

## Essential Oils and Skin Cancer

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The beauty industry is becoming aware of the benefits of pure essential oils in rejuvenating the skin and improving common skin ailments such as acne, rosacea, overly dry or oily skin, and normal aging concerns. The holistic aromatherapy practitioner recognizes that essential oils can also provide adjunct support in conditions such as eczema, wound healing, burns and other skin concerns that are beyond cosmetic applications, but what about the more serious condition of skin cancer? As an esthetician myself, it is often in a facial treatment under a dermascope that the first implications of skin abnormalities are noticed. Of course, a medical referral to a dermatologist is certainly in order with anything that looks suspicious, but with attention to safe-sun practices and the use of rejuvenating and healing essential oils, the need for medical attention may be avoided. Essential oils can also be a part of recovery from medical intervention for skin cancer, helping with the emotional and physical fallout, as well as skin healing if surgery is performed.

We all know that excess sun exposure is the main culprit in promulgating skin cancers. There is no such thing as a healthy tan, and researchers and dermatologists claim that sun exposure and burning of the skin causes cumulative damage that is nearly impossible to reverse. The sun provides for conversion of vitamin D in the body and small amounts are healthy, but did you know that all you need is 10 minutes of off-peak sun time per day on bare arms or legs to get enough? Dermatologists claim that sun exposure exceeding 45 minutes is very damaging to the skin, not to mention the early aging and wrinkles that it promotes. Dietary antioxidants can help limit the damaging effects of the sun, but it is difficult enough getting what we need just to deal with poor lifestyle and daily pollutants that assault us from numerous sources. Dermatologists and estheticians agree that the best defense is a strong offense – wear protective clothing and don't expect sunscreens alone to protect you, especially from long exposure sun bathing.

There are three types of ultra violet (UV) light that occur in nature. UVA rays are known for aging, UVB rays for burning and UVC rays that are mostly blocked by the ozone layer. The UVA rays are most associated with damaging effects such as hyperpigmentation, wrinkles, actinic keratoses and cancers. Another damaging consequence of UV radiation is DNA damage of the nucleus and mitochondria of the cell.

The landscape of using essential oils externally to treat skin cancers is largely uncharted. There is a 2001 study from Arizona that investigated the joint effects of using citrus peel and black tea to reduce cancer risk which resulted in a "significant protective effect", but these were ingested. Like this study most of the research on essential oils and cancer relate to using monoterpene compounds in the form of ingestion of plant sources such as herbs, vegetables and fruits, especially citrus peels. Essential oils are rich in monoterpene compounds and in some research studies these compounds are isolated and given orally. As holistic aromatherapy practitioners, we would not have access to, nor should we choose this option. However, there is promising research on the horizon. More current literature demonstrates the viability of external application of essential oils for skin cancer. Three articles on sandalwood essential oil (and its compounds alpha and beta santalol) reveal its effectiveness in the treatment of skin cancers. Geraniol has a number of studies that point to its efficacy in treating certain cancers, including skin cancer. Berberine, though not extracted from an essential oil but rather herbs such as golden seal and Oregon grape, has also shown promise in the treatment of skin cancers. Curcumin from turmeric also shows promise in the literature.

Though the formation of cancer is multifactorial, the literature is clear that the monoterpene compounds found in essential oils have the ability to affect several metabolic pathways which may influence cancer formation. While the research of whole essential oils for direct external use in treating skin cancer is just beginning, in many instances we are left to extrapolate on the research that exists, with best-use models being the oils that have been studied overall. This is not to say that essential oils cannot be used in skin treatments to support other modalities of skin cancer management or that one should not incorporate this information into preventive practices or complimentary treatment protocols; quite the contrary.

Incorporating specific essential oils into a daily skin care regime is one of the many ways we can be proactive in protecting and rejuvenating our skin, whether for reasons of health or beauty. They also have an added benefit - since stress is a primary culprit in all forms of health disorders including cancer, essential oils provide overall physical and emotional support through soothing aromatic treatments and palliative care, that go beyond direct treatment.

