

Essential Oils in Healthcare Settings

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Background

The use of essential oils in various settings is growing, in part due to a move to ‘natural’ products and increasing marketing of these as substitutes for conventional medicine and vaccines, and as cleaning products. Oils are being applied topically, ingested, and diffused, often without sufficient scientific evidence to support these uses, or consideration of potential toxic effects.¹ While the use of essential oils may have perceived positive effects for an individual, such as a reduction in stress,² there is currently insufficient scientific evidence or consensus that they are effective to prevent or treat communicable diseases like influenza, or for use as cleaning products or pesticides/insect repellants, and they should not be promoted as such.³⁻⁶

Studies have shown some essential oils to have antiseptic or antiviral properties (e.g., tea tree oil,⁷⁻⁹ elderberry extract,¹⁰ and natural phenols¹¹), and while there is some promising research to show that essential oils may assist in illness prevention and treatment,^{8,11} inhibit organism growth,⁷ or help to eliminate biofilms when used in conjunction with traditional antimicrobials,¹² the majority of these studies are in vitro^{7,11,13}. There are no established standard concentrations of essential oils, and currently insufficient evidence exists to recommend their use in healthcare settings such as hospitals, long-term care homes, and clinical offices (including physiotherapy and massage), residential settings such as retirement homes and group homes, and community settings such as schools and daycares. Some natural products may cause harm to individuals, when used as an adjunct to traditional medicine.¹⁴ In addition, the scents and ingredients of essential oils and products containing these may cause allergic reactions,¹⁵⁻¹⁷ sensitization or phototoxic effects,¹⁸ and contravene facility “no scent” policies. Health Canada has explicit information regarding the use of essential oils, including that these should not be ingested, should not be applied to more than 10% of body surface area, and should not be used topically undiluted.¹⁸

Organisms have been found to grow in essential oils and equipment used to diffuse these, and improper storage and /or sharing of equipment between individuals have been associated with outbreaks.¹⁹

Position Statement

- Essential oils are not a substitute for conventional treatment or vaccines. IPAC Canada recommends following national guidelines for immunization, including annual influenza vaccination.
- Essential oils are not sufficient for cleaning and disinfecting surfaces or reusable items in a healthcare setting. At minimum, environmental surfaces and inanimate items, or noncritical medical devices should be thoroughly cleaned and disinfected with a low-level disinfectant that has a drug identification number (DIN) from Health Canada indicating its approval for use in Canadian healthcare settings²⁰, along with appropriate efficacy and contact time for the intended use, following manufacturer’s instructions for use.
- Diffusers/vaporizers should not be used in healthcare settings. If diffusers/vaporizers are used for/by an individual, they should be completely emptied and thoroughly cleaned and disinfected daily and more frequently if necessary, to prevent contamination, biofilm development, and resultant inhalation of any potentially pathogenic organisms.²¹

Glossary/Definitions

As per the Canadian Standard Association (CSA):

- “SHALL” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard;
- “SHOULD” is used to express a recommendation or that which is advised but not required; and “MAY” is used to express an option or that which is permissible within the limits of the standard, an advisory or optional statement.

Healthcare setting (CSA): “any location where health care is provided, including emergency care, prehospital care, hospitals, long-term care, home care, ambulatory care, and facilities and locations in the community where care is provided (e.g., educational institutions, residential facilities, correctional facilities, dental offices, and physician's offices).

