



TITLE: Essential Oil Products for Disinfection: Clinical Effectiveness, Cost-Effectiveness, and Guidelines

DATE: 04 September 2014

RESEARCH QUESTIONS

1. What is the clinical effectiveness of essential oil products for the disinfection of skin or wounds?
2. What is the clinical effectiveness of essential oil products for the disinfection of hospital surfaces?
3. What is the cost-effectiveness of essential oil products for the disinfection of skin, wounds, or hospital surfaces?
4. What are the evidence-based guidelines regarding the use of essential oil products for the disinfection of skin wounds, or hospital surfaces?

KEY FINDINGS

No relevant literature was found regarding the clinical and cost-effectiveness of essential oil products for the disinfection of skin, wounds, or hospital surfaces.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 8), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and August 20, 2014. Internet links were provided, where available.

Disclaimer: The Rapid Response Service is an information service for those involved in planning and providing health care in Canada. Rapid responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. Rapid responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

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The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

Population	Patients being treated in hospital
Intervention	Essential oils (e.g., Thieves oil) for skin, wound, or surface disinfection
Comparator	Q1: other skin/wound disinfectants (e.g., chlorhexidine soap) Q2: other surface disinfectants (e.g., PerCept RTU, Accel PREvention RTU)
Outcomes	Effectiveness for the eradication of Methicillin-resistant Staphylococcus aureus (MRSA), Vancomycin-resistant Enterococci (VRE), Extended Spectrum Beta Lactamase (ESBL), prevention of infection transmission, cost-effectiveness, guidelines
Study Designs	Health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, economic evaluations, non-randomized studies, evidence-based guidelines

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

No relevant health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, or evidence-based guidelines regarding the clinical and cost-effectiveness of essential oil products for the disinfection of skin, wounds, or hospital surfaces were identified.

References of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

No relevant literature was found regarding the clinical and cost-effectiveness of essential oil products for the disinfection of skin, wounds, or hospital surfaces, therefore no summary can be provided.

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

Economic Evaluations

No literature identified.

Guidelines and Recommendations

No literature identified.

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APPENDIX – FURTHER INFORMATION:

Randomized Controlled Trials – Alternate Comparator

1. Blackwood B, Thompson G, McMullan R, Stevenson M, Riley TV, Alderdice FA, et al. Tea tree oil (5%) body wash versus standard care (Johnson's Baby Softwash) to prevent colonization with methicillin-resistant *Staphylococcus aureus* in critically ill adults: a randomized controlled trial. *J Antimicrob Chemother.* 2013 May;68(5):1193-9.
[PubMed: PM23297395](#)

Non-Randomized Studies – No Active Comparator

2. Edmondson M, Newall N, Carville K, Smith J, Riley TV, Carson CF. Uncontrolled, open-label, pilot study of tea tree (*Melaleuca alternifolia*) oil solution in the decolonisation of methicillin-resistant *staphylococcus aureus* positive wounds and its influence on wound healing. *Int Wound J.* 2011 Aug;8(4):375-84.
[PubMed: PM21564552](#)

Economic Evaluation – No Active Comparator

3. LeFevre A, Shillcutt SD, Saha SK, Ahmed AS, Ahmed S, Chowdhury MA, et al. Cost-effectiveness of skin-barrier-enhancing emollients among preterm infants in Bangladesh. *Bull World Health Organ.* 2010 Feb;88(2):104-12. Available from:
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2814477>
[PubMed: PM20428367](#)

Review Articles

4. Wound management: tea tree oil. Adelaide (Australia): Joanna Briggs Institute; 2013.
Subscription required.
See: Best Practice Recommendations, page 5
5. Warnke PH, Becker ST, Podschun R, Sivananthan S, Springer IN, Russo PA, et al. The battle against multi-resistant strains: Renaissance of antimicrobial essential oils as a promising force to fight hospital-acquired infections. *J Craniomaxillofac Surg.* 2009 Oct;37(7):392-7.
[PubMed: PM19473851](#)
6. Fong D, Gaulin C, Lê ML, Shum M. Effectiveness of alternative antimicrobial agents for disinfection of hard surfaces [Internet]. Vancouver: National Collaborating Centre for Environmental Health; 2011 Sep [cited 2014 Sep 3]. Available from:
http://www.nccch.ca/sites/default/files/Alternative_Antimicrobial_Agents_Sept_2011.pdf
Presentation at http://www.bccdc.ca/NR/rdonlyres/E9C003D1-E781-498B-9210-E3E6A623D96C/0/EHSeminarDec122011_Alternative_antimicrobial_agents.pdf.
See: Tea Tree Oil, page 4; Thyme Oil, page 5