### Pharmacokinetics Simplified

Essential oils are made up of isoprenoid compounds (monoterpenes); they contain 10 carbon molecules and inhibit the mevalonate pathway that contributes to abnormal cell growth. Monoterpenes have multiple pharmacologic effects on mevalonate metabolism. Some of these effects may account for their tumor suppressive activity: monoterpenes increase the levels of liver enzymes involved in detoxifying carcinogens, reducing the possibility of cellular damage and stimulating apoptosis, a cellular self-destruction mechanism triggered when a cell's DNA is badly damaged. Monoterpenes are formed in the mevalonic acid pathway in plants. This is the same pathway that makes cholesterol in animals and humans. Cancer researchers know that some aspects of cholesterol metabolism are involved in cancer growth. They also discovered that plant monoterpenes interfered with animal cholesterol synthesis, thereby reducing cholesterol levels and reducing tumor formation in animals. In other words, plant derived isoprenoids contribute to the suppression of mevalonate synthesis.

Mevalonate kinase is a protein involved in the synthesis of cholesterol. Cholesterol is an important component of cellular membranes, and serves many other important functions. Researchers have identified two significant monoterpene components: Limonene in orange oil (*Citrus sinensis*), and Perillyl Alcohol in lavender oil (*Lavandula angustifolia*). Limonene and perillyl alcohol affect the pathway that produces cholesterol and can inhibit cholesterol synthesis, thereby eliminating a minor contributor to cancer formation. These isolated compounds are being studied in cancer treatment. D-limonene, which comprises at least 90% of orange peel oil, has chemopreventive activity in an animal model. Similarly, other dietary monoterpenes have chemopreventive activity against certain cancers when fed during the initiation phase. Monoterpenes appear to act through multiple mechanisms in the chemoprevention and chemotherapy of cancer. Isoprenoid-mediate activities are cumulative and synergistic. Therefore, the combined actions of the estimated 23,000 isoprenoid constituents of plant materials, acting in concert with other chemopreventive phytochemicals, may explain the lowered cancer risk associated with a plant-rich diet.

The University of Wisconsin, Madison, has been treating patients with a variety of advanced cancers, including breast, ovarian and prostate, with 5,000 to 7,500 milligrams per day of encapsulated perillyl alcohol in an oil base.

## Essential oils in dermal treatments

Though this has been a debated subject, most researchers acknowledge that essential oils work by penetrating the skin. Absorption and penetration occur due to two critical factors – essential oils are lipid soluble, and they have a small molecular size (low molecular weight). It is generally understood that this penetration goes to the dermal layer of the skin, and affects the physiology of the body through lymphatic vessels, capillaries and nerve endings located in this region. It is in this critical layer that new cells are formed and the health of the skin is most affected.

Though little clinical research exists on the direct effects of essential oils on skin, such as sebum production and wrinkle prevention, there is some data on the effects of essential oils on other skin problems such as wound healing and burns. Most aromatherapy practitioners have had to rely on anecdotal evidence, personal experience and historic use for other skin ailments.

## Doctrine of Signatures

Many systems of early traditional medicines used this doctrine to determine plant uses – how the plant exhibits itself is a clue to how it might be used. In a similar system Anthroposophic medicine equates and associates the healing properties of essential oils derived from fruit peels in treating disorders of the skin, since both are outer protective coverings. Since most chemo-preventive research is done on d-limonene from citrus oils (especially orange) this is an interesting anecdotal corroborator. It is remarkable that many of the citrus oils are ones to avoid with sun exposure due to photosensitivity - perhaps an interesting homeopathic principle at work? In any case, they should only be used when there is no chance of UV light exposure, either indoors or at night.

Under the same Signature philosophy, we notice that the resin oils, considered the blood of the tree, affect the deep venous systems of the body and wounds that won't heal. These resins are collected by causing a wound in the bark; as the sap rushes in to seal over the cut it is collected and extracted. Most resin oils are used traditionally for wounds. If one considers the deep spiritual aspects of disease, especially cancer, it is considered by some to be a deep soul wounding on a spiritual level. If treating from this perspective one might choose resinous oils such as frankincense, myrrh and benzoin as deep soul remedies or on a physical level for difficult-to-heal wounds such as ulcerations.

## Essential Oils Researched for Anti Cancer Activity

Angelica	Orange	Palmarosa
Geranium	Atlas cedar	Patchouli
Turmeric	Cistus	Frankincense
Ginger	Neroli	Sandalwood
Pine	Lemongrass	
Violet, Boronia, smanthis (b-ionone)		

There are likely many more oils with anti-cancer potential, if not directly, then by correcting the overall "terrain" (environmental host condition), but we'll have to wait on further research for definitive substantiation.

## Blending for Compliance

Making a pleasant smelling blend is necessary for compliance. Here are a few suggestions for overall use in massage, bath or body lotion. The suggestion dilution is two percent, but can be adjusted according to your desire or sensitivity level. Blends do not need to be this complex either; simply choose 2-4 of your favorite choices to combine.

