the herb-and-seed variety is extremely cilantro-like aromatically. I had difficulty finding verifiable information on the leaf-only availability of the hydrosol.



Why Does Cilantro Taste of Soap?

Some people have a strong aversion to the taste of cilantro (*Coriandrum sativum* L.) and attest to it either smelling or tasting like soap.⁸ There may be a scientific reason for this phenomenon. In addition to the presence of “soapy-flavored aldehydes,” in cilantro (*Coriandrum sativum* L.) leaves,²¹ a certain number of the population possess a genetic variant found in their olfactory receptors which leads them to perceive this “soapy” odor or taste.²²

Therapeutic Profile

Herb: Chevallier and Maby write that coriander seed (*Coriandrum sativum* L.) was historically used as a spice and herb for culinary dishes by various cultures.^{9,12} However, this use might be because of *Coriandrum sativum*'s actions on the digestive system. Mabey lists its use (leaf nor seed specific) for flatulence issues and stimulation of the appetite.¹² Chevallier adds that an infusion of cilantro (*Coriandrum sativum* L.) leaves can help relieve cramps and bloating. Nervous gut tension is settled by the herb infusion.⁹

Leung and Foster state that young cilantro (*Coriandrum sativum* L.) leaves are used widely as a garnish in culinary dishes. In addition, the whole herb “is also used in stomach-ache, nausea, measles, and painful hernia.”⁵

Keville states that “the herb is currently being studied for its ability to help relieve anxiety, depression, and the oxidative stress that occurs with Alzheimer’s disease.”⁸

Essential Oil: There is much research and literature about the therapeutic properties

of coriander seed (*Coriandrum sativum* L.) essential oil but little about cilantro leaf (*Coriandrum sativum* L.). However, some studies are emerging. Therapeutic properties include antifungal, antioxidant, antibacterial, and antilisterial. See the *Clinical Research* section of this article for references and expansion on these properties.

Hydrosol: Harman lists the therapeutic properties of coriander seed (*Coriandrum sativum* L.) hydrosol as “Carminative, anti-microbial, digestive tonic, detoxifying.”¹³ No information was available for cilantro (*Coriandrum sativum* L.). Catty believes that coriander seed (*Coriandrum sativum* L.) hydrosol vs seed-and-herb (*Coriandrum sativum* L.) hydrosol works better for mild constipation, bloating, and flatulence.²⁰

Safety Profile: Cautions for Use

Herb: None noted in literature reviewed.

Essential Oil: None noted in literature reviewed.

Hydrosol: None noted in literature reviewed.

Clinical Research

The following studies are an example of cilantro's (*Coriandrum sativum* L.) clinical research use:

- **Antioxidant and Antibacterial:** A dual study, by Peter Y.Y. Wong and David D. Kitts, using parsley (*Petroselinum crispum*) and cilantro (*Coriandrum sativum* L.) extracts demonstrated radical-scavenging activity, ferrous ion-chelating activity, and inhibition of *Bacillus subtilis* and *Escherichia coli* growth through various tests.²³

- **Antifungal:** In a study entitled *Coriandrum sativum* L. (*Coriander*) Essential Oil: Antifungal Activity and Mode of Action on *Candida* spp., and Molecular Targets Affected in Human Whole-Genome Expression, it was found that cilantro (*Coriandrum sativum* L.) leaves “had strong antifungal and anti-adherent activity against *Candida* spp., as well as anti-proteolytic activity against *C. albicans*...”²⁴

- **Antilisterial:** Another study, *Antilisterial Properties of Cilantro Essential Oil*, concluded that “Cilantro oil is a potent antilisterial plant extract with potential applications as a food preservative or in the formulation of disinfectants for the control of *Listeria monocytogenes* in the food processing environment.”²⁵

Editor’s Note: Remember that clinical studies need to be read in context with many factors including size of study, control methodology, number of participants and location. The following studies are extracts or summaries of studies and their stated perceived outcomes. Research each study fully and correctly to learn more.

- **Alzheimer’s Disease:** A 2016 study in *The American Journal of Chinese Medicine*, *Coriandrum sativum* Suppresses A β 42-Induced ROS Increases, Glial Cell Proliferation, and ERK Activation, showed results that suggested that “*C. sativum* leaves have antioxidant, anti-inflammatory, and ERK signaling inhibitory properties that are beneficial for patients with AD [Alzheimer’s Disease].”²⁶

Cilantro in Full Profile

Cilantro (*Coriandrum sativum* L.) is sure to add a bright, green note to your herb garden in color, texture, taste, or therapeutically. And it is relatively easy to grow, even if you have limited space. If you can’t grow the herb, consider seeking out the essential oil or hydrosol to add a certain *je ne sais quoi* factor to perfume blends, or promising therapeutic value for spring health.

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Sedona Aromatics follows the L3C business model concept, a low profit approach, by providing community aromatherapy scholarships for courses and affording aromatherapy education to more during challenging times. Sharon is the author and teacher of *Sedona Aromatics' Language of Aromatics*TM online aromatherapy certification program. *Sedona Aromatics* is also home to the online *Botanical Aromatherapy*TM membership school.

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Sharon is an intuitive aromatherapy blend formulator. As a garden and home herbalist, and natural perfumer, she believes in integrating herbal and scent knowledge within her aromatherapy formulas and teachings.

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————— *Leafy Green Bath Fizz or Foot Soak* —————

A fresh, green bath fizz or foot soak which will invigorate, cleanse, and/or relax you for the spring season!

This recipe makes approximately 25-oz. of product.

Equipment:

- weigh scales
- large mixing bowl (to mix everything together)
- one Pyrex® jug
- three mixing bowls (to separate out ingredients after weighing)
- small pan
- large spoon for mixing
- stove top
- glass Mason jars to store the bath fizz/foot soak. Choose size/s which works for you.

Ingredients: (By weight)

6-oz. (120 g) citric acid
 12-oz. (340 g) bicarbonate of soda
 5.75-oz. (163 g) arrowroot powder
 0.5-oz. (14 g) cocoa (*Theobroma cacao*) butter
 2 tsp. powdered green clay

Ingredients: (By volume)

22.5 mL cilantro (*Coriandrum sativum* L.)
 sunflower (*Helianthus annuus*) oil

Essential Oils:

35 drops cilantro (*Coriandrum sativum* L.)
 25 drops geranium (*Pelargonium graveolens*)



The Infused Oil

Step One: Make the Cilantro Infused Oil

Note: You will only use a proportion of the finished oil to make this recipe as listed below. You will need a 4-oz. jar to make this infused oil.

Ingredients:

4-oz. (120 mL) organic sunflower (*Helianthus annuus*) oil

Organic cilantro (*Coriandrum sativum* L.) leaves (dried) (enough to fill a 4-oz. jar. They will shrink significantly from fresh to dry leaf)

To Make:

Dry out the cilantro leaves by spreading them out on tissue paper on a flat surface. Depending on your climate, this may take a few days. You want them to be free of moisture before infusing them in the oil.

Add the dried cilantro leaves to a clean, clear jar (such as a Mason jar). Pack it full.

Pour in the sunflower oil until it covers all the leaves.

Cap and label the jar.

Store in a dark closet for 6-8 weeks, remembering to shake the jar gently intermittently.

After 6-8 weeks, strain off the cilantro leaves, and repour the infused oil into another jar. Label.

Store in a cool, dark place until you are ready to use the oil.

Photo this page: *Leafy Green Bath Fizz with Cilantro* (*Coriandrum sativum* L.) leaf © Sharon Falsetto

Step Two: Make the Bath Fizz or Foot Soak

Pre-blend the essential oils together in a small, glass beaker. Set to one side.

Weigh out and measure the ingredients. Separate them into different mixing bowls. Place the cocoa butter into the Pyrex® jug.

Add the arrowroot powder, citric acid, and the bicarbonate of soda to the large mixing bowl and mix with a spoon. You may want to wear gloves if you have sensitive hands due to the use of citric acid. Set to one side.

Heat up a small pan of regular tap water on the stove top. When the water is hot, add the Pyrex® jug with the cocoa butter. Slip the handle of the jug over the edge of the pan so that the jug is resting above the above water (Bain Marie method).

When the cocoa butter has melted, add in the cilantro-infused oil, and stir. Take the mixture off the heat.

Add the essential oil blend and stir.

Add the liquid cocoa butter, basil-infused oil, and essential oil mix to the mixing bowl containing the arrowroot powder, citric acid, and bicarbonate of soda. Stir together with a spoon until the oils have absorbed into the dry ingredients. If necessary, use clean hands to “rub” the mixture together thoroughly. Make sure that you don’t have any clumps.

Add 2 teaspoons of powdered green clay and lightly mix together.

Pour the finished contents into suitable glass Mason jar/s. Label with contents and date.

Make sure that the jar is airtight and kept away from moisture before use.

**To Use the Bath Fizz or Foot Soak**

Add two scoops of the bath fizz to a steaming bath. Alternatively, use as a foot soak. Swirl and enjoy.

Cautions: For adult use only. Possible skin sensitivity. The dilution rate of the essential oil blend in this quantity of product is low but discontinue use immediately if irritation occurs.

Photo this page: *Leafy Green Bath Fizz with Cilantro (Coriandrium sativum L.) and Geranium (Pelargonium graveolens) leaves* © Sharon Falsetto

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Can Chemistry Be Green?

By E. Joy Bowles, PhD, BSc Hons



In the world of fragrance and perfumery, the word “green” is an odour description, not just a colour. Let’s look at the perfumery concept of “green” odours which characterise and define many essential oils. Michael Edwards, an Australian perfume expert, is quoted describing green notes as adding “freshness, crispness and sharpness” to fragrances.¹

Focusing on essential oils, The *Eden Botanicals* webpage “Green Aroma Family” suggests that clary sage (*Salvia sclarea*), geranium (*Pelargonium graveolens*), peppermint (*Mentha × piperita*), petitgrain (*Citrus aurantium* var. *aurantium* (fol)) and spearmint (*Mentha spicata*) essential oils and violet leaf (*Viola odorata*) absolute would contribute “green” aromas to an essential oil formulation.²

The author writing for the *Scentscillo*³ website mentions several food substances that have very powerful “green” notes:

- Cucumber (*Cucumis sativus*) (E, Z)-2,6-nonadienal)⁴
- Green bell pepper or capsicum (*Capsicum annuum*) (2-methoxy-3-isobutyl pyrazine)⁵
- Green pea (*Pisum sativum*) (2-methoxy-3-isopropyl pyrazine)⁶

These types of aromatic food chemicals can be used in fragrances, adding surprise and

novelty. The author also mentions galbanum (*Ferula gummosa*), freshly cut grass, conifer trees, lily-of-the-valley (*Convallaria majalis*), and lime (*Citrus aurantifolia*) as sources of “green” notes.

The *Creating Perfume* website gives instructions for “green perfume construction”⁷ and suggests a mixture of essential oils and individual chemicals with “green” aromas with pretty pictures that you can trawl through. But my favourite place for looking up aroma chemicals and their odour descriptions is *The Good Scents Company* (TGSC) database.⁶

Green Essential Oil Chemistry

Out of the 1,491 aroma substances listed on the TGSC database with “green” in the odour description, a couple of things caught my eye. Firstly, that there were many aldehydes and esters in the list, with either “hexyl,” “hexenyl” or “hexanoate” as part of the name (‘hex’ = 6 carbon atoms in a chain).

According to Tisserand & Young, violet leaf (*Viola odorata*) absolute has several “hex” compounds, cistus (*Cistus ladanifer*) essential oil has about 6.8% cis-3-hexenol, and jasmine sambac (*Jasminum sambac*) absolute has 2.3% 3-hexen-1yl benzoate.⁸ The very green tomato leaf (*Solanum lycopersicum*) absolute has 2-hexenal and 3-hexenal as well as hexanal among its key aroma components,⁹

both of which are components in the aroma of cut grass.

Secondly, I happen to know that some of these components are likely to be only present as trace compounds in essential oils, but nevertheless, their potent aromas, and low odour thresholds mean that they contribute strongly to the overall aroma of the essential oil. For example, galbanum (*Ferula gummosa*), although its major constituents are beta-pinene and delta-3-carene, has minor compounds such as (3E,5Z)-undeca-1,3,5-triene and 2-methoxy-3-isobutyl-pyrazine that are only present in traces, but are nevertheless key to the green aroma of galbanum (*Ferula gummosa*).¹⁰ 2-methoxy-3-isobutyl-pyrazine, also a key odour component of green bell pepper (*Capsicum annuum*) is perceptible at the incredibly low odour threshold of 0.002 parts per billion (ppb).¹¹ The R-(-)-linalool found in lavender (*Lavandula angustifolia*) essential oil has an odour threshold of 0.8 ppb (12), meaning the smell of linalool is about 400 times weaker than the smell of the pyrazine.

The biological significance of the “green” 2-alkenal aldehydes, particularly 2-hexenal, appears to be a defensive mechanism plants use to repel predators and micro-organisms, and to prime neighbouring plants to upregulate their own production of C6 aldehydes.¹³ The description ‘2-alkenal’ means a C=C bond is conjugated with the aldehyde group in the number two position along the carbon chain. Rats don’t like the smell of 2-hexenal, and it triggers the Tyrosinase-Related Protein 1 (TRP1) channels in their trigeminal nerves, causing them to retreat from the aroma.¹⁴ In humans, it is likely that these aldehydes would also trigger our



trigeminal TRP1 receptors, which could cause an alerting stimulus to be sent to the awareness centres in the brain via the reticular activating system.¹⁵ The “freshness, crispness and sharpness” of these green aromas might literally be able to influence our alertness, sharpening our mental clarity and focus.