Note: Definitions of health care settings can overlap, as some settings provide a range of care, such as chronic care or ambulatory care provided in acute care, and complex care provided in long-term care.” Clause 1.2 defines healthcare settings as: “including, but not limited to, all acute care hospitals; trauma centres; emergency care facilities; medical clinics with or without overnight stay or observation; endoscopy centres; laser eye clinics; outpatient surgical services; cosmetic surgical offices; dental general and surgical facilities; other office surgical facilities; general physician offices (with and without treatment spaces); stand-alone laboratory facilities; diagnostic imaging centres; nursing homes; long-term care facilities; assisted-living facilities; mental health facilities; forensic facilities; rehabilitation facilities; additional services facilities; chronic care facilities; group homes; hospice care facilities; stand-alone dialysis clinics; ambulatory clinics; walk-in health clinics; physiotherapy clinics; pediatric clinics; public health clinics; adult daycare centres; third-party reprocessors; educational settings; and private entrepreneurs.”²²

Stakeholders

Healthcare and other workers in acute care facilities, long-term care homes, clinical offices, and communal settings in the community

Participants in Development of Position Statement

This position statement was developed by IPAC Canada Standards and Guidelines Committee

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References

1. National Association for Holistic Aromatherapy (USA). Safety information. 2019 [cited 2019 Nov 12]. Available from <https://naha.org/explore-aromatherapy/safety/>
2. Mi-kyoung L, 1, Sunog L, Ji-Ah S, Mi-Eun K, Myung-Haeng H. The effects of aromatherapy essential oil inhalation on stress, sleep quality and immunity in healthy adults: Randomized controlled trial. *Eur. J. Integr. Med.* 2017 Jun [cited 2019 Nov 12];12:79-86. Available from <https://www.sciencedirect.com/science/article/abs/pii/S1876382017300951>
3. US Food and Drug Administration. Warning letter: Young Living. 2014 Sep 22 [cited 2019 Nov 12]. Available from <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/young-living-09222014>
4. US Food and Drug Administration. Warning letter: dōTERRA International, LLC. 2014 Sep 22 [cited 2019 Nov 12]. Available from <https://www.fda.gov/inspections-compliance-enforcement-and-criminal-investigations/warning-letters/doterra-international-llc-09222014>
5. United States Environmental protection Agency. Combined complaint and consent agreement: Docket no.: FIFRA-08-2014-d009. 2014 Sep 30 [cited 2019 Nov 12]. Available from [https://yosemite.epa.gov/OA/RHC/EPAAdmin.nsf/Filings/92A8183318BCDC4685257D70001BC163/\\$File/FIFRA0820140009.pdf](https://yosemite.epa.gov/OA/RHC/EPAAdmin.nsf/Filings/92A8183318BCDC4685257D70001BC163/$File/FIFRA0820140009.pdf)
6. Cunningham PW. Homeopathic oil company cracks down after FDA threats. 2015 Jul 15 [cited 2019 Nov 12]. *Washington Examiner*. Available from <https://www.washingtonexaminer.com/homeopathic-oil-company-cracks-down-after-fda-threats>
7. Warnke PH, Lott AJ, Sherry E, Wiltfang J, Podschun R. The ongoing battle against multi-resistant strains: In-vitro inhibition of hospital-acquired MRSA, VRE, Pseudomonas, ESBL E. Coli and Klebsiella species in the presence of plant-derived antiseptic oils. *J Craniomaxillofac Surg.* 2013 [cited 2019 Nov 12];41(4):321-326. Available from <https://www.ncbi.nlm.nih.gov/pubmed/23199627>
8. Low WL, Kenward K, Britland ST, Amin MC, Martin C. Essential oils and metal ions as alternative antimicrobial agents: A focus on tea tree oil and silver. *International Wound Journal.* 2017 [cited 2019 Nov 12];14(2):369-384. Available from <https://www.ncbi.nlm.nih.gov/pubmed/27146784>
9. Garozzo A, Timpanaro R, Stivala A, Bisignano G, Castro A. Activity of Melaleuca alternifolia (tea tree) oil on Influenza virus A/PR/8: Study on the mechanism of action. *Antiviral Research.* 2011 [cited 2019 Nov 12];89(1):83-88. Available from <https://www.ncbi.nlm.nih.gov/pubmed/21095205>
10. Barak V, Halperin T, Kalickman I. The effect of sambucol, a black elderberry-based, natural product, on the production of human cytokines: I. Inflammatory cytokines. *Eur Cytokine Netw.* 2001 [cited 2019 Nov 12];12(2):290-296. Available from