## Facial Blend

Blend two to three drops of each - Lavender, Helichrysum, Carrot seed, Orange.

Carrot and helichrysum are not on the list of oils that have been studied, but I have seen benefits in using them for suspicious spots that have been given a "watchful waiting" diagnosis by a medical practitioner. Add all

## Blend I (in drops)

- ◆ Orange 30
- ◆ Tangerine 20
- ◆ Lavender 15
- ◆ Frankincense 15
- ◆ Sandalwood 10
- ◆ Rose 10
- ◆ Geranium 5
- ◆ Lime 5
- ◆ Ambrette 5

## Blend II (in drops)

- ◆ Sandalwood 37
- ◆ Tangerine 33
- ◆ Frankincense 30
- ◆ Orange 27
- ◆ Rose 20
- ◆ Lavender 20
- ◆ Lime 13
- ◆ Angelica 12
- ◆ Geranium 10

the oils to one ounce of Tamanu oil and apply several times per day. Leave out the orange if you use this oil when sun exposure is likely, even though the coumarins content is low.

## Standard dilutions for all blends

The above blends (which can be made into stock bottles) or any single oil must be diluted into a carrier oil or lotion at one or two percent dilution. This can be applied externally, or add 5-10 drops of the undiluted blend to the bath. Avoid eye areas.

1%: 5-6 drops of essential oil per ounce of carrier

2%: 10-12 drops of essential oil per ounce of carrier

## Charging your blend

Little attention is paid to this very important part of any healing remedy, but it is very powerful and should always be done with your full attention and intention. Hold your completed blend, inhale the aroma and charge the formula with your healing thoughts. Every time you smell and use the blend this intention reverberates.

## Carrier Oils

Seed and nut oils are usually the carriers of choice to dilute essential oils. Unlike essential oils which are volatile and will evaporate upon exposure to the air, these "fixed" oils are subject to rancidity. Like essential oils, all carrier oils should be stored away from heat and light to ensure their freshness. Refrigeration of all carrier oils is highly recommended. The addition of vitamin E oil acts as an antioxidant for the carrier and will help extend the shelf life. Add one capsule of Vitamin E (400 IUs) to a two ounce bottle.

There are a few outstanding carrier oils to choose from when blending your essential oils into a usable end product. Whenever possible, buy organic "cold pressed" oils extracted without the use of solvents. My personal first choice from the following list would be the specialty oils, followed by the herb infused oils, but all are suitable.

## Oils High in Essential Fatty Acids

### Borage / Evening Primrose / Black Currant / Rosehip

All of these oils are high in gamma linoleic acids (GLA), an important element in maintaining healthy skin or repairing skin damaged by the sun. Its rejuvenating effects are especially useful in treating mature skin. These oils can be used sparingly as a portion of your carrier, and since they are expensive, price alone will probably keep you from using too much.

## Herb Infused Oils

**Calendula** - a carbon dioxide extract of this plant can be diluted (5%) in any vegetable oil; or an herb infused oil can be used. Calendula is very healing to the skin for all cosmetic applications. It has traditionally been used in cancer formulas, but is specific for burns, diaper rash, wounds and bruises. It is antimicrobial, making it suitable for a variety of medicinal preparations. It is easily prepared at home by macerating dried and ground up blossoms; cover with olive oil. Strain after two weeks.

**St. John's Wort** – this herbal preparation is best purchased from a quality herb company. It is not as easy to prepare at home because it should be made from fresh herb which has the

## Blend III (in ml or drops)

- ◆ Atlas Cedar 2
- ◆ Frankincense 2
- ◆ Rose 2
- ◆ Tangerine 1
- ◆ Lavender 1
- ◆ Neroli 1
- ◆ Angelica 1
- ◆ Violet absolute 1

possibility of water contamination and bacterial growth. It is wonderful for burns, bruises and nerve damage.

### Specialty oils

**Calophyllum inophyllum** - Also known as tamanu, this thick green oil from the nut of a tropical palm has been used for centuries by the native people of the South Pacific for wounds, burns, acne, itching and pain; it is anti-inflammatory and antibacterial. Tamanu is relatively expensive but can be blended with other carriers.

**Nigella sativa** – sometimes called black caraway or black cumin, it is a relative of the common garden ornamental Love in a Mist (*Nigella damascena*). This dark, strongly odiferous oil has been used by Middle Eastern cultures for food and cosmetic purposes. It is used in cancer care as an internal antioxidant and can be blended with other oils to reduce the strong odor in external applications for burns or body care.

