

## Irritation, Sensitization, and the Inflammatory Response

Essential oils are concentrated plant extracts and as such, aromatherapists always need to prioritize safety. Oils affect people in different ways, and some oils can have an adverse effect when applied to the skin or used in too high a concentration, while others may not affect an individual at all. The three primary effects aromatherapists need to consider when deciding which essential oils to use are irritation, sensitization, and phototoxicity.

Phototoxicity (also commonly referred to as photosensitivity) occurs when a photoactive molecule is activated by sunlight and releases energy to the skin, resulting in a burn. The phototoxic agent in an oil absorbs ultra violet (UV) light and releases it into the dermis and the epidermis. When phototoxic constituents in an oil (such as furocoumarins, coumarins, and linalol/linalool) react with a radiation-absorbing substance, there is an increased likelihood of sun damage to the skin and, potentially, skin cancer. Bergamot *Citrus aurantium* var. *bergamia* is a good example. The furocoumarin called bergaptene, found in bergamot, is known to cause phototoxicity.

Additional oils that may produce photosensitivity include: Angelica *Angelica archangelica*, cedarwood *Cedrus atlantica* (Atlas) or *Juniperus virginiana* (Virginia), cinnamon *Cinnamomum zeylanicum* bark, clary sage *Salvia sclarea*, elecampane *Inula helenium*, ginger *Zingiber officinale*, lemon *Citrus limonum*, lemon verbena *Aloysia citriodora*, lovage *Levisticum officinale*, grapefruit *Citrus paradisi*, neroli *Citrus aurantium* var. *amara*, opoponax *Commiphora erythraea*, orange bitter *Citrus aurantium*, orange sweet *Citrus sinensis*, patchouli *Pogostemon cablin*, and tangerine *Citrus palustris*. Do not expose the skin to sunlight or UV lamps for at least 12 hours after using these oils.

Irritation and sensitization, however, do not require an external “trigger” like the sun to kick-start the resulting inflammatory response. Irritation is a direct result of contact with a corrosive material and it is localized. The extent of irritation is related to the concentration of the substance applied. Inflammation resulting from the irritation is often a result of previously damaged skin. Sometimes irritants can cause more damage in stressed individuals whose skin is already compromised.

By contrast, sensitization is a systemic response involving the immune system. Sensitization occurs once the offending substance has penetrated the skin, been picked up by proteins in the skin, and mediated by the Immunoglobulin E (IgE) response that produces histamine and other irritants. Each person’s response is unique, although there are certain substances more likely than others to cause a response. People who are allergic to other substances and experience asthma, eczema, or hay fever are more likely to encounter sensitization with some essential oils.

If a skin patch test results in irritation, healing occurs once the material is removed. To remove the irritating substance, gently swab it with vegetable oil or milk. You may also try tepid water, though some aromatherapists feel water may intensify the irritation at first.

To determine whether or not an oil may cause irritation or sensitization with an individual, a skin patch test is always recommended. This is especially important when using oils with an individual who has a history of irritation or sensitization, including asthma, allergies, or rashes. For individuals who do not have a history of irritation or sensitization, a skin patch test helps identify possible irritants or sensitizers.

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To conduct a skin patch test for irritation, test an individual once within a 24-hour period of time. Apply the recommended dosage to the crook of the individual's arm, and cover. After 24 hours, check for irritation. If there is no evidence of irritation (including but not limited to redness, tenderness, itchiness, or heat), proceed with the recommended dosage.

To conduct a skin patch test for sensitization, test an individual twice within a 48-hour period of time. Apply the recommended dosage to the crook of the individual's arm, and cover. After 24 hours, check for irritation, remove, and then patch test again. Usually, any sensitization reaction will show itself within 48 hours.

If a sensitization response occurs, remove the offending material. Never allow the skin to blister. It is erroneous and dangerous to advocate using neat essential oils on the skin and to explain blistering as "the elimination of toxins." Registered aromatherapists should never advocate or engage in such administrative practices. A homeopathic antihistamine or *Urtica urens* may assist to calm the immune response. Once the immune response has abated, try an alternative essential oil. Turmeric *Curcuma longa* essential oil has been shown to have a more powerful effect than cortisone and may assist for sensitization responses. The significant anti-inflammatory effect of the essential oil of *C. longa* is attributed to its histaminic and prostaglandin inhibitory activity.<sup>1</sup>

\*Note, these statements have not been approved by the FDA. This article has been provided for educational purposes only. It is not intended to treat, diagnose,

cure, or prevent disease. For making any significant changes to your health and wellness routine, consult with your primary care physician or naturopathic doctor.