<https://www.ncbi.nlm.nih.gov/pubmed/11399518>

11. Bahramsoltani R, Sodagari HR, Farzaei MH, Abdolghaffari AH, Gooshe M, Rezaei N. The preventive and therapeutic potential of natural polyphenols on influenza [Internet]. *Expert Rev Anti Infect Ther*. 2016 [cited 2019 Nov 12];14(1):57-80. Available from <https://www.ncbi.nlm.nih.gov/pubmed/26567957>
12. Budzynska A, Rozalska S, Sadowska B, Rozalska B. *Candida albicans*/*Staphylococcus aureus* dual-species biofilm as a target for the combination of essential oils and fluconazole or mupirocin. *Mycopathologia*. 2017 [cited 2019 Nov 12];182(11-12):989-995. Available from <https://www.ncbi.nlm.nih.gov/pubmed/28823093>
13. Fisher K, Phillips C. In vitro inhibition of vancomycin-susceptible and vancomycin-resistant *Enterococcus faecium* and *E. faecalis* in the presence of citrus essential oils [Internet]. *Br J Biomed Sci*. 2009 [cited 2019 Nov 12]; 66(4): 180-185. Available from <https://www.ncbi.nlm.nih.gov/pubmed/20095125>
14. Bossaer JB, Odle BL. Probable etoposide interaction with echinacea. *Journal of Dietary Supplements*. 2012 [cited 2019 Nov 12];9(2):90-95. Available from <https://www.ncbi.nlm.nih.gov/pubmed/22607644>
15. Schaller M, Korting HC. Allergic airborne contact dermatitis from essential oils used in aromatherapy. *Clin Exp Dermatol*. [Internet]. 1995 Mar [cited 2019 Nov 12];20(2):143-145. Available from <https://www.ncbi.nlm.nih.gov/pubmed/8565250>
16. Knight TE, Hausen BM. Melaleuca oil (tea tree oil) dermatitis. *J Am Acad Dermatol*. [Internet]. 1994 [cited 2019 Nov 12];30(3):423-427. Available from <https://www.jaad.org/article/S0190-9622%2894%2970050-8/abstract>
17. Bleasel N, Tate B, Rademaker M. Allergic contact dermatitis following exposure to essential oils. *Australas J Dermatol*. 2002 [cited 2019 Nov 12];Aug;43(3):211-213. Available from https://www.academia.edu/32043795/Allergic_contact_dermatitis_following_exposure_to_essential_oils
18. Health Canada. Aromatherapy – Essential Oils [Internet]. 2018. Available from <http://webprod.hc-sc.gc.ca/nhp/nd-bdipsn/atReq.do?atid=aromatherap&lang=eng>
19. Mayr A, Hinterberger G, Lorenz IH, Kreidl P, Mutschlechner W, Lass-Flörl C. Nosocomial outbreak of extensively drug-resistant *Pseudomonas aeruginosa* associated with aromatherapy. *Am J Infect Control*. 2017 [cited 2019 Nov 12]; 45(4):453-455. Available from [https://www.ajicjournal.org/article/S0196-6553\(16\)31007-0/pdf](https://www.ajicjournal.org/article/S0196-6553(16)31007-0/pdf)
20. Health Canada. Guidance document - disinfectant drugs. Ottawa, ON: Her Majesty the Queen in Right of Canada; 2018. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/disinfectants/disinfectant-drugs.html>
21. Public Health Ontario. Evidence brief: humidifier use in health care. 2017. Available online at: <https://www.publichealthontario.ca/-/media/documents/eb-humidifier-hc.pdf?la=en>

22. Canadian Standards Association. CAN\CSA-Z314.-18 Canadian medical device reprocessing.
Rexdale, ON: Canadian Standards Association; February 2018

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