So – can chemistry be “green?”

Hopefully I’ve opened at least one can of worms for you to discuss with your colleagues and students... there’s always more to learn!

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The Scent of Green

Dr. DorothyBelle Poli

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In a discussion with my father about what is “green,” his answer surprised me. He defined green as “money, an ugly color, and something clean.” How in the world do those three things define the same word? The more we talked about his rationale, it made sense for a self-made man who painted motorcycles and race cars. But the idea that my grease monkey father related “green” to “clean” remained the weird part. At that moment, I began my scientific investigation into something more than a color with someone who sees the world from the perspective of power and influence. Where would this journey go?

Sure, green reminds us of nature—surrounding ourselves with trees and herbaceous plants brings a feeling of calm and rebirth. People seek out nature when chaos exists in their lives. We sit in gardens, go for walks, or unplug and venture into the woods for longer therapy. Even my dad’s capitalist views apply here; commercials often tout “fresh meadow fields” and the like as scents for their products when wanting to portray emotional calm. As it turns out, green or “fougère” is a scent that perfumers embrace as a true scent. This

volatile collage has a long history and is profitable.¹ Plants from ferns to fruiting plants produce this natural odor.

The perfumery industry has long been trying to determine how a person interprets the chemistry of a scent.² Human interpretation of a smell is complex. Smells have been described as a pyramid of scents where aromas, sensations, look (color and texture), and emotions are connected. Here, 800 chemicals could be represented but the untrained nose smells “coffee.”³ Because odors are often culturally defined, it is hard to have a universal classification of odors within the business.⁴ However, some smells appear to have a longer history, evolutionarily connecting us to the basics of survival.⁵ What is “safe,” “dangerous,” “good,” or “bad” may represent those basic olfactory categories of perfumery and our basic human survival.⁶

So, what is “green scent” really? Green is considered a simple odor and therefore seems to be easier for the human brain to interpret.⁷ Green is defined by Teixeira et al. as “typical botanical notes with scents of fresh leaves or





Strawberry (*Fragaria x ananassa*)

stalks and mown grass or with reminiscent freshness.” Being described as “fresh” suggests that the volatile evaporates quickly, because of high volatility⁸ and is therefore considered a top note.⁹

Since plants cannot run away from danger, they need a unique yet intricate way to communicate with one another and those with whom they interact. Secondary metabolites (e.g. the compounds of the plant defense system) are low molecular weights and used as antioxidants, colorants, fragrance, and flavorings.¹⁰⁻¹³ Each of these functions helps

a plant survive. For example, antioxidants aid cellular stress while colorants, fragrance and flavorings could lure or repel an animal’s attention. The green scent plays a part on this important list of survival tools.

Through further exploration of the chemistry of green scent one quickly discovers the connection to Green Leaf Volatiles (GLVs). GLVs are part of the oxylipin pathway (which also produces jasmonates) through the peroxidation of polyunsaturated fatty acids. As a result, GLVs are known to have specific roles in plant defense, plant-plant interactions, and plant-insect interactions.¹⁴⁻¹⁵ Specific chemicals are common GLVs: (E)-2-hexenal (a leaf alcohol), (Z)-3-hexenal (a leaf aldehyde), and 1-octen-3-ol. These compounds are widely distributed in fresh leaves, vegetables, and fruits.¹⁶ However, the green scent is really a mix of at least eight volatile six-carbon (C6) compounds. Often it is the mix of these chemicals plus eight more nine-carbon (C9) compounds that produce the slight, yet unique versions of green scent found across plants.¹⁷ Each version of green scent helps plants communicate with their own species or to attack another. Some additional examples are found in Table 1.

Table 1: Examples of GLVs in different plants connected to aroma

Chemicals Involved	Description
(z)-3-hexen-1ol, 1-hexanol, hexenal, (E)-2-hexenal and hexyl acetate	Strawberry fruit ripening shows floral and sweet sensations changing over time ¹⁸
A GLVs blend	Flavor and aroma compounds reported in tea ¹⁹
C6 & C9 aldehydes and alcohols	Cucumber fruit ripening shows changing concentrations over time ²⁰
(Z)-3-hexenal and (E)-2-hexenal	Aroma in fresh cherry tomato with strong green grassy and green-leafy odor ²¹

In addition to the composition of green scent's components, different amounts are released in relation to attacker feeding styles,²² wounding,²³ fungal and bacterial infections.²⁴⁻²⁵ Even monocots and dicots show variations in their GLVs.²⁶ The system is straight forward yet varying enough to be convoluted.

Economic Connections and Why Aromatherapists Should Pay Attention

Obviously, any compound that can impact flavor and aroma has an economic impact; GLVs are no different. Green scent compounds can be manipulated to help regulate fruit and vegetable marketing and storage.²⁷ Another example of how green scent can be used for economic gain is in green tea aroma; it is understood to be negatively impacted by "raw grass" scent.²⁸ As more plant secondary metabolites pathways are understood they can be manipulated by science to change the overall chemical profile of a plant. While we can see variations in a plant's overall percentages of compounds caused by chemotypes and ecotypes, as particular plants become manipulated for non-essential oil uses, it will likely impact our aromatherapy potentials in those same plants. Aromatherapists will need to pay attention to future purchases made from reputable companies who provide GC-MS analysis of essential oils to ensure their essential oils are what works for their purposes.

Conclusion

Going back to my conversation with my father, green does represent money and clean.



Crate of herbs

Profits, mood, and general wellbeing are easily represented by an ugly color (for a car and bad luck for a motorcycle). There is true power and influence with this literal scent. **The power of green!**

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About Dr. DorothyBelle Poli:

Dr. DorothyBelle (DB) Poli is a Full Professor of Biology at Roanoke College in Salem, Virginia, and a Research Associate at the Virginia Museum of Natural History. She is an evolutionary plant physiologist who explores how plant hormones influenced axis formation. DB received her Plant Biology PhD. from the University of Maryland in 2005. In addition, she is a certified Aromatherapist from the *Aromahead Institute*. She is the co-Director of the Dragon Research Collaborative, a transdisciplinary research group that explores how plant fossils may have contributed to the dragon folklore around the world. You can contact Dr. Poli at poli@roanoke.edu

Cuckoo Bumblebee (*Bombus campestris*)



Beware the Cuckoo Bees

By Amanda Plunkett
NAHA Certified Clinical Aromatherapist®

Cuckoo! Cuckoo! What do you think of when you hear those words? A clock? A bird? Would you ever guess I am speaking of bees and wasps? Yes, we are going to discuss the birds and the bees (and the wasps), and in the cuckoo world, they are not very different.

Cuckoo birds, cuckoo bees, and cuckoo wasps are solitary brood-parasitic organisms which lay their eggs in another species' nest. They are designated as cuckoo organisms based on their behavior, not their genetics. They exploit the resources of similar species to reduce their energy expenditure and increase their ability to reproduce. Since brood parasites need to evade detection, they have adapted several mechanisms such as visual and pheromone mimicry of their host species. This has led to an arms race of counter strategies, adaptations, and coevolution of hosts and the cuckoo species.

Social Parasites

Some cuckoo bees stalk out solitary bees which causes great harm. Solitary bees forage on

pollen and nectar and wrap each young egg in an individual cell or cocoon. A cuckoo bee will lay in wait until the solitary bee leaves for work and then stealthily lays her eggs in the cell. Since those that have evolved as cuckoo parasites have developed strategies to out compete their hosts, the cuckoo larvae grow more quickly, wipe out the supplies, and leave before the host egg even hatches. Yet, some cuckoo bees are not only are brood parasites. They take it a step further by exploiting the social systems of their hosts, thus they are also called social parasites. They usurp the existing queen and rely on the unsuspecting social worker caste of their host to raise their own young.

Identifying Cuckoo Bees

There are over 20,000 bee species worldwide and an estimated 15% of these species exhibits cuckoo behavior. They come from many different genera, often mimicking their host so closely that they can only be identified through DNA genetic coding. As such, researchers are combing their museum specimens and



Clockwise from top left: *Melanempis scoliiformis*, Unknown species, *Melecta albifrons albovaria*, *Nomada superba*
All photos © USGS Bee Inventory and Monitoring Lab

using DNA sequencing to discover new species.¹ Many do however have very minute differences that can give away their identity. For example, since most have lost the ability to forage and gather pollen, they lack “the scopa, a specialized brush of hairs used for pollen collection in most nest-building bees.”² Not only do the cuckoo bees look very similar to their hosts, but they also often employ chemical mimicry as well. The cuckoo bee uses various adaptations such as camouflaging the odor of the eggs to hide olfactory evidence of the presence of parasitic brood,³ camouflaging her own scent through pheromones to go undetected in social systems or waiting until mating where the male scent overrides her own. Many bees use pheromone secretions produced by the Dufour’s gland. Researchers

“found that the principal component of the male cephalic secretions in five out of eight species of *Nomada* was identical to that of the principal component of the Dufour’s gland secretions of females of their main host species belonging either to the genus *Andrena* or to *Melitta*.”⁴ So waiting to mate just before a possible battle benefits these cuckoo bees. This is a dangerous mission as any detection by the host immediately elicits the death penalty for her and her offspring.

Cuckoo Bees as Pollinators

Are these parasitic, often murderous bees, beneficial since they do not collect pollen for their young? Yes, they too are pollinators. Unfortunately, not much is known about

the foraging habits of most cuckoo species, but they need to feed themselves nectar for their energy source, and pollen to develop their ovaries. Data is limited and there is much research to be done to discover their secrets. However, the adorable fuzzy *Bombus campestris* has been spotted on green alkanet (*Pentaglottis sempervirens*), devil's-bit scabious (*Succisa pratensis*), thistle, dandelion (*Taraxacum officinale*), red clover (*Trifolium pratense*), germander speedwell (*Veronica chamaedrys*), ground ivy (*Glechoma hederacea*), European bramble (*Rubus fruticosus*), and knapweed (*Centaurea nigra*).⁵ Let's not forget to mention the beautiful iridescent cuckoo wasps who are also important pollinators. They visit plants in the *Apiaceae*, *Asteraceae* and *Euphorbiaceae* plant families. To hope to catch a glimpse of one of these jeweled wasps, look in habitats with dry sandy soils during the hottest months in the summer.

Life is full of organisms which manipulate and take advantage of others. In the world of the cuckoos, it is usually the next of kin. Beware usurpers and parasites, we are now aware of your crafty mechanisms to employ others to do your work! These cute and bee-utiful faces do not fool us any longer. Deception gives birth to fields of blooms.

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Calendula (*Calendula officinalis*)

Cooling Oil Rub for Itchy Skin

You will need a 0.5-oz. (15 mL) glass, amber bottle with cap to make this blend.

Ingredients:

0.5-oz. (15 mL) calendula (*Calendula officinalis*)
herbal oil

Essential Oils:

6 drops lavender (*Lavandula angustifolia*)
6 drops copaiba (*Copaifera reticulata*)
5 drops blue spruce (*Picea pungens*)
5 drops helichrysum (*Helichrysum italicum*)

To Make: In a glass amber bottle, mix the essential oil synergy with the herbal oil. Cap and label.

To Use: Apply a dime-sized amount of the blend to fingertips and massage gently onto affected area of skin.

Cautions: For topical use only. Consult a physician for use during pregnancy. Avoid use with children under 10 years of age.

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About Amanda Plunkett:

After years of suffering with an environmental illness, Amanda turned to holistic medicine. She began her aromatic education by obtaining her Advanced Aromatherapy and Internal Usage Certifications under the mentorship of Jade Shutes in 2015 with over 500 hours of training. She now serves the community as a NAHA Certified Clinical Aromatherapist®. In 2016, she launched Bee Rooted, a company dedicated to advocating for healthy environments and rescuing

nuisance honeybees. Since then, she has also successfully completed a horticulture class and gained an Organic Lawn Care Accredited Professional Certification through the Organic Landscape Association and the Northeast Organic Farming Association.

As an Environmental Illness survivor, she feels she has a special relationship with bees as they too are sensitive to miniscule environmental changes. She uses her experience to spread awareness for healthier environments, offering consultations and presentations around the country on holistic personal care, organic landscaping, and developing habitat for pollinators. Amanda is the Southern California regional director for NAHA. To learn more about Amanda, visit her website at: www.beerooted.com



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Humble, Holy Hyssop (*Hyssopus officinalis*)

By Tricia Ambroziak, NAHA Certified
Professional Aromatherapist®



Hyssop (*Hyssopus officinalis*) has a long history of use as a spiritual and medicinal cleansing herb. It's a beautiful plant that's easy to grow, attracts bees and butterflies, and is used both in cooking and medicinally. Let's look at this herb and the properties and uses of the hydrosol.

Botany and Distribution

Hyssop (*Hyssopus officinalis*) is an herbaceous perennial and member of the *Lamiaceae* or mint family. It is native to parts of the Middle East, regions around the Caspian Sea and southern, south-central, and eastern Europe.²

The plant grows between 30 to 60 cm (11.8 to 23.6 inches) high with a square, woody stem. It features shiny, aromatic, dark green, leaves that are lance-shaped and range from 2 to 2.5 cm (0.78 to 0.98 inches) in length.