<sup>1</sup> See Lyengar MA. Roa MOR, Roa SG, et al. (1994). Anti-inflammatory activity of volatile oil of *Curcuma longa* leaves. *Aromatherapy Database* SN292. *Indian Drugs* 31(11):528-531. See also Chandra, D. & Gupta, S. (1972). Anti-inflammatory and anti-arthritic of volatile oil of *Curcuma longa*. *Indian J Med Res* 60(1):138-142.

### About the Author



Dorene Petersen has served as Chair of the Aromatherapy Registration Council (ARC) since 1999. As Chair, Dorene helps to ensure minimum standards of training and safety knowledge of registered aromatherapists. Dorene is President and Founder of the American College of Healthcare Sciences (ACHS). She regularly lectures on aromatherapy and has appeared on various TV and radio shows, including Good Morning Oregon, the national radio show *Voice of America*, and KPTV *Better Portland*. Dorene's articles about aromatherapy have appeared in publications including *Alternative Therapies in Clinical Practice*, *The News Quarterly*, *Making Scents*, *The Herbarist*, the *NAHA Aromatherapy Journal*, and *Massage Magazine*.

Dorene can be contacted via email at [info@aromatherapycouncil.org](mailto:info@aromatherapycouncil.org) and by phone at (503) 244-0726.

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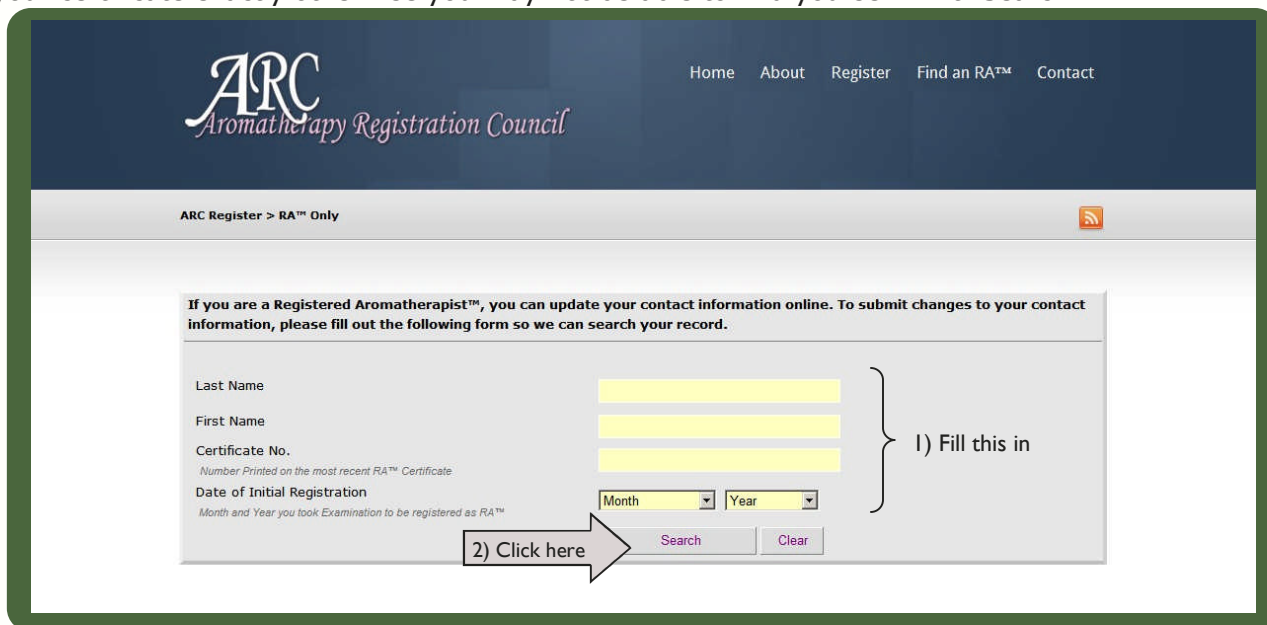
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We are on the web:  
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If you would like to help in any of these capacities, contact ARC for further information at call (503) 244-0726. or email [info@aromatherapycouncil.org](mailto:info@aromatherapycouncil.org).