Frankincense Oil User's Guide

A research-based overview of the benefits of frankincense oil.

Compiled by Dr. Steve Foster for

Essentially KateS

E-BOOK

Thanks for your purchase. If this is your first introduction to essential oils, welcome! We're honored you chose Essentially KateS.

Essentially KateS Premium Frankincense Essential Oil is extracted by steam distillation of freshly harvested Boswellia serrata resin. Along with widespread use in massage and aromatherapy, frankincense oil has historically been used for a variety of medicinal purposes.

I can comment only on applications for use outside of human and animal health. On health related matters, I can only provide the information. To offer recommendations or "treatment" guidelines would place our product in the category of a drug, subject to FDA regulation and approval.

Though essential oils are "natural" and present little or no toxicity in dilute form, please remember that they can be toxic in concentrated form, especially to small children. More is not always "better" with respect to essential oils. Keep out of reach of children at all times. Be cautious in any topical application, especially the face and around the eyes.

Be careful to wash your hands after use to prevent transfer to the eyes. If that happens, rinse with warm water, but remember that oil is not soluble in water. Use a drop of carrier oil, such as olive, in the eye to dilute the irritant effect of the oil until it passes.

This guide is intended as a reference. Scan through it to see what's here, then look at the topic of interest as appropriate. It is provided only in electronic form; hard copies are not available.

If you have questions about a particular non health related usage, feel free to contact me by e-mail at support@essentiallykates.com.

Best Regards,
Dr. Steve Foster

Personal care

Deodorant

Underarm odor is due to bacterial action on perspiration, not perspiration itself. I have used a very light dilution of botanic (aka castile) soap and essential oil (my personal preference is peppermint, but frankincense works as well) in water as my deodorant for years. It has been very effective, and nontoxic.. no aluminum chlorhydrate.

Mix up a 1-2% solution of 6-12 drops per ounce (there are 591 drops in an ounce) of botanic soap with water in a small spritzer spray bottle. Add an equal amount of frankincense oil (you can always add more). Use as you would any spray deodorant. Both the botanic soap and the frankincense oil are antibacterial. I spray 3 or 4 times each side. If it isn't as effective as needed, increase the concentration of both soap and oil.

Shampoo

Frankincense oil is good for both the hair and the scalp. Add a few drops of frankincense oil to your shampoo bottle for fresh smelling hair and a clean and well conditioned scalp. Alternatively, you could play with your own mix of botanic soap, frankincense oil, and other essential oils.

Conditioner

Add frankincense oil to fractionated coconut oil for a deep hair conditioner. It will be easier to rinse if you include a small amount of botanic soap.

Shower

Run hot water in the shower while you sprinkle in a few drops of frankincense oil on the floor or walls out of the direct stream of water. The hot steam will vaporize the essential oil.

Bath

Add 5 - 10 drops of frankincense oil to your bath water as the water is running in, along with a few drops of botanic soap to help the oil and water mix. If you want bubbles, you'll need to add a bath soap (with a foaming agent) as well.

Band-aids

Add a drop of frankincense to the cloth portion of band-aids before applying, for antibacterial and healing benefit.

Sunburn

Make up 5% solution of frankincense to carrier oil for use with sunburn.

Facial Cleanse

Make a strong cup of any herb tea, chamomile works great. Mix 1/4 cup of liquid castile soap, 1/2 teaspoon of olive, rosehip, or other light carrier oil, add 10 drops of frankincense oil, and enough tea to make up a total of 4 ounces. Add several drops of vitamin E oil if you have it on hand. Mix well, and place in a small pump or dispenser bottle. Work into a wet washcloth, wash face and rinse.

Cleaning

Frankincense isn't the essential oil most commonly chosen for cleaning (peppermint and tea tree oil are at the top of this list), but still has many positive attributes to recommend it. Like peppermint and tea tree oils, it is naturally antibacterial, and a natural insecticide and insect repellent. That makes it a good non toxic cleaner. In addition, it leaves its own clean, pleasant aroma.