Fragrant, tubular flowers bloom in mid to late summer in shades of purple-blue and sometimes pink or white. They are two-lipped with protruding stamens and bloom in whorls on dense, terminal spikes.³

Hyssop (*Hyssopus officinalis*) is easy to grow in average, dry to medium moisture, well drained soils in full sun to part shade. Established hyssop (*Hyssopus officinalis*) is drought tolerant and evergreen subshrubs in warm winter climates. It is often grown as an edging plant or to attract bees and butterflies.³

"Cleanse me with hyssop, and I will be clean; wash me, and I will be whiter than snow."¹

The flowers, stems, and leaves are used and are best harvested and most potent just when flowers are opening.²

From Holy Herb to the Last Word: The Many Uses of *Hyssopus officinalis*

Hyssop's (*Hyssopus officinalis*) name is derived from the Hebrew *ezob* and the Greek *azob* which both mean "holy herb." It was used by both the Hebrews and Greeks as a spiritual cleaning herb and by the Romans to protect against the plague.² Although, scholars believe the "biblical hyssop" may refer to a different herb than that of *H. officinallis*.^{4,5}

It has a sweet, powerful, unique aroma. It was used in the Middle Ages to mask bad smells and protect against contagion. It also has a long history of use in perfumes, potpourris, incense, herb pillows, and bouquets.^{6,7}

It can be used fresh or dried to create tinctures, syrups, teas, infused oils, and poultices. It can be used to flavor sauces, salads, honey, meats, soups, or stews.^{2,3}

Some versions of za'atar, a famous Middle Eastern herbal mixture, include hyssop (*Hyssopus officinalis*) leaves. Hyssop

(*Hyssopus officinalis*) flowers are thought to give rise to rich, aromatic honey when used by beekeepers.

H. officinalis is warming, drying, and pungent. It offers anti-spasmodic, carminative, diaphoretic, expectorant, nervine, anti-inflammatory, wound, and bruise healing actions. Its key constituents include volatile (essential) oils, phenol, thujone, diterpenes, triterpenoid saponins, flavonoids, hysopin, tannins, and alpha-glucosidase inhibitors.⁸

Hyssop (*Hyssopus officinalis*) is often used for respiratory issues such as colds, bronchitis, and flu. Herbalist Robin Bennett describes hyssop (*Hyssopus officinalis*) as her “foremost ally for helping people heal from bronchitis,” noting that it can help “expectorate even the

most entrenched phlegm stuck in the bronchia and cilia of the lungs.”⁹

Hyssop (*Hyssopus officinalis*) syrup or a gargle made from a decoction can help soothe a sore throat. The tea or tincture can ease digestive upset and act as a tonic for the digestive system.

H. officinalis offers anti-bacterial and anti-viral benefits and is of great help for intestinal viruses. Research suggests it is effective against tuberculosis bacillus, herpes simplex, and cold and flu viruses.⁶

Topically hyssop (*Hyssopus officinalis*) can be applied as an infused oil or poultice for its anti-inflammatory and wound healing properties. It may also be useful in easing the pain and inflammation of arthritis.⁹

Hyssop (*Hyssopus officinalis*) is also useful in times of stress as a restorative and balancing nervine tonic. It can be useful to offer support for feelings of anxiety, depression, tension, or exhaustion.^{6,7}

Hyssop (*Hyssopus officinalis*) is an important flavoring agent in green Chartreuse a liqueur made by the Carthusian Monks since 1737. The monks intended the liqueur to be used as medicine and was originally referred to as an “elixir of long life.”

Only two Chartreuse monks know the 130 herbs that go into the liqueur and how to prepare and distill the mixture. They oversee its production and slow aging process in oak casks in silence.¹⁰

Chartreuse is commonly used in cocktails such as the *Last Word* that was developed during the prohibition-era circa 1915.



Hyssop (*Hyssopus officinalis*)

Hydrosol Properties and Uses

If you've worked with hyssop (*Hyssopus officinalis*) essential oil before you're probably aware that the scientific name holds great significance in the chemistry and safety of the oil. You'll see either *H. officinalis* or *H. officinalis* var. *decumbens* (sometimes referred to as *H. officinalis* ct. *linalool*, or *H. officinalis* ct. 1,8 cineole).

The *decumbens* variety has much lower amounts of the ketone pinocamphone and is typically rich in linalool and/or 1,8 cineole, as well as pinene and limonene. *H. officinalis* var. *decumbens* essential oil is considered safe but not recommended for babies or children under five years of age. It should be used with caution with children between the ages of 5-10 years. Use hyssop (*Hyssopus officinalis*) essential oil with caution with asthmatics due to its cineole content.

Essential oil produced from *H. officinalis*, however, may contain from 31 to 43% of the ketone pinocamphone and such an essential oil comes with strong precautions. Its hazards may include neurotoxicity, acute toxicity with a dermal maximum of 0.3%, and potential to cause seizures or convulsions particularly if used internally.⁹ Thus *H. officinalis* var. *decumbens* is the variety used to create a safe essential oil.

When using the herb, you may typically see *H. officinalis* with no distinction of variety or chemotype. It is not suggested for use during pregnancy or with those prone to seizures.^{2,8}

So how does this translate to the hydrosol? Unlike essential oils, hydrosols typically contain only a small percentage of volatile

components; generally, less than 1%.

GC/MS (gas chromatography/mass spectrometry) data available for *H. officinalis* hydrosol is extremely limited and the data I had access to was thought to be an adulterated batch. The analysis showed the ketone isopinocamphone (196.38 mg/L) as the major aromatic constituent with monoterpenols terpinen-4-ol (14.82 mg/L), alpha-terpineol (4.03 mg/L), and elemol (3.75 mg/L) appearing in much smaller amounts. Pinocamphone appears at 1.79 mg/L.¹²

Isopinocamphone is used as a flavor and fragrance compound and has GRAS (Generally Regarded As Safe) status. The level of pinocamphone is significantly less than the amount that might be found even in the *H. officinalis* var. *decumbens* essential oil.

Thus, the hydrosol is listed as having no known safety concerns. But it is wise to purchase your hydrosols (and essential oils) from a reputable supplier who intimately know the origin of their products.

The sample of *H. officinalis* hydrosol that I purchased smelled delightful: Herbaceous, fresh, and a bit like artichokes. It has a predicted shelf life of up to 18 months with proper storage. The pH of the sample I have is about 4.55.

Hyssop (*Hyssopus officinalis*) hydrosol, like the essential oil and herb, is useful in supporting respiratory health, emotional health, supporting immune health, and fighting germs. Hyssop (*Hyssopus officinalis*) hydrosol can also be used to support the nervous system and makes an excellent base for a throat gargle.

Incorporating *H. officinalis* hydrosol into Your Practice or Routine

For respiratory support, a steam blend is tremendously helpful. Pour 1–2-oz. (30 – 60 mL) of boiling water and 1-2-oz. (30 – 60 mL) of *H. officinalis* hydrosol into a glass or ceramic bowl or mug, along with one drop of *H. officinalis* var. *decumbens* essential oil. Use a towel to create a tent, close your eyes, and inhale the vapors for 5 to 10 minutes. Repeat 2 to 3 times to help open the airways and fight germs.

H. officinalis hydrosol can be used diluted or undiluted as a throat gargle, or as part of a blend. Use about 2 teaspoons (10 mL) per 1-oz. (30 mL) of water, warm gently, add ¼ to ½ teaspoon of salt and stir to dissolve. Repeat throughout the day for several days to nurture a sore throat.

Given its antimicrobial properties, *H. officinalis* hydrosol makes an excellent base for cleaning minor cuts and scrapes. Use it simply as-is or combine it with essential oils such as tea tree (*Melaleuca alternifolia*) and lavender (*Lavandula angustifolia*) to create a soothing spray. A blend of 3 to 6 drops of lavender (*Lavandula angustifolia*) essential oil and 2 to 4 drops of tea tree (*Melaleuca alternifolia*) essential oil per ounce of hydrosol would create a gentle but effective blend.

The hydrosol is also a great choice for purifying a space not only physically but also energetically. Hyssop (*Hyssopus officinalis*) is said to strengthen one's boundaries and help purify outdated beliefs, allowing for more organized thoughts that provide protection and strength. Thus, the hydrosol can be layered with other essential oils and hydrosols for helping support one emotionally and energetically.



Hyssop (*Hyssopus officinalis*)

H. officinalis hydrosol is also a great choice for non-toxic cleaning especially if it is nearing the end of its shelf life. The hydrosol can be combined with essential oils such as lemon (*Citrus × limon*) or sweet orange (*Citrus sinensis*) and powerhouses such as thyme (*Thymus vulgaris*) essential oil or lemongrass (*Cymbopogon flexuosus*) essential oil to create a counter spray or purifying and deodorizing room spray.

H. officinalis hydrosol would also be a great base for a hand cleansing gel (see recipe in this article) and can work well in a toner for blemished skin particularly combined with rose geranium (*Pelargonium* spp.) hydrosol and witch hazel (*Hamamelis virginiana*) hydrosol.

With its long history of use in spiritual and physically cleansing, “holy herb” *H. officinalis* has much to offer your aromatherapy practice or routine both energetically and therapeutically.

I hope you've enjoyed learning about this “holy herb” and feel inspired to incorporate the hydrosol into your routines and practice.

Hyssop Gel Hand Cleanser

Hyssop (*Hyssopus officinalis*) hydrosol offers germ fighting and energetically cleansing properties to this hand gel recipe. The combination of hydrosol, aloe, glycerin, and essential oils creates a wonderful combination for gently cleansing and moisturizing the hands. This recipe makes 500 g or a bit more than four x 4-oz. bottles.

Equipment and Ingredients:

Scale

Three large glass beakers or glass or stainless-steel bowls

Spoons or stir rods

Funnel

Four 4-oz. glass or PET plastic bottle with pump

207 g (7.4-oz.) hyssop (*H. officinalis*) hydrosol

207 g (7.4-oz.) distilled water

25 g (0.9-oz.) aloe vera (*Aloe barbadensis*) gel or liquid

33 g (1.2-oz.) glycerin

5 g (0.18-oz.) xanthan gum

15 g (0.54-oz.) Polysugamulse D9* or other solubilizer*

0.5g (0.02 oz or 14 drops) Vitamin E (tocopherol)

7.5 g (0.27-oz.) Geogard Ultra** or Optiphen plus^

70% isopropyl alcohol

Essential Oils:

2.5 g (2.7 mL or 70 drops) sweet orange (*Citrus sinensis*)

To Make: Sanitize work area and equipment with 70% isopropyl alcohol. Combine hydrosol, distilled water, and aloe vera in one beaker/bowl and stir to combine. In a second beaker/bowl, add the solubilizer, essential oil, and vitamin E and stir to combine. Add the solubilizer mixture to the hydrosol/water/aloe vera mixture, while stirring to solubilize the essential oil.* Sprinkle the xanthan gum over the glycerin in a third bowl/beaker and stir to create a slurry and to help avoid clumping. Add the hydrosol mixture to the glycerin/gum mixture and stir to combine and thicken. Add the gel mixture to bottles using a funnel.

Tip: You may need to gently warm the hydrosol/aloe/water mixture to fully solubilize the essential oil.

To Use: Add a dime-sized amount of gel to palm of hands and rub gently into the skin. Avoid getting into eyes.

Cautions: Non-toxic. Sweet orange (*C. sinensis*) essential oil may cause skin irritation in sensitive individuals, especially if the essential oil is old or oxidized.

*Polysugamulse D9 INCI: Sorbitan Oleate Decylglucoside Crosspolymer is a solubilizer approved for use in organic formulations. If using another solubilizer follow the manufacturer's guidelines. This ingredient is available at [Formulator Sample Shop](#). Since this is a water-based formulation, it must be preserved adequately to avoid contamination with bacteria, mold, or fungus.

**Geogard Ultra: INCI: Gluconolactone, sodium benzoate (Geogard Ultra/NeoDefend) approved for use in organic cosmetics. ^Optiphen plus INCI: Phenoxyethanol (and) Caprylyl Glycol (and) Sorbic Acid. These ingredient are available at [Formulator Sample Shop](#) and [LotionCrafter](#).

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Uplifting and Cleansing Spray

Use this spray to strengthen personal boundaries, promote clarity, and encourage fresh perspective while providing a sense of protection and strength. This combination of hydrosol and hyssop (*Hyssopus officinalis*), Virginian cedarwood (*Juniperus virginiana*), and rosemary (*Salvia rosmarinus*) essential oils promotes a sense of grounding and strength with an added citrus note to uplift and add brightness to the blend.

Ingredients:

60 mL (2-oz.) hyssop (*H. officinalis*) hydrosol

80 to 100 drops Solubol or other solubilizer

Clean 2 to 4-oz. glass or PET plastic bottle

Essential Oils:

5 drops hyssop (*H. officinalis* var. *decumbens*)

5 drops sweet orange (*Citrus sinensis*) or grapefruit (*Citrus × paradisi*)

5 drops rosemary (*Salvia rosmarinus*)

5 drops Virginian cedarwood (*Juniperus virginiana*)

To Make: Sanitize work area and equipment with 70% isopropyl alcohol. Add 80 to 100 drops of Solubol or solubilizer to bottle according to manufacturer's directions. Add essential oils and mix gently to combine. Slowly add in hydrosol, cap, and shake to blend.

To Use: Shake bottle and spray 2-3 times to cleanse a space and promote emotional well-being. Avoid spraying in the eyes.

Cautions: Avoid using *H. officinalis* var. *decumbens* and *S. rosmarinus* essential oils around babies and with caution with children aged 5 to 10 years. *H. officinalis* var. *decumbens* essential oil may antidote homeopathic remedies. Avoid use of *S. rosmarinus* essential oil at levels higher than 16% around epileptics and, although not contraindicated during pregnancy, you may wish to avoid use of *S. rosmarinus* essential oil as an extra safety precaution. *C. sinensis* or *C. × paradisi* essential oils may cause skin irritation in sensitive individuals, especially if the essential oil is old or oxidized.