**Carrot** – this oil is cold pressed from the seeds of *Daucus carota*. It is dark green with a strong, but not unpleasant, odor reminiscent of the distilled essential oil also derived from the seed. It is best blended with other oils due to price and odor.

### Common carrier oils

**Castor** – this very viscous and thick oil is not normally used in aromatherapy, but can be added in small amounts to formulas treating eczema or other dry skin conditions. The medical intuitive, Edgar Cayce, used this oil extensively for purifying the body. In naturopathy, castor oil is used as a compress to break down fibrous tissue or to detoxify the liver.

**Jojoba** - The carrier of choice for perfumery, jojoba is technically a wax not an oil, and will not go rancid. Because it is chemically similar to sebum, the oil your skin produces, it is beneficial for all cosmetic applications. Jojoba is also great for scalp and hair treatments.

**Kukui** - the thinnest, lightest oil for the face, it provides just the right amount of moisturizing without feeling greasy. This oil, native to the South Pacific, is high in linoleic and linolenic acids and is rapidly absorbed into the skin. It was used by the Hawaiians for skin conditioning after sun exposure (don't expect it to act as a sunscreen). Kukui nut oil has low toxicity levels but is very laxative and not intended for oral use. It has a distinct odor and is rather expensive, so you may wish to combine it with other oils.

**Sesame** - It contains natural vitamin E and sesomoline, a natural preservative. Sesame has long been used as a base for Ayurvedic medicinal preparations and is said to be most balancing to a vata dosha. It has minimal sun protection (SPF 4) especially combined with kukui or coconut, but don't rely on it as a sunscreen.

PLEASE NOTE – fatty oils should be used after the heat of a burn has dissipated. Though they offer many healing components they can make a burn feel hotter when applied before icing or applying cold compresses. Burns such as sunburns or heat related burns from a stove are best treated using cold aloe vera juice as a carrier for your essential oil. I keep dilutions of 50% lavender essential oil diluted in aloe juice in my refrigerator for small kitchen burns. If the treatment area is large, such as full-body sunburn, dilute the lavender to 5-20%, depending on sensitivity and size of the burn area.

### Sunburn Bath Salts

½ cup borax      ¼ cup baking soda    1 qt strongly brewed black tea

Add 5 drops of lavender essential oil to the baking soda and borax mix and add everything to a bath filled with tepid water. The tannins in the tea are very soothing and effective in removing the sting of a burn. Providing immediate antioxidant quenching to sunburn will help prevent further damage.

### Adjunct Therapies

The following adjunct therapies include drinking tea made from the listed herbs, choosing from the list of specific essential oils and incorporating lifestyle suggestions.

#### Lymphatic cleansing

Herbs: cleavers, red root, red clover, lemon, baptisia, elder, fenugreek, gentian, mullein, myrrh, poke

Essential oils: atlas cedar, grapefruit, rosemary, juniper, ginger, spruce, myrrh, lemongrass

Lifestyle: transform physical and emotional stagnation - mini trampoline, skin brushing, massage

#### Liver tonics

Herbs: milk thistle, dandelion, burdock, Oregon grape root, bupleurem, nettles

Essential oils: carrot seed, rosemary, helichrysum

Lifestyle: release anger constructively (exercise); castor oil compresses over the liver

#### Mood enhancers

Herbs: borage, basil, violet, hawthorn, lemon balm, oat straw

Essential oils: clary sage, lavender, ylang, bergamot, neroli, jasmine, rose, frankincense, sandalwood

Lifestyle: spend time in nature; watch uplifting movies and comedies; surround yourself with joyous events and positive people; think happy thoughts

### Summary

At this stage of limited research essential oils can be relied on as one piece of a treatment protocol in dealing with skin cancer. Cancer is a complex disorder which requires a multi-modality protocol – sometimes including medical intervention, surgery and lifestyle changes. While there is no conclusive evidence that essential oils can reverse the most damaging effects of the sun or skin cancer, they can help facilitate many levels of physical, emotional and spiritual healing. They can be integrated in daily body care as part of a cellular rejuvenating program along with sunscreens and protective clothing. You will enjoy the added benefits of smelling good, and feeling relaxed is no small contribution to a more stress free existence that supports healthy immunity.

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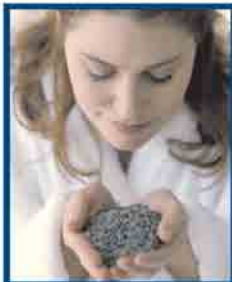
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