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Basil

Revised: May 15, 2024.

CASRN: 8015-73-4

Drug Levels and Effects

Summary of Use during Lactation

Basil (*Ocimum basilicum*) contains linalool, 1,8 cineole (eucalyptol), methylchavicol, methylcinnamate and an essential oil with high estragole content. Estragole might be a procarcinogen. Basil is a purported galactogogue[1,2] but has also been used to decrease breastmilk oversupply in Persian traditional medicine.[3] No scientifically valid clinical trials support either of these uses. Galactogogues should never replace evaluation and counseling on modifiable factors that affect milk production.[4,5] No data exist on the excretion of any components of basil into breastmilk or on the safety and efficacy of basil in nursing mothers or infants. Basil is "generally recognized as safe" (GRAS) as a food by the U.S. Food and Drug Administration. Basil appears to be safe during breastfeeding in the amounts found in foods, but many sources recommend that medicinal doses of basil not be used during lactation because of its estragole content and lack of safety information.[6]

Dietary supplements do not require extensive pre-marketing approval from the U.S. Food and Drug Administration. Manufacturers are responsible to ensure the safety, but do not need to *prove* the safety and effectiveness of dietary supplements before they are marketed. Dietary supplements may contain multiple ingredients, and differences are often found between labeled and actual ingredients or their amounts. A manufacturer may contract with an independent organization to verify the quality of a product or its ingredients, but that does *not* certify the safety or effectiveness of a product. Because of the above issues, clinical testing results on one product may not be applicable to other products. More detailed information about dietary supplements is available elsewhere on the LactMed Web site.

Drug Levels

Maternal Levels. Twelve nursing mothers who were19 weeks to 19 months postpartum ingested 100 mg of 1,8 cineole (eucalyptol) in the form of delayed-release capsules (Soledum-Klosterfrau Vertriebs GmbH, Germany) that release the drug in the intestine. Then they pumped 1 to 4 milk samples at the time they perceived the smell of eucalyptus on their breath which had been previously shown to be approximately concurrent. A total of 21 milk samples were obtained. Odor was rated by a panel of 3 to 5 experts as either smelling like eucalyptus or not.

Fourteen of the samples had a distinct eucalyptus-like odor. Chemical analysis of the positive odor tests found 1,8-cineole in concentrations from 70 to about 2090 mcg/kg of milk, most in the range of 100 to 500 mcg/kg of milk. Samples with negative odor tests contained concentrations in the range of 0.98 to about 20.23 mcg/kg of milk. In one woman who donated 3 samples, the highest concentration of 71 mcg/kg occurred at 1.5 hours after ingestion, with concentrations of 1 mcg/kg before ingestion and 15 mcg/kg at 9.5 hours after ingestion.[7]

Eight women had their milk analyzed for 1,8-cineole metabolites. Ten metabolites and several enantiomers of these metabolites were detected.[8,9]

Eighteen nursing mothers who were nursing their infants of 8 to 53 weeks of age were served a curry dish that contained an average of 34.6 mg of linalool. Baseline linalool concentrations in milk averaged 0.22 mcg/L (range 0 to 1.1 mcg/L). Milk samples contained linalool in concentrations of 0.12 to 15.24 mcg/L at 1 hour after eating, 0.03 to 6.44 mcg/L at 2 hours after eating and 0.01 to 3.73 mcg/L at 3 hours after eating. In the same study, the curry dish contained an average of 394 mcg of 1,8-cineole. Baseline 1,8-cineole concentrations in milk averaged 1.44 mcg/L (range 0.07 to 7.57 mcg/L). Milk samples contained 1,8-cineole in concentrations of 0.19 to 7.41 mcg/L at 1 hour after eating, 0.33 to 7.86 mcg/L at 2 hours after eating and 0.22 to 3.33 mcg/L at 3 hours after eating.[10]

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

Nursing mothers who were participating in an experiment on the excretion of 1,8-cineole (eucalyptol) in breastmilk took a 100 mg capsule of 1,8-cineole orally. Although instructed not to, 12 mothers breastfed their infants during the experiment. Mothers reported that none of their infants refused their milk or breastfed less than usual. Two mothers felt that their infants were more agitated a few hours after breastfeeding. A third mother reported that the infant stopped nursing from time to time and "looked puzzled", but resumed nursing. Upon repeating the experiment 6 weeks later, the infant did not react in an unusual way during breastfeeding.[7]

Effects on Lactation and Breastmilk

Relevant published information was not found as of the revision date.

References

1. Winterfeld U, Meyer Y, Panchaud A, et al. Management of deficient lactation in Switzerland and Canada: A survey of midwives' current practices. Breastfeed Med 2012;7:317-8. PubMed PMID: 22224508.
2. Erarslan ZB, Kültür S. Medicinal plants traditionally used to increase breast milk in Turkey: An ethnobotanical review. J Herbal Med 2024;44:100849. doi:10.1016/j.hermed.2024.100849
3. Kabiri M, Kamalinejad M, Sohrabvand F, et al. Management of breast milk oversupply in traditional Persian medicine. J Evid Based Complementary Altern Med 2017;22:1044-50. PubMed PMID: 28817945.
4. Brodribb W. ABM Clinical Protocol #9: Use of galactogogues in initiating or augmenting maternal milk production, second revision 2018. Breastfeed Med 2018;13:307-14. PubMed PMID: 29902083.
5. Breastfeeding challenges: ACOG Committee Opinion, Number 820. Obstet Gynecol 2021;137:e42-e53. PubMed PMID: 33481531.
6. Kopec K. Herbal medications and breastfeeding. J Hum Lact 1999;15:157-61. PubMed PMID: 10578793.
7. Kirsch F, Beauchamp J, Buettner A. Time-dependent aroma changes in breast milk after oral intake of a pharmacological preparation containing 1,8-cineole. Clin Nutr 2012;31:682-92. PubMed PMID: 22405404.
8. Kirsch F, Buettner A. Characterisation of the metabolites of 1,8-cineole transferred into human milk: Concentrations and ratio of enantiomers. Metabolites 2013;3:47-71. PubMed PMID: 24957890.

9. Kirsch F, Horst K, Rohrig W, et al. Tracing metabolite profiles in human milk: Studies on the odorant 1,8-cineole transferred into breast milk after oral intake. Metabolomics 2013;3:47-71. doi:10.1007/s11306-012-0466-9
10. Debong MW, N'Diaye K, Owsienko D, et al. Dietary linalool is transferred into the milk of nursing mothers. Mol Nutr Food Res 2021;65:e2100507. PubMed PMID: 34658145.

Substance Identification

Substance Name

Basil

Scientific Name

Ocimum basilicum

CAS Registry Number

8015-73-4

Drug Class

Breast Feeding

Lactation

Milk, Human

Complementary Therapies

Food

Phytotherapy

Plants, Medicinal