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About Tricia Ambroziak:

Patricia (Tricia) Ambroziak is a certified aromatherapist and cosmetic formulator. She has been blessed with 30 years of marriage and is mom to two amazing young adults. She

enjoys exploring the wonder and power of plants, herbs, hydrosols, and essential oils and their role in supporting wellness. She is the owner of *Aromatherapy by Tricia Ambroziak* and formulates products for a number of local small businesses including *Be Kekoa Hair Salon, Pure Silk Skincare & Beauty boutique, Ethereal Day Spa, and Holbody Healing Massage Therapy*. Tricia also tutors at Great Oak High School, has taught science, and worked in biological research. She is a former martial arts instructor with a 3rd degree black belt in Tae-Kwon-Do and college basketball player, who enjoys staying active in sunny, Southern California. To learn more about Tricia visit her website at: www.aromatherapybytriciaambroziak.com

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Spring Greens: Green Carrier Oils

By Susan M. Parker



In the spring season, green shoots start to push out. The compounds that make oils green in color contain a range of valuable antioxidant and anti-inflammatory properties.

Color can play a large part in the presentation of an oil; colors range from yellow, orange, red, and green, through to no color at all. Whether an oil has a color or not depends on its level of refining. The refining process varies widely and determines the nature of an oil sold on the market.

Refined Oils

I most often see the green oils as fully refined, meaning that all color, scent, and other unsaponifiable fractions are removed. The refining of oils is a question I am most asked about.

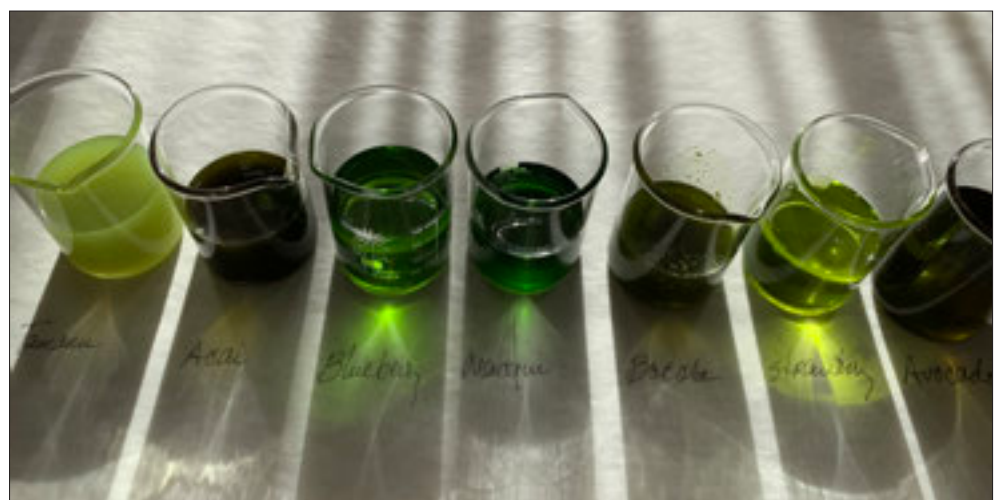
All oils are refined or processed in some way. Some only need simple filtering. Occasionally I have received a very crude oil when ordering, and what I mean by crude is that the oil is dark, heavily scented (not in a good way), and too coarse to use as a helpful carrier oil for aromatherapy.

Refining carrier oils can remove the color, odor, free fatty acids, waxes, phospholipids, and other non-fatty acid compounds contained in a crude oil.

Why Plants are Green

The green color in nature is made up of a preponderance of chlorophyll as seen in the leaves, stems, and some green flowers. But in addition to chlorophyll, other plant pigments color the foods we eat and the oils we use. Even nature can be an artist mixing blue pigments with yellows and orange to make a wide range of greens, from yellow-green to blue-green.

Chlorophyll is an oil-soluble pigment, and the green color is highly dependent on the mineral magnesium. Magnesium in the plant



© Susan M. Parker

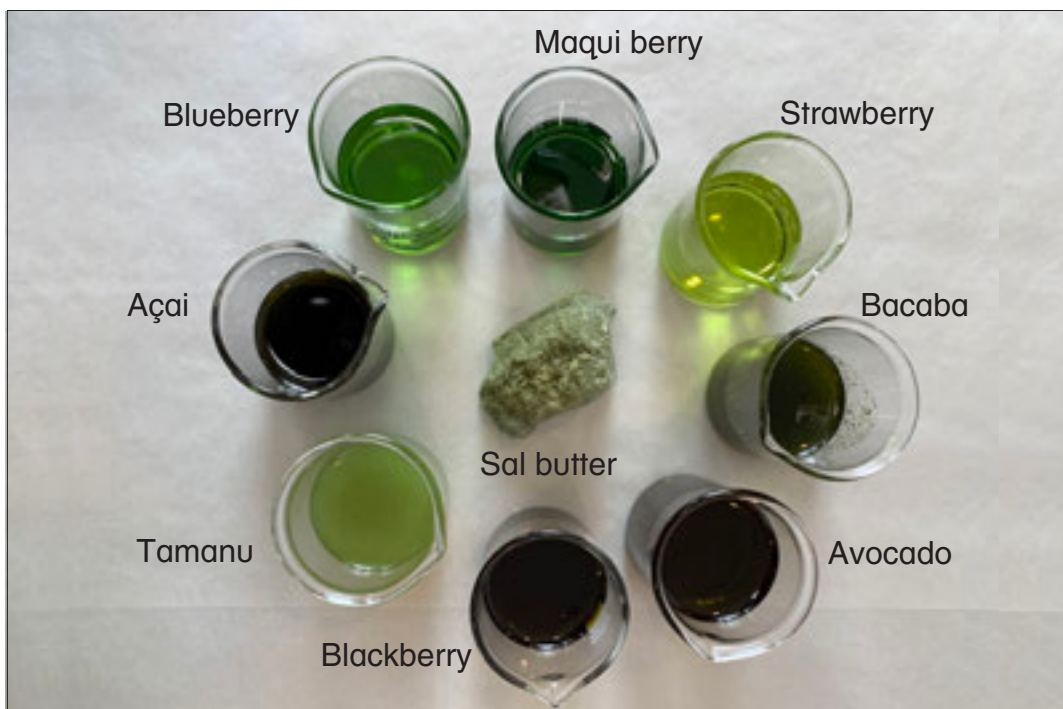
tissues will make a beautiful bright green color, but if magnesium is lost over the course of the plant's cycle, the bright green color turns a dark olive color.

Green Plant Pigments

Chlorophyll is the best-known green plant pigment, but other plant compounds also create green, such as the range of anthocyanins, a sub-class of flavonoids. An important clue in this word is the inclusion of *cyan*. Cyan is a shade of blue that helps create green colors when it combines with the more common oil colors of yellows and orange.

Carotenoids are usually associated with yellow and orange colors, especially beta-carotene as orange. But there are also green versions of carotenoids, xanthophylls, lectin, and zeaxanthin. If you've ever mixed paint colors, you'll know that mixing blue and yellow together creates green.

You have to seek out the unrefined oils to find the greens as it is the color most often refined out of oils. The oils most likely to be refined are avocado (*Persea americana*), olive (*Olea europaea*), blueberry (*Vaccinium corymbosum*), blackberry (*Rubus fruticosus*), strawberry (*Fragaria × ananassa*), grapeseed



© Susan M. Parker

(*Vitis vinifera*), and sal (*Shorea robusta*) butter. All oils can be nearly clear and refined or green and unrefined.

Green oils include:

- Açai (*Euterpe oleracea*)
- Avocado (unrefined) (*Persea americana*)
- Bacaba (*Oenocarpus bacaba*)
- Blackberry (unrefined) (*Rubus fruticosus*)
- Blueberry (unrefined) (*Vaccinium corymbosum*)
- Carrot seed (*Daucus carota*)
- Grapeseed (unrefined) (*Vitis vinifera*)
- Hemp (unrefined) (*Cannabis indica*)
- Maqui berry (*Aristotelia chilensis*)
- Olive, virgin (*Olea europaea*)
- Sal butter (unrefined) (*Shorea robusta*)
- Strawberry (unrefined) (*Fragaria × ananassa*)
- Tamanu (*Calophyllum inophyllum*)

About Susan M. Parker:

Susan M. Parker is author of *Power of the Seed: Your Guide to Oils for Health and Beauty*, (Process Media, 2014) one of the first books to focus exclusively on the lipid or carrier oils, rather than simply as dilutants for aromatherapy or their use in the massage and beauty industry.

Inspired by an herbal apprenticeship in the early 1990's, Susan established SOLUM&HERBE in 1996, an herbal apothecary focusing on skin care and topical treatments. Making herbal extracts, including oil infusions from her gardens, awakened a desire to know more about the infusing of oils.

Unable to find a comprehensive guide to better understand these carrier oils, she decided to learn about them independently.

With an art background, but little chemistry, Susan worked with a chemist friend to understand the

basic chemistry of lipid oils. To help ground the learning process she began writing up her notes and self-published a small booklet on the subject in 2001.

Drawing on her art degrees from the 1970's, she cut and pasted the booklet together, and made 100 copies available to the local herbal community in Northern California. In 2015, *Power of the Seed*, a much expanded and further researched book, was published by Process Media, Port Townsend, WA.

A student of natural health, gardener, herbalist, flower essence devotee, mother and now grandmother, Susan studied herbalism with Pam Montgomery and David Hoffman in the 1990's. After 22 years of creating and producing a range of products, SOLUM&HERBE ended production in 2018. Susan continues to research and teach about the lipid oils on-line. You can learn more about Susan at: <https://susanmparker.com/>

Every seed has the capacity to make oil and each plant's seed brings something special.

— Susan M. Parker

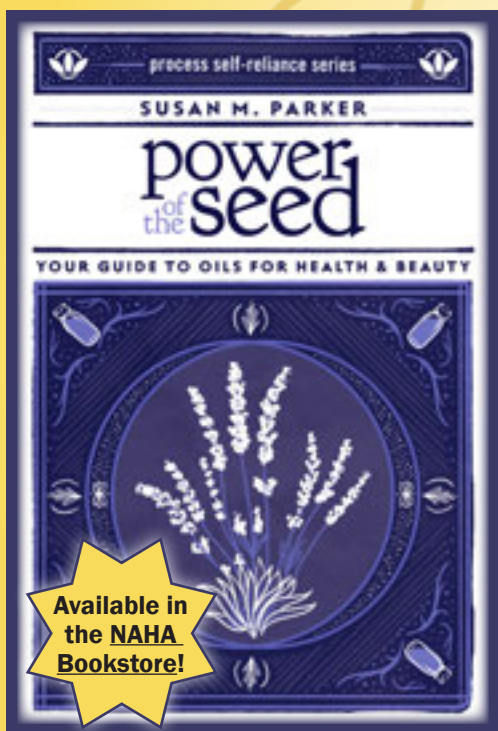
Praise for *Power of the Seed*:

“The Power of the Seed is an incredible reference book ... for beginners, to experienced aromatherapists, and massage therapists.”

“I purchased the paper book (two copies) and the kindle version so I have all of this wisdom & knowledge wherever I need it. I constantly refer to it.”

“The part I liked the best was the chemical analysis for these oils. ... I actually took an online Aromatherapy Course for this, but can honestly say I've gotten more from Susan's Book.”

susanmparker.com/book





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Where Scent Meets Art: Jumping Hurdles

By Ginger Andro and Raghda Maksoud

“We are currently facing many hurdles BUT will never lose the sight of infinite hope.”- Widad Akrawiand



Jumping hurdles seems like the way we live our lives. We jump hurdles in school, with our careers, our health, friends, family, for money and time. We negotiate our circumstances, evaluate the next thing to do and then we “jump.” Like the spring season, jumping hurdles and overcoming obstacles can be a time for new beginnings, energetic change, rebirth, and renewal. Even the seedling needs to push through the earth in order to grow into the plant it is meant to be. I think that we have many “springs” in our life, not only the ones connected to the calendar but those that make us leap over the hurdles we encounter.

Ginger’s Backstory

One of those hurdles for me (Ginger) was a diagnosis of breast cancer. This was almost unimaginable as there was no family history, I was young and had a relatively healthy lifestyle. However, there it was, and I had to deal with it. Because the cancer was a particularly aggressive type, I chose conventional treatment but had complementary support. I did fine, but the chemotherapy had an unexpected side effect. My olfactory sense had become so intensified that it became my primary sensory experience, overtaking my sight. As I was almost over this

obstacle, another came up alongside of me. My husband contracted endocarditis resulting in an emergency aortic valve replacement. When we cleared that stone wall, we came away with a deepening of our relationship and a beautiful growing season began. Since that time my husband, Chuck Glicksman, and I began collaborating on multi-sensory installations. The work usually includes video projection, sound, sculptural elements, and scent. Most often shaped mirrors are an element that reflect the projected image as well as the viewers. These reflections along with their shadows change the relationship from viewer to participant in our installations.

Incorporating Scent into Art

Although our art backgrounds differ, Chuck’s in filmmaking, music and multi-media production and mine with dimensional painting, sculpture and fabrication, our biggest hurdle was the inclusion of scent. I wanted to communicate the experience I had when my



JUMPING HURDLES 2013-2022; Motorized praxinoscope on a steel stand, hand-colored prints on watercolor paper, mirror, mixed media and original scent composition. 57”X36”X36” © Ginger Andro and Chuck Glicksman

olfactory sense was so dramatically awakened. I wanted to open the viewer’s senses to an artwork in a fresh, new and unexpected way, for them to really experience it directly before they analyzed it. The problem was that I had no idea how to accomplish this. The first piece had a scent purchased at a farmers’ market and was diffused by way of a small glass bowl of water with a few drops of oil on an electric cup warmer. It was quite make-shift, to say the least! To actually learn about my new art materials, I began studying natural perfumery with Debbie Freund who led me to another visual artist working with scent, Gayil Nalls. Gayil’s project, *The World Sensorium*, is where she took a survey of 225 Countries’ most prominent scent, translated the results into a blend and dropped 2000 encapsulated envelopes in Times Square for New Year’s 2000.

Later, I met Ernesto Netto, a Brazilian sculptor who incorporates hanging spices contained in fabric sacks in his work and recently I was shocked to discover that Marcel DuChamp, the early 20th century surrealist artist, used scent extensively in his work. This fact was never mentioned in the countless books and art history classes I have taken. It was like going to “Ancestry” and finding a family! As research becomes easier to access, I am constantly discovering how many other people have pursued the need to connect vision and smell to express their art.

Jumping Hurdles with Fougère

We are diffusing our scent “Equisimo” with our motorized praxinoscope “Jumping Hurdles” in the up-coming exhibition “Timeless Movement” at the Morris Museum this spring. The

work is a rotating pre-cinema animation device that depicts a horse and rider jumping a hurdle in sixteen single frames. Like a flip book, and because it's motorized, the movement appears as an endless revolving loop. As an homage to the English photographer, Eadweard Muybridge, *Jumping Hurdles* brings us to the elemental through low-tech and a pre-cinema invention, a reminder and reflection on the persistence of vision phenomenon in an over-stimulated time.

The scent was created to evoke open pastures and equestrian memory and the feeling of freedom, to communicate the feeling of flight, of being in rhythm as if with a horse leaping and landing on open fresh ground. It is a blend that encourages confidence, optimism, and the feeling of success. I decided to base it on a fougère accord to give an open and active feel and added a leather accord with a slight animalic emphasis to specifically address the horse and rider quality.

My essential oil choices for this leather accord include:

- tobacco absolute (*Nicotiana tabacum*)
- cistus (*Cistus ladaniferus*)
- mountain savory (*Satureja montana*)
- cedarwood (*Cedrus atlantica*)
- benzoin (*Styrax benzoin*)
- vetiver (*Vetiveria zizanioides*)
- monarda (*Monarda fistulosa*)
- wintergreen (*Gaultheria fragrantissima*).

The essential oils were chosen based not only on their scent profile, but also on their influence on the emotions, psychology, and on subtle energies, such as power, focus,

optimism, and beauty. For this information I referenced the *Spiritual PhotoEssencing Repertory* and the *SPE Materia Medica* as well as other texts. "Equisimo" has also been adapted as an oil-based perfume.

Raghda's Backstory

With regard to hurdles, Raghda writes that 2013 was a transformational year for me, a decision of moving to another country which wasn't an easy decision. I was only seeing hurdles, the biggest one was family and friends. How could I survive without a supporting system that I love? The cold weather and grey skies in winter and the twelve hours of the international flight that I need to consider every time I miss Egypt?

I couldn't even imagine all the options, opportunities, and blessings out there. I decided to immerse myself in the culture, make new friends, and 'jump hurdles' one at a time. Imagination and strong will were big factors in my decision-making process. I imagined building my own pyramids here in the USA, and I did.

Valentine's day 2018 was the last day of my twenty-three years of corporate work life. I decided to quit the stress, politics, and the big hurdle of a woman owned business and jump to new possibilities.

Yes, it was an alchemical year if I can use this term. The NAHA conference in Utah was the spark. I jumped the first hurdle of stage fright, stood there and presented on Egypt. A couple of NAHA directors gave me a scent strip with bergamot (*Citrus × bergamia*) on it, and I took a deep breath and started the "Journey."

My second hurdle was what to do on the cold grey winter days. The answer was just there: Why don't we teach aromatherapy, meet new people, distill plant materials, and fill the space with amazing energy, scents, and colors? So, we did! Opening the school wasn't easy with all the competition and the amazing experiences out there, so I asked myself how to be different and the answer was, to be honest, educated, and hardworking.

I am proud to say that Ginger and I, with Chuck's help, changed the East coast map with a different approach to aromatherapy.

Consider your winters as your new spring, shine and grow, and don't be afraid of obstacles.

Fougère Fragrance Family

Because it is now spring, Raghda and I thought we would like to share a little about the Fougère fragrance family.

In 1882 perfumer Paul Parquet created "Fougère Royale" for the house of Houbigant. He wanted to achieve a fresh, light scent in contrast to the heavy more popular animalic scents. As part of this perfume, he extracted coumarin, an isolate from the tonka bean (*Dipteryx odorata*). This was first time a synthetic component was used and it revolutionized perfume making. Mr. Parquet named his creation after the French word for fern which was originally intended for women.



Holiday Botanicals Workshop, October 2021 © Chuck Glicksman

However, the chic men of the late nineteenth century soon began wearing it and it has since been known as a men's fragrance.

Fougère is considered a traditional perfume accord and is widely used alone or in combination with other accords such as woody, floral, or leather.

The basic structure of Fougère

Citrus Top Note:

- Bergamot
(*Citrus aurantium* var. *bergamia*)

Floral/Herbal Heart Note:

- Lavender (*Lavandula angustifolia*)
- Lavender absolute
(*Lavandula angustifolia*)
- Geranium rose
(*Pelargonium graveolens*)

Deep Base Note:

- Oakmoss absolute (*Evernia prunastri*)
- Tonka bean absolute (*Dipteryx odorata*)
- Patchouli (*Pogostemon cablin*)
- Vetiver (*Vetiveria zizanioides*)



Tonka bean (*Dipteryx odorata*)

About Ginger Andro:

Ginger Andro has a BA degree in Fine Arts, with certifications in aromatherapy, natural perfumery, and animal aromatherapy. She is a lead teacher for *Ebers School of Aromatherapy* and a registered S.P.E. Practitioner. Ginger is the Co-President of *The American Herbalist Guild/Lower Hudson Valley Chapter* and a partner in *Kiki and Friends Aromatics, LLC*. As part of the artist team Andro & Glicksman, she uses scent in their multi-sensory installations. Ginger's passion for science and art is merged by using essential oils as a medium for healing, expression and communication. Ginger is the NAHA Regional Director for New Jersey. To learn more about Ginger, visit www.kikifriends.com and/or www.androglicksman.com

About Raghda Maksoud:

Raghda Abdel Maksoud is a certified clinical aromatherapist and an expert with 23 years of experience in global business development and supply chain in the aromatic and medicinal herbs, fragrance, and essential oils industries.

Raghda traveled to 21 countries with the most outstanding medicinal plants growing regions. She believes that plants represent a universal language that connects us all, they are the agents of nature for our healing journey and a living example of hope.

In 2016, she founded *Ebers Aromatherapy and Consulting* – a women owned business dedicated to aromatherapy education, essential oils ethical sourcing, business development and supply chain.

Raghda is teaching aromatherapy globally through her NAHA approved *Ebers School of Aromatherapy* as well as arranging educational study tours to Egypt for aromatherapists and plant lovers to visit farms, distillers and learn about aromatherapy and herbal medicine in a real-life experience.

She is a member of the Aromatic Research Quality Appraisal Task Force (ARQAT) for standard in aromatherapy research practice, *Airmid Institute* Egypt Ambassador, and a technical member of WFFC “Women for Flavors and Fragrance North America.”

Her mission is to develop aromatherapy globally, particularly in the Middle East, as well as support the development of women-owned small businesses, and research. Raghda is the NAHA International Director for Egypt and the International Relations Committee Chair. To learn more about Raghda, visit: <https://ebersaromaschool.com/>



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CO2 Extracts: Essential Plant Power for Clinical Applications

By Madeleine Kerkhof-Wellhüner



Supercritical carbon dioxide (CO₂) extraction is a modern technology for the production of lipophilic plant extracts. Over the last century the technique has evolved from experimental to highly selective raw materials and products with great potency. As a therapist, formulator, and educator, specialized in working with and for the frailest patients, I've seen the most amazing results in integrating CO₂ extracts in clinical aromatherapy and aromatic medicine.

Development

The first observations of the occurrence of supercritical phases, meaning the disappearance of the gas-liquid boundary when a liquid is exposed to a certain pressure and temperature in a closed environment, were made as early as the beginning of the 19th century. In the 1940's, 1950's, and 1960's, experiments showed that different solvents had different characteristics.

In those days mainly toxic organic solvents were known for their ability to extract (lipophilic) molecules from plant material. Producers predominately in the food industry were increasingly looking for solvents that would be less harmful or non-toxic to their products or the environment. By using carbon dioxide extraction, they could achieve that.¹

Due to the non-toxicity and relatively low temperatures needed for CO₂ extraction, given the right level of pressure, CO₂ can be used to extract thermally labile plant components without any residual solvent remaining in the end product. Also, the extract's colour, composition, odour, texture, and aroma are usually carefully preserved in the process. This is also the reason why CO₂ extracts are so valued by perfumers and formulators of herbal supplements. And it is how I became familiar with CO₂ extracts. As a nurse aromatherapist and herbalist, I advised the use of herbal supplements with CO₂ extracts as part of a patient's formula, and very often with excellent results.

CO₂ Extracts in Aromatherapy

In my quest to offer all those very frail patients in my practice the best aromatics to use in a broad array of applications, I started to source ginger (*Zingiber officinale*) CO₂ extract as mentioned by Eliane Zimmermann in her book "Aromatherapie für Pflege und Heilberufe."²

Would CO₂ extracts indeed be valuable for aromatherapy, especially for clinical care? Were CO₂ extracts really so much stronger than conventional essential oils? Some people were raving about their potency. And yes, I adopted that as being fact for all CO₂ extracts. However, over the years I have learned that although they can be different, CO₂ extracts

have their own place in aromatherapy alongside conventional essential oils with their benefits and possible limitations and risks. The same thought applies to the use of CO2 extracts as (medicinal) base oils. I pioneered and learned how to blend with them and worked with their sometimes viscous, and therefore challenging, consistency. And I loved the fact that using a CO2 extract as a solvent is entirely non-toxic too and a very safe method to release some of the richest fragrances from plants.

Since that time, I've come to know many CO2 extracts and learned how beneficial they can be in the various aspects of aromatherapy. This in turn led to the publication of my book, *CO2 Extracts in Aromatherapy, 50+ Extracts for Clinical Applications*, in 2018.

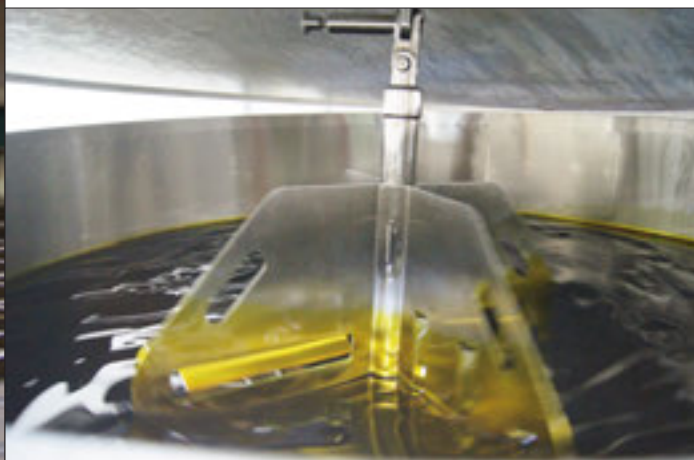


CO2 Extraction: The Short Explanation

Carbon dioxide as a “solvent” selectively carries the required compound or compound families away from the raw plant material. The extraction method is suitable for botanicals that are usually extracted for their essential oils, such as resins of frankincense (*Boswellia* spp.) or myrrh (*Commiphora myrrha*), the roots of ginger (*Zingiber officinale*) or orris (*Rhizoma iridis*), the leaves of sweet marjoram (*Origanum majorana*) or peppermint (*Mentha × piperita*), the corns of pepper (*Piper nigrum*), or the flower petals of rose (*Rosa* spp.).

The method is also ideal to extract high quality fatty plant, or more medicinally active base oils, such as sea buckthorn (*Hippophae rhamnoides*) from the fruit pulp or the seeds or rosehip (*Rosa canina*).

Carbon dioxide reaches a critical point at a temperature of 31°C and a pressure of 74 Bar. The fluid, by now looking like a dense fog or vapour, has maximum solvent capacity of aromatic compounds with similar polarity. By adjusting temperature and pressure, we can select a great variety in the composition



Left: Loading Extractor vessel CO2, Right: Ginger CO2 extract homogenization © Madeleine Kerkhof, Kicozo

of molecules and molecule families of the end product within the scope of the raw material.

By releasing the pressure after the process, the carbon dioxide in its gaseous form escapes (and is retrieved and re-used), leaving the extract behind to be further fractionated or—homogenised and filtered—used as-is.

CO₂ Total Extracts

CO₂ total extracts contain all CO₂ soluble components, such as waxes, resins, pigments, fatty acids, and essential oils. Very high pressure is used to extract CO₂ total extracts. Most CO₂-totals are used as base oils. Examples are pomegranate (*Punica granatum*) CO₂-total and evening primrose (*Oenothera biennis*) CO₂-total. There are exceptions, such as cinnamon burmanii (*Cinnamomum burmanii*) CO₂-total which is used as we would use an essential oil. Scent-wise, it is considered by me to be “cinnamon heaven.”

In some extracts we see molecules that will not show up in the essential oil of the same plant material. CO₂ total extracts are almost identical, in constituents, to the plant which they are derived from. Some need to be warmed gently to approximately 30°C to become fluid, before adding them to any base product.

CO₂ Select Extracts

CO₂ select extracts can be compared to conventional essential oils. A lower pressure is used to extract mainly volatile CO₂ soluble components. This results in an oil that is similar, but often richer in composition and superior in fragrance, to a distilled essential oil.

There is also a subCO₂, where the parameters for extraction remain just under the supercritical point. These extracts are

usually much like CO₂-select extracts in their appearance and viscosity. Most of these extracts are used in the same way that we use essential oils.

Certificate of Analyses (CoAs)

We know from essential oil analyses that there are a wide range of variabilities in their molecular makeup. An active ingredient should fall within a certain range, and the level of it indicates much of the properties and quality of the essential oil. However, there can be many differences between oils and extracts depending on (for example):

- **Method of Extraction:** i.e., distilled rose (*Rosa × damascena*) essential oil, its absolute or CO₂ extract, each with its own characteristics (i.e., phenyl-ethyl-alcohol content).
- **Use of Dry or Fresh Plants:** In distillation, fresh plants are often used. In CO₂ extraction, the material is often dry or dried because the presence of water may hinder efficient extraction.
- **Whole or Ground Plant Parts:** i.e., for distillation usually whole or lightly chopped up plant material is used, whereas for CO₂ extraction the plant material is ground or very finely chopped to ensure ideal mass transfer within the extraction vessel.
- **Country of Origin:** This can have a profound impact on the chemical makeup of an oil.
- **Harvest Period:** Plants need to be harvested and extracted at their most favourable time.
- **Harvest Year:** Weather and growing conditions can differ from year to year,

influencing health and composition of the oil accordingly.

Conceptions and Misconceptions Around CO2 Extracts

It is often said that CO2 extracts, especially the ones we would use as essential oils, are much more potent, and therefore should be dosed lower than their conventionally extracted counterparts. This is not always the case. Some are indeed rich(er) in compounds making them medicinally more valuable, yet many CO2 extracts can be actually milder, by looking at their composition, and can even sometimes be dosed higher (of course, based on individual (patient) needs, requirements and contra-indications).

Essential Oils and Other Active Ingredients in CO2 Extracts

In all CO2 extracts we find larger or smaller quantities of essential oils, fatty acids, pigments, and other compounds. For example, we find some of the highest levels of essential oil, up to 95%, in the CO2-select extract of star anise (*Illicium verum*) with its rich full-bodied fragrance. A moderate to high level of essential oil, some 80%, is found in sweet marjoram (*Origanum majorana*) CO2-select. This amazing extract has a warm, woody, smooth, only slightly camphoraceous scent. It is high in esters and belongs to my favourite oils for crises situations. This is the oil of letting go on all levels,



Sweet marjoram CO2 plus EO-1 © Madeleine Kerkhof, Kicozo

from giving birth or clinging to old patterns to passing on from this world.

In the CO2-select extract of lemon balm (*Melissa officinalis*), some 75% of essential oil is usually present, whereas its CO2-total extract contains a fairly low level, just under 18%. You could think therefore that this CO2-total can hardly be compared to distilled essential oil or the CO2-select, but it has shown the most amazing effect in a formulation for very serious herpes simplex (HSV-1) virus infections.³

We also find so called cuticular waxes in CO2 extracts. They form a thin coating of wax covering the outer surface of the plant which helps to protect it from surface moisture loss, and against excessive rain damage, but also from ultraviolet (UV) light and against anyone or anything trying to climb into or hold on to it. Some examples are stearic acid, squalene, and palmitic acid.

Flavonoids are easily extracted by supercritical CO2. Some examples of CO2 extracts with flavonoids are the base oils of sea buckthorn (*Hippophae rhamnoides*) and rosehip (*Rosa canina*). We also find carotenes and vitamin E in CO2 extracts, usually also those we value as base oils.

Other highly interesting compounds in plants that are present in CO2 extracts which we

use as base oils are triterpene esters, such as arnidol in arnica (*Arnica montana*) with excellent anti-inflammatory and analgesic properties.⁴ We find another one—faradiol—in calendula (*Calendula officinalis*)⁵ which has excellent anti-inflammatory and analgesic properties^{6,7} and shows efficacy in, for example, radiodermatitis.^{8,9}

CO₂ Extracts' Valuable Addition to (Clinical) Aromatherapy

I work with CO₂ extracts alongside conventional essential oils and base oils and compounds in all settings of clinical aromatherapy, and make choices according to individual needs of patients, looking for aromatic treatment options that fit these requirements. Formulations range from blends for pain to respiratory infections and from oral care to skin and wound care.

One of my favourite extracts for children is rhatany (*Krameria lappacea*) CO₂-total extract that I use for nappy rash with a raw skin which tends to bleed, and for the treatment of lacerations, minor bleeding cuts and scrapes, which children—playful as they can be—often sustain.

At the Botanica 2020 conference, I elaborated in my workshop on the potential of some CO₂s we use as essential oils in the care for the elderly and people with dementia. The exquisite fragrances, which are almost always more reminiscent of and true to the plant material they are made of, can provoke even more genuine and lively autobiographical memories, connected to plants, gardens, food, spices, sweets, and all kinds of other memories. These can vary from Siberian fir (*Abies sibirica*) subCO₂ with its sublime



Calendula CO₂ and infused oil with flower
© Madeleine Kerkhof, Kicozo

scent of a pine forest to the brilliant cocoa (*Theobroma cacao*) CO₂-select for memories of a hot cup of cocoa or pure chocolate bar. We can utilise these extracts to make patients feel safe, their environment more homely, engage them in scent activities and generally improve their wellbeing by connecting to their world.

In end-of-life care CO₂s can be valuable to treat a large diversity of general symptoms, such as pain, dyspnoea, and anxiety, and to help patients and their loved ones to feel nurtured and comforted.^{10,11} CO₂s, in my personal experience, can even help us connect on a deeper level to our spiritual self than some of their conventional distilled counterparts. One of my favourite extracts is Somalian frankincense (*Boswellia carterii*) CO₂-select.

Conclusion

In my opinion, it will be very interesting to see how CO₂ extracts and their sometimes somewhat unfamiliar components can find their rightful place within aromatherapy. For aromatherapists to use them wisely and efficiently it is important to study them, work

with them and take additional classes with experts in this field. Also, more scientific data would be welcome to assess the efficacy and safety of CO2 extracts.

I believe that CO2 extraction deserves to be an integral part of aromatic support in holistic health care.

This article is part of a previously published contribution to the magazine In Essence (UK) Vol. 19 No.1 Winter/Autumn 2020.

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About Madeleine Kerkhof-Wellhüner:

Madeleine is founder, CEO and Senior Educator of Kicozo, global Knowledge

Institute for Integrative & Complementary (Nursing) Care. She is a former RN, Clinical Aromatherapist, Aromatherapy Educator, Massage Therapist and AquaCare Specialist. Madeleine is a highly respected expert and world-renowned educator in Clinical Aromatherapy (AromaCare), AquaCare and other complementary therapies, specialised in the care for the frailest patients and elderly, in oncology, in palliative and end of life care. She is a member and advisor to the Dutch Nurses Society and Palliatief (NL), of the American Holistic Nurse Association, AIA (where she is in the education committee), NAHA (and approved educator), IAAMA, IFPA, EONS. She is also a Fellow of ICAN, the International Clinical Aromatherapy Network.

Madeleine is the author of two highly acclaimed books: “Complementary Nursing in End of Life Care” (2015), “CO2 Extracts in Aromatherapy, 50+ Extracts for Clinical Applications” (2018), and *Clinical AromaCare—Aromatherapy for Clinic and Practice* (2020 in Dutch).

Madeleine teaches at Kicozo’s campus in The Netherlands where she heads a team of tutors. Kicozo is accredited by the Dutch Board of Nursing Quality. She is a guest teacher for some of the best schools for Aromatherapy and Integrative Medicine and Nursing in the world. She travels the world and also offers online programs, offering safe and science based (continuing) education, to train nurses and health care professionals in clinical aromatherapy (AromaCare), and other clinical complementary (nursing) techniques to enhance quality of life for patients and their loved ones. To learn more about Madeleine visit: www.kicozo.info/english/

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Go Green! How Can Digital Marketing Help Your Business?

By MaKayla Clanton



Is digital marketing looming at your doorstep? Are you refraining from online marketing efforts just because you are not sure where to start? In an increasingly digital world, it is wise for business owners to keep up with current digital marketing trends. You may think that word-of-mouth by family and friends or placing print ads in your local newspaper, or even occasionally sharing your business to your *Facebook* page will keep your business open with customers, but how long will those efforts last? What if you could reach more of your target audience for your business by just doing a few extra things online? I am here to show you how.

Set Up a Website

There are a few different ways to dive into digital marketing, and the first way is just buying and setting up your own website domain for your business. You should really purchase your own website domain vs. hosting on someone else's domain, such as *Etsy*. Having your own website domain makes your

company seem more professional than your competitors' for a variety of reasons. Also, you are not subject to another business's rules and sudden changes, over which you would have no control. If you are currently looking for a website hosting platform for your business, you could try looking at *Weebly*, *Wix*, and even *Squarespace*.

- **Weebly:** Website hosting platform, with e-commerce by *Square*. You can start out with a *Free* plan and that includes basic use of templates, and Search Engine Optimization (SEO) options that you can use to your advantage. If you choose the *Personal* option it is \$6 per month and you can connect to a personal domain. If your business is already established, I would personally suggest the *Professional* option. It is \$12 per month, and you will be able to connect with a domain and add more customization to your website with different features. You will also be able to see your website's statistics, have unlimited storage, and get a free domain.

- **Wix:** An online platform that can host your website, help boost traffic to your site, increase engagement, and has SEO tools to utilize. *Wix* has free website options, or you can browse through more customized plans.
- **Squarespace:** A website builder where you can claim a personalized domain and browse through different templates to see how you would want your website to look. They offer an email marketing platform, tools for Search Engine Optimization (SEO) and e-commerce options to sell products and services. Plans start at \$12 per month for a personal plan and jump up to \$18 per month for a business plan.

Search Engine Optimization (SEO)

Having a website for your business is a great way to participate in Search Engine Optimization (SEO). Why might SEO be helpful for your business? Let me tell you! Using keywords in your website will help with search rankings and drive more traffic and potential customers to your website. On your website platform, it will have a place for you to enter “keywords” and you can enter in words that pertain to your business.



Here are some examples of how to use long-tail keywords related to your website/business:

- Aromatherapist in the USA
- Aromatherapy Educator in Idaho
- Herbalist in Arizona
- Best Aromatherapists near me
- Top-Rated Aromatherapists in California

Just remember that keywords need to be short and simple, and relatable to your business. Keywords are typically no more than 5 words long.

A few short primary keywords to use for your aromatherapy business are:

- Aromatherapist
- Herbalist
- Aromatherapy
- Essential Oils
- Clinical Aromatherapist
- Holistic Aromatherapy

Social Media

Another way to utilize digital marketing would be to make sure that you are active on relatable social media platforms that your business can benefit from. Choose social media platforms that you resonate with the most and don't overload yourself with too many social media profiles.

Facebook is a great way to start with digital marketing. Create a *Facebook* page specifically for your business that friends and family members and potential customers can like and follow.

To create a new *Facebook* business page, follow these simple instructions:

1. Go to <https://www.facebook.com/> Make sure that you are logged into your account.
2. At the top of your screen, you will see a flag symbol for pages. This is the link associated with creating a new page.
https://www.facebook.com/pages/creation/?ref_type=launch_point
3. Select “Create a Page.” It will begin asking for information as to what you would like to name the page. Typically, you would put the name of your business.
4. It will ask you to fill in a category regarding your business, so you can enter “Aromatherapy Service” or “Aromatherapist” or whatever category you may align with.
5. You will be prompted to fill in some more information regarding your new *Facebook* business page.

Besides *Facebook*, it is beneficial to also have an *Instagram* page for your business, so you can stay connected on a different platform and make connections with your customers. *Instagram* is a photo and video sharing social media platform. It is beneficial for creators and makers to share photos of their products that they are trying to sell to the consumers. *Instagram* is similar to *Facebook* in the way of connecting with people. You are able to make connections with people in your area, or people in your niche, or people around the world in general, just by simply following their page.

Between *Facebook* and *Instagram*, there are a few ways to get interactive with your audience other than just posting photos to

your newsfeed. Some of these ways to interact would be connecting with your audience by using the “Stories” feature. Posting photos and videos of you talking to your “Story” can reach a broader audience for your business if your page is not private. *Instagram* stories stay active for 24 hours, then they are archived and can be added to a highlight bubble that is featured on your *Instagram* profile. *Instagram* has a feature called *Reels* which is a page dedicated solely to video. You can watch videos on this page from other creators you follow, and you can also make your own videos and share to your *Instagram* account. For an aromatherapist, a good way to utilize *Instagram* is by posting products you sell to your *Instagram* feed/story. Showcase your products or feature your favorite products so that consumers who follow your page get an idea of what you sell for your business.

There is also a feature called *Instagram Live* or *Facebook Live* that you can utilize and people following your page can join the Live Feed where you can interact with them in real time, and you can give them more information about your product or service and they can ask questions.

Instagram and *Facebook* are not the only social media platforms that you should be utilizing for your business. *Pinterest* and *TikTok* can boost your business by helping you reach a larger and broader audience in a niche market.

- *Pinterest*: Image sharing social media service. Great to share photos of ideas, inspiration, and products.
- *TikTok*: Video creating platform. Share 15-60 second video clips.

Email Advertising

Email advertising is also an effective way to reach people about special promotions that your business may have. *MailChimp* is an excellent integrative platform to design and create mass emails that can go out to a specific email list of customers and clients you may have. It is also free to use if you have under 2,000 subscribers!

Sometimes the internet and social media platforms can be chaotic and overwhelming, however digital marketing is a great way to grow your business virtually and can open a new door to so many wonderful opportunities.

About MaKayla Clanton:

MaKayla Clanton is the Marketing Director and Office Administrator for the *National Association for Holistic Aromatherapy (NAHA)*. In May 2020, she graduated from Idaho State University with her bachelor's degree in Visual/Corporate Communication with an emphasis in Photography and Marketing/Advertising. She has been working for NAHA since November 2020. Aside from marketing, MaKayla has her own photography business, and photographs weddings and portraits in Idaho. In her free time, she likes to take her dogs on adventures, hang out with her husband, bike, hike, ski, camp, and travel.

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NAHA Spring Recipes

Contributed by NAHA Directors

Our spring issue focuses on the greenness and vibrancy of the season, offering positivity and hope with the emergence of new life. Our directors delivered with some inspiring, green blends.

Fresh Clean and Green Room Spray

By Jennifer Pressimone
NAHA Vice President, Florida

Surround your senses and refresh your mind to promote positivity, mental clarity, and general well-being. You will need a 2-oz. glass bottle with sprayer top to make this blend.

Ingredients:

1.75-oz. rosemary (*Salvia rosmarinus*) hydrosol
0.25-oz. coconut (*Cocos nucifera*) Solubilizer

Essential Oils:

6 drops thyme (*Thymus satureioides* ct. Borneol)
6 drops cilantro (*Coriandrum sativum*)
4 drops sweet marjoram (*Origanum majorana*)
2 drops lemongrass (*Cymbopogon citratus*)
2 drops tea tree (*Melaleuca alternifolia*)
1 drop basil ct. linalool
(*Ocimum basilicum* var. *crispum*)

To Make: Add 0.25-oz. of coconut Solubilizer to the empty glass bottle followed by each essential oil. Cap and shake well to marry the oils into the Solubilizer. Last, add in the rosemary hydrosol. Secure the cap and mix well. Label. Store in a cool area.

To Use: Spray above your head and in the surrounding area, avoid getting directly into your eyes. Use 2-3 times daily for a fresh and elevating scent that inspires motivation, brain power and confidence. Apply to your abdomen area before meals to enhance digestion. Inhale the scent 4-6 times while working on a project requiring creativity and clear communication. This combination of scents will also invigorate vitality, restores nervous system communication, and build resilience to endure challenges.

Jennifer's Tips: Additionally, this blend combination will invigorate vitality, restore nervous system communication, and build resilience to endure challenges. It is helpful to stimulate circulation to tired and fatigued muscles while promoting enhanced respiration and lymphatic movement. Psychologically, it can help when you are grieving, feel overshadowed, mentally exhausted, irritable, and pessimistic. This blend is also a nice "cleaning green" blend to clean any surface or appliance. These essential oils have been scientifically shown to possess antibacterial, antiviral, and antifungal properties.

Cautions: For adult use only. For topical use only. Avoid use in pregnancy.

Nourishing Nettle Tea

By Anna Pageau, Nevada

Purchase dried herbs, or if you can grow them, pick fresh from your garden. Wear a pair of thick leather gloves when dealing with fresh stinging nettle (*Urtica dioica*).

Ingredients:

- 1 Tablespoon (15 g) stinging nettle (*Urtica dioica*) herb
 - 1 teaspoon (5 g) lemongrass (*Cymbopogon citratus*) herb, optional OR
 - 1 teaspoon (5 g) Peppermint (*Mentha × piperita*) herb, optional
-

To Make: In a tea strainer, place chopped loose nettle leaf (*Urtica dioica*). It does have a strong green earthy flavor, so I recommend starting with approximately one tablespoon (15 g) and adjusting the amount to your taste. Nettle (*Urtica dioica*) is a nourishing herb so larger quantities are safe. Some people consume as much as 2 cups (28 g) each day as an infusion. An infusion uses larger amounts of plant material steeped for 4 -12 hours.

To create a more flavorful blend, consider adding in 1 teaspoon (5 g) of lemongrass (*Cymbopogon citratus*) or peppermint (*Mentha × piperita*) herb.

Pour hot water over the herbs in the tea strainer and a pot and allow herbs to steep for approximately five minutes. Then sip and enjoy.

To Use: Nettle (*Urtica dioica*) is full of nutrients that support overall health. Many people have used it to help decrease seasonal allergy symptoms.

Anna's Tips: When I was living in Florida, I added a cup of nettle (*Urtica dioica*) tea to my daily routine and found that my reaction to mosquito bites was less severe.

Cautions: For adult use only. Nettle (*Urtica dioica*) acts as a diuretic so can be drying. There have also been some reports of headaches or stomach discomfort when consuming larger amounts daily.

Children's Sore Throat Blend

By Jamie Michaels, RN, CCA, CAI, Wisconsin

Ingredients:

- 1-oz. (30 mL) German chamomile (*Matricaria chamomilla*) infused jojoba (*Simmondsia chinensis*)

Essential Oils:


- 2 drops lavender (*Lavandula angustifolia*)
 - 1 drop tea tree (*Melaleuca alternifolia*)
 - 1 drop lemon (*Citrus × limon*)
 - 1 drop Roman chamomile (*Anthemis nobilis*)
-

To Make: Add essential oils and 1-oz. (30 mL) of infused oil to a glass dropper bottle. Cap and gently mix to blend. Label.

To Use: Apply a dime-sized amount to the palm of your hand and massage gently from the bottom of the ear lobe and down the sides of the neck and throat as needed up to six times per day.

Jamie's Tips: This blend is created to promote drainage, decrease pain and discomfort, and to promote better rest. This is a 1% blend intended for use with children aged five years and older.

Cautions: Avoid use 12 hours prior to being out in the sun. Always apply new products to the inner arm to check for possible adverse reaction and wait at least two hours before applying to the neck and throat. For topical use only. Never apply essential oils inside of the ear canal.



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Submitted recipes are subject to change at Editor's discretion to meet NAHA safety guidelines.

Peaceful Spring Sleep (Diffuser Blend)

By Liz Fulcher, Pennsylvania

This lovely nighttime blend features the beautifully relaxing green essential oil, bergamot (*Citrus bergamia*).

You will need a 5 mL glass amber or cobalt blue bottle to make this blend.

Essential Oils:

5 drops bergamot (*Citrus bergamia*)

3 drops lavender (*Lavandula angustifolia*)

3 drops sweet orange (*Citrus sinensis*)

1 drop melissa (*Melissa officinalis*)

To Make: Create a stock blend with the four essential oils in a 5 mL bottle. To make a larger quantity, simply increases each of the drops x2, x4, x6, etc. until the bottle is as full as you desire. Now you have a stock bottle and can reuse the blend several times.

To Use: Add 3-5 drops of the stock blend to your aromatherapy diffuser. Refer to the manufacturer's guidelines for use.

Liz's Tips: This is a sweet citrus floral blend to help soothe anxiety and help you drift off to a peaceful sleep.

Cautions: I recommend diffusing for 30 to 60 minutes at a time. Use the aromatherapy diffuser in a well-ventilated space. Use caution around children, pets, seniors, and in pregnancy.

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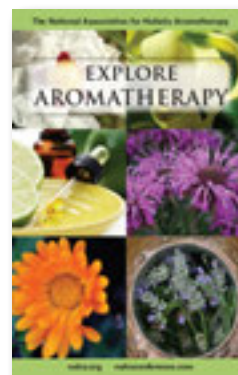
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or Wholesale, LGB stands ready to supply aromatherapeutic quality oils that are botanically rich, aromatically divine. Staffed with a highly professional customer service team, questions and inquiries are handled quickly and efficiently. All oil products are 'hand poured to order' by our highly trained oil room product fulfillment team. Use code NAHA15 for 15% Off your first order. Aromatherapy Student discounts and Certified Aromatherapist/Health Care Professional discounts available by contacting us.

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Mountain Rose Herbs

Mountain Rose Herbs offers high-quality organically grown herbs, spices, teas, essential oils, and botanical goods. Since 1987, they have been known for their uncompromising commitment to organic agriculture, fair trade standards, and sustainable business practices. The company's core belief that people, plants, and planet are more important than profit guides everything they do.

mountainroseherbs.com

New Directions Aromatics

New Directions Aromatics: Certified organic processor offering the highest quality, pure essential oils for professional use. Discover hard to find oils and natural products including wild crafted and conventional types. You will be amazed at our extensive line of carrier oils, extracts, absolutes, ayurvedics, cosmetic and soap bases, specialty packaging and much more. Purchasing directly from distilleries and producers worldwide enables us to offer premium quality products at wholesale pricing. ISO, USDA Organic, Fair Trade, Vegan and Kosher certified with a knowledgeable and friendly customer service and a 100% customer satisfaction guarantee.

newdirectionsaromatics.com

Palo Santo EcuadorianHands

We're artisan distillers of Palo Santo (Bursera Graveolens) 100% pure essential oil, therapeutic grade. Elaborated without harming the tree, Palo Santo is very useful for relaxing the mind and body as well as purifying the bad energies. Incense,

malas, beads, soap also available. Bursera graveolens, known in Spanish as "Palo Santo" (holy wood) is a tree that inhabits the coast of Ecuador. It has a high concentration of Limonene, a medicinal terpene known to be a strong antioxidant, anti-inflammatory, antibacterial, anti-fungal and antiseptic agent. [Learn about our reforestation program.](#)

ecuadorianhands.com/en

Plant Therapy

Plant Therapy is the premier destination for essential oils, KidSafe blends, carrier oils, hydrosols, USDA Certified Organic products, and more! At Plant Therapy we have always believed in exceptional quality, the purest ingredients, and the desire to positively impact as many people as humanly possible. Ultimately, we feel this is possible by providing our customers with an exceptional experience that keeps them coming back. Plant Therapy's quality control procedures are some of the strictest in the industry. Each oil offered by Plant Therapy has gone through multiple rounds of testing and has been approved by Robert Tisserand and our team of Certified Aromatherapists. Every bottle of oil that you purchase from Plant Therapy will have a specific batch code that is linked to batch specific GC-MS reports which can be found on the product page. With free shipping and free returns, you can't go wrong with Plant Therapy!

planttherapy.com

Positively Aromatic

Positively Aromatic is an Artisan Distillery. Our primary product is Hydrosol produced using Copper Alembic Stills with low temperature, slow process distillations that produce a high-quality Hydrosol and Essential Oil. Our distillates are USDA Certified Organic, pure and unadulterated. We produce 52 different Hydrosols and have 11 different varieties of Lavender Essential Oils. With each distillation, we are thoughtful of the end-user and how our beautiful Hydrosol will enrich their health and well-being. Distillation is done intentionally, sustainably, and ethically with meticulous sterilization protocols. Our owner is a Certified Aromatherapist and NAHA Director. Visit us at pa-wholesale.com

pa-wholesale.com

NAHA Marketplace

Pure Bulgarian Lavender

Growing roses and lavender was family tradition from several generations. Now is the time to order your bulk rose oil and Hydrosol at exclusive price directly from our distillery. We grow and distill USDA Organic and Non organic Rose Oil, Lavender Oil, Blue Chamomile, Roman Chamomile, Melissa Oil, Menta Piperita Oil, Juniper Berry Oil, Silver Fir Oil, Pine Oil, Yarrow Oil. We have our own fields with aromatic plants and two distilleries in Bulgaria, Rose Valley. For your convenience, we ship worldwide from two locations Chicago IL and Karlovo Bulgaria. We ship door to door and we take care for the logistic and custom.

purebulgarianlavender.com

PurePlant Essentials

Let us be your first choice for a wide selection of premium quality 100% pure GC/MS tested, organic and wild crafted essential oils and custom formulas. All of our oils are sustainably sourced, formulated by a certified clinical aromatherapist and hand poured fresh to your specified order to ensure potency and freshness. Serving the aromatherapy community online since 2005, we are also your qualified source for aromatherapy education and certification - NAHA Approved Educator.

pureplantessentials.com

Shaman Essential Oils

Springing from the Kalustyan Corp.'s 70-plus years in the spices and herb market, Shaman Essential Oils embraces local growers and sustainability to bring premium quality aromatic oils to the world. We offer a full line of essential oils, carrier oils, organic essential oils, unique custom blends, and more, all of it sourced from small, sustainable farms and our own overseas distillation operations. We sell in bulk and also offer private labels. We are a proud member

of the NAHA, and hold Organic, Vegan, Non-GMO, and Kosher certifications. We've traveled thousands of miles and devoted hundreds of hours to offer only the best essential oils. From farm to bottle to you, many of our essential oils never leave our hands until they're in your hands.

shamanoils.com

Time Laboratories

Founded by Annemarie Buhler in 1973, Time Laboratories stands as a pioneer in the natural products industry. We incorporate only the highest quality research-based essential oils, plant extracts, and other raw materials into innovative formulations offered to our customers at competitive prices. We offer a full line of pure & genuine essential oils (third-party GC/MS tested), authentic aromatherapy products, natural skin care products, bath & spa products, herbal supplements, capsules & tablets, mother tinctures and gemmotherapy glycerin macerats. Choose from our extensive stock line, or allow us to custom formulate for you. We look forward to hearing from you!

timelabs.com

Your Body Needs

Your Body Needs... provides 100% pure essential oils, carrier oils and aromatherapy accessories. The company also has its own line of aromatherapy based body products such as body oils and muscle therapy cream. We provide aromatherapy classes on a regular schedule and personal consultations specializing in custom face oils for skin care, and personal blends for stresses of daily living due to physical or mental stress. In business since 2008, Your Body Needs...has developed relationships with distillers and educators in the field all around the world. We are dedicated to quality of product and our customers.

yourbodyneeds.com

NAHA Marketplace

SCHOOLS

ACHS.edu American College

American College has a heritage of excellence in distance education for over 40+ years. Our Aromatherapy Department offers uniquely tailored accredited degrees, certificates, professional focus credentials, general interest, and FREE online classes ranging from beginner level to those needing advanced clinical aromatherapy professional credentialing. Our programs are designed for student success with research, a science-based curriculum taught by industry-leading experts and a collaborative experiential online learning environment. We are DEAC accredited and fully online for ease of education. See why 98% of ACHS students would recommend us to a friend. Your success is our reputation.

achs.edu

Aroma Apothecary Healing Arts Academy

Aroma Apothecary Healing Arts Academy is an aromatherapy and holistic healing school. We invite you to learn nature's pharmacy and natural healing methods. Our professional aromatherapy certification courses are designed for health professionals, holistic retailers, and those who have an interest in aromatherapy and natural healing. These courses can be taken in 50 hour sections or as a full 200-hour Professional Clinical Aromatherapy Program or a 300-hour Clinical Aromatherapy Mastery Program which exceeds the NAHA Levels 1, 2 and 3. Aroma Apothecary Healing Arts Academy is an Approved School by the National Association for Holistic Aromatherapy (NAHA), Alliance of International Aromatherapists (AIA), and by the National Certification Board for Therapeutic Massage and Bodywork (NCBTMB) for massage therapy continuing education. [AAHAA BLOG](#)

learnaroma.com

Aroma Hut Institute

Aroma Hut Institute offers professional quality clinical aromatherapy courses online and in-person. Aroma Hut training includes Aromatherapy Certification programs for Level 1 Foundation (100 hours) & Level 2 Advanced Clinical (270 hours). Courses are approved for Massage Therapy CEU's in Florida and Nationally through NCBTMB and can be taken individually. Graduates have the option to continue with Teacher Training and start their own Aroma Hut School. Rebecca Park Totilo, our in-house apothecary formulator and instructor, is a best-selling author of over 52 books on aromatherapy and essential oils including, *Organic Beauty With Essential Oil*, *Therapeutic Blending With Essential Oil* and *Heal With Oil*. She has been seen by millions via national television, syndicated radio, and internet. Rebecca has over twenty-five years of experience as an international educator, specializing in the ancient biblical healing arts.

aromahut.com

Aromahead Institute

Study essential oils online with Andrea Butje! Andrea has been teaching Aromatherapy since 1995 and has an international reputation for her work with essential oil distillers. Aromahead Institute's classes are in-depth and dynamic, all taught in an easy to use, beautiful and well organized online classroom. Aromahead offers a 235-hour Aromatherapy Certification Program (covering both NAHA Levels 1 and 2), and a 400-hour Scholars Program including advanced courses in aromatherapy chemistry and therapeutic blending. Interact directly with Andrea and students from all over the world. Aromahead's classes are approved for Massage Therapy CEUs in FL, NY, and by the NCBTMB.

aromahead.com

NAHA Marketplace

Ashi Aromatics Inc.

Do you love animals? Are you considering a holistic career working with animals and their caregivers? Do you want to learn more about aromatherapy for use with your animal friends? If you answered yes to one or more of these questions, you may be interested in our unique and specialized courses. We offer Aromatherapy and Botanical Studies to assist you on your path to become a qualified Animal Aromatherapist and Animal Flower Essence Practitioner. Our courses are unique in that it offers a complete program designed with the main focus on Animal Aromatics and Botanical Studies. The Animal Aromatherapy Practitioner Certification Course(sm) is a 300+hour online program specific to the use with animals. Our courses are approved by NAHA and HAA (Holistic Animal Aromatherapy Association). Continuing Education is available for NAHA & HAA members as well as for CFA (Canadian Federation of Aromatherapists) Members. Course registration includes access to student forum and instructor mentorship support. We also offer programs in Animal Aroma Acupoint Massage(sm), Auricular Aromatherapy, Energy Therapies, and more. Your Instructor Kelly Holland Azzaro, RA, CCAP, CBFP, LMT has over 25 years professional experience in aromatherapy, massage and energy therapies for both humans and their animal friends. She specializes in Animal Aromatherapy and Flower Essences and shares her passion, knowledge and practical real-life experience on these topics to help education and empower others.

animalaromatherapy.com

Bev Hawkins Membership Club

The Bev Hawkins Membership Club a subscription club sharing focused, detailed and insightful information in monthly packages with a new package is delivered each month. Our Members range from anyone with an interest in aromatherapy, to the novice just starting out, to the enthusiast who is

more familiar with essential oils, to the Professional who wants to continue to expand and share their knowledge. Benefits of Membership include the Welcome Package; Monthly Packages; Certificates of Completion; All Previously Published Packages and a community. Each month's package covers: one essential oil in depth; one condition plus so much more.

bevhawkins.com/bundles/Membership-welcome

Essentria Aromatherapy School

Welcome to Essentria Aromatherapy School! We are an online school offering a Level 1 & Level 3 certification course with NAHA. Come learn in our easy to use online program from the comfort of your home! Learn at your own pace, start whenever you want! Created by Rachael Dean, Nikki Fraser, and Rhonda Greenbury who are each Level 3, Certified Clinical Aromatherapists with NAHA and Certified Aromatherapy Health Practitioners (CAHP) with the Canadian Federation of Aromatherapists (CFA). Our Level 3, Aromatherapy Certification course (fully updated 2021!) is over 425 hours and covers over 70 essential oil profiles, history, chemistry, safety, chakras, carrier oils, hydrosols and so much more. Students also learn anatomy, physiology and pathology. They learn through hands-on activities, assignments and case studies while having fun in our positive and upbeat student group. Those who will benefit from our program are; parents, health providers, health coaches, fitness, yoga instructors, RMT's, naturopath's and natural health enthusiasts or those who want to learn how to improve their health! Our Level 1 Aromatherapist Course is designed for professionals looking to add essential oils into their established practice. In this 50 hours course, it covers 20 essential oil profiles, history, basic chemistry, 3 carrier oils, and so much more. Our free Intro Course is available for all to get a taste of our online learning environment! Join us today!

schoolofessentria.com

NAHA Marketplace

Herbafarm Academy & Rose Harvest Aromatherapy Retreat

Herbafarm Academy is the brainchild of Meltem Kurtsan, a pharmacist by training with deep roots in herbal health care, also founding president of Women Entrepreneurs Association of Turkey. The Academy is located in a beautiful corner of Bodrum, Turkey offering special courses and workshops since 2015 in natural health sciences; such as Aromatherapy, Phytotherapy, Natural Cosmetics, Homeopathy as well as Medicinal and Aromatic Herbs Cultivation. HerbaFarm Academy is a NAHA Approved Aromatherapy School, hosting Level 1 and Level 2 online and in-class courses. Our professional aromatherapy certification courses are designed to provide in-depth and hands-on experience in aromatherapy and holistic healing with the involvement of prominent Academics.

HerbaFarm holds Rose Harvest Aromatherapy Retreat to discover the power of Rosa damascena, a very important medicinal plant and symbol of beauty. Next retreat is scheduled for: May 21-28, 2022.

herbafarmacademy.com

Institute of Integrative Aromatherapy

When you select the Institute of Integrative Aromatherapy for your education partner, you'll see the difference from the very beginning. Our unique clinical and holistic training program was developed and is taught by a professional nurse aromatherapist and pioneer in Integrative Aromatherapy® education. With more than 30 years of experience, and 9 authored books on the subject, Valerie Cooksley, RN, OCN, FAAIM, CERT shares her expertise as both an experienced aromatherapy practitioner and educator. You will receive one-on-one personalized mentoring in the specialized training in the art, science and bio-energetics of essential oil therapy and learn how to combine with other integrative therapies.

floramedica.com

JennScents Aromaversity

JennScents provides holistic health education, products, services and private coaching. AROMAVERSITY: Level 1, 2 & 3 online aromatherapy certification program, NAHA & NCBTMB approved. An inviting, user-friendly and easy to navigate multi-modal learning environment for aspiring & current aromatherapists to grow and develop aromatherapy skills, scentillect and scenterpretation. Our structure makes it convenient to attend class when it's convenient for you. We also specialize in: Virtual & Custom Blending Services, Professional Essential Oil & Product Formulation Services, Clinically formulated mind-body health products and Guest speaker and Private Mind-Body-Soul Health Coaching—providing motivation, inspiration & encouragement.

jennscents.com

Sedona Aromatics:

The Garden School Online (TM)

UK-certified aromatherapist, published author and editor, Sharon Falsetto, BA (Hons), has been working in healthcare-related services since the 1990's. She wrote and tutors Sedona Aromatic's Botanical Aromatherapy™ online program. Sedona Aromatics is a NAHA approved school and a NAHA approved continuing education provider. Sedona Aromatics also offer the Botanical Aromatherapy(TM) Membership School for one low fee per year. Sharon is an intuitive custom blend formulator, small business consultant, aromatic gardener, and herbalist in training. She works exclusively from her garden studio and aromatic gardens on a one-acre sanctuary near Sedona, Arizona.

sedonaaromatics.com



NAHA Marketplace

NATURAL HEALTH RESOURCES - CLINICS

Be Hive of Healing

Be Hive of Healing is about the manifestation of a holistic vision of integrated healing. Integrative Medicine is a time-tested medical protocol that merges the practices and philosophies of both conventional and alternative medicine to create a new paradigm for optimum health. Treatments are individualized to each patient's condition, and are developed to activate the body's natural healing processes. Integrative medicine is a holistic approach to healing, and acknowledges the person as a whole being, rather than a collection of symptoms. We attend to your health through a doctor-patient relationship founded on listening to your needs, empathizing with your pain, and meeting your expectations. Our holistic healing methodology includes all aspects of you—body, mind and spirit. Location: Agoura Hills, CA. Medical Team: Dr. Habib Sadeghi, Dr. Sherry Sami

behiveofhealing.com

Endobiogenic Integrative Medical Center (EIMC)

CHALLENGING HEALTH ISSUES? JUST DON'T FEEL WELL? WE CAN HELP! We use innovative techniques to treat a wide range of conditions. Our clinic was founded in 2005 in cooperation with Dr. Jean Bokelmann and the Idaho State University Integrative Health Clinic. The Endobiogenic Concept® was developed by French medical doctors Christian Duraffourd and Jean Claude Lapraz. Our Endobiogeny team uses this personalized approach to wellness to focus on the cause of disease rather than just symptoms. Based on modern physiology and endocrinology, Endobiogeny is an innovative natural approach to wellness that identifies the imbalances, unique to the human body, that are causing suffering. Endobiogeny focuses on the root causes of disease, not just symptoms. Individualized Phyto-Aromatherapy treatments include essential oils, herbs, supplements, diet & lifestyle changes. Location: Pocatello, Idaho - Face-to-face and remote appointments available. Medical Team: DeLisa Eddington NP-C, Annette Davis CN, Laramie Wheeler, DO

eimcenter.com

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By Sharon Falsetto, BA (Hons)

sharon@sedonaaromatics.com





Submit your aromatherapy case studies to be featured in the NAHA Journal!

Before submitting, please read the [NAHA Writer Guidelines](#).

For questions or to submit a case study, email Sharon Falsetto at sharon@sedonaaromatics.com



Case Study Writing Guidelines

1. Identify the individual's chief complaints.
2. Summarize the individual's background, relevant facts, and any key factors leading to the current complaints.
3. Formulate a thesis statement.
4. List your aromatherapy recommendations for the individual.
5. Demonstrate that you have researched your recommendations for the individual and/or explain your reasoning for choosing specific essential oils and any other recommendations.
6. Explain any constraints and recommend alternatives (e.g., alternatives to oils that are out of budget, allergies, sensitivities, personal preferences of the individual).
7. After following your individual for a minimum of 3 months, summarize the outcome. Include details on compliance, any improvements, set-backs or challenges that the individual experienced. (Case studies of less than 3 months can be submitted for acute conditions).
8. Summarize your action plan for the future.

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Cornflower (*Centaurea cyanus*) with mortar and pestle and assorted herbs in jars.

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Please consult your health care practitioner if you are pregnant or have been diagnosed with any serious healthcare problems before using essential oils. Keep all aromatherapy products out of reach of children and pets. Before using essential oils and aromatherapy products please consult with a professional aromatherapist.

NAHA asks that all authors and contributors include information on safe use of essential oils and clearly define each essential oil's common name and Latin binomial(s). NAHA has the right to accept or reject any articles, advertisements or content submitted. NAHA website is a resource-full area for information on Aromatherapy Safety, Applications and Uses. www.naha.org

AROMATHERAPY PUBLICATIONS

NAHA Aromatherapy Journal

www.naha.org

Aromatherapy Today Journal

www.aromatherapytoday.com

International Journal of Clinical Aromatherapy www.ijca.net

International Journal of Professional Holistic Aromatherapy www.ijpha.com

International Federation of Professional Aromatherapists www.ifparoma.org



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NAHA 

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