Studies have shown that mixing essential oils tends to produce a synergistic effect. If you're cleaning with tea tree or peppermint, you'll increase effectiveness by adding a few drops of frankincense oil.

A Word About Mixing Oil and Water

Any time you mix oil and water, a small amount of the oil may remain "suspended" in the water, but for the most part, the oil will float on top. It's best to add an emulsifier (soap), which helps the oil and water mix.

You can use liquid dish soap for uses such as insecticidal spray, but in other cases, you'll want to buy a liquid nontoxic botanic or castile soap. These soaps are made entirely from plants, very much like essential oils. They are generally nontoxic, insecticidal and antibacterial in their own right, and very effective cleaners.

There will be cases in which you'll use just a little soap as an emulsifier to help the oil and water mix, and others when you'll want the cleaning benefit of the soap. You might choose to convert entirely to nontoxic soaps in the house, as we did many years ago when we started our family.

These soaps should be generally available at any store that carries natural products, such as Sprouts, Vitamin Cottage or a Health Food Store. We plan to offer our own botanic soap product in the not too distant future, so watch for that as well.

Spray Cleaner

I suggest making up a spray bottle of 1 to 2% frankincense oil and water (6 to 12 drops per ounce), or 1% frankincense and 1% peppermint or tea tree, which would be six drops total per ounce, or one teaspoon per cup of water, as there are 50 drops in a teaspoon. Always be sure to add a few drops or more of botanic soap (or dish soap) to help the oil and water mix. If you want something stronger, increase the concentration of oil and botanic soap.

It's helpful to add a half cup of vinegar, but that's optional. Use distilled or purified water if you have it available. Spray and wipe hard surfaces as you would with any cleaner. On stubborn matter, spray and let sit for a few minutes before wiping. Use a brush as needed. Many essential oils are very effective at removing sticky substances, such as tape residue and tar.

Laundry

If you live in a damp or humid climate, add a quarter teaspoon of frankincense oil to a washing machine load of towels and other washable materials that tend to be prone to moisture, mold and mildew. Fill the washing machine with water, add the soap and let agitate a little, then add the oil. Let it cycle a minute before adding the material to be washed.

In addition, or as an alternative, spray a washcloth with the frankincense (or combination of essential oils) spray described above nearly to saturation, and throw it in the dryer with towels, sheets, etc. You'll have great smelling laundry, with the added benefit of resistance to mold and mildew. You can use this in place of dryer sheets. You could also spray wool dryer balls in the same manner.

Dishwasher

Sprinkle a few drops of frankincense oil in the soap dispenser of your dishwasher, along with the dishwasher detergent, before running. The detergent will act as the emulsifier to help the

oil and water mix when the clean cycle runs. If you wash dishes by hand, add a few drops to the sink along with your dish soap.

Furnace or Humidifier Filters

Use the spray described above to lightly spray any filter unit that filters the air that enters your house.

Hand Washing

Add several drops of frankincense oil (6 drops per ounce would be 1%) to the hand soap dispenser in your bathroom or kitchen.

Add 8 drops of frankincense or other essential oil per ounce of non-greasy unscented hand lotion in a small container and shake or stir well for use as a waterless hand sanitizer.

Please be aware that no claims are being made about the bactericidal or virucidal efficiency of either of these methods. Virtually all essential oils are anti microbial and anti fungal to some degree, several are anti viral. The logic is sound, but the results will vary based on ingredients, combination of oils, and concentration.

Repelling Insects

Most essential oils are natural insect repellents, and frankincense is no exception. Studies included in the research addendum have shown it to be effective against mosquitos. Though it hasn't been studied with many other insects, it is very probable that it is effective against insects in general, as are most essential oils.

Frankincense oil can be diffused into the air, alone or in combination with other oils (citronella and oregano are very good repellents of insects), and also sprayed onto surfaces to discourage both flying and crawling insects. To repel flying insects inside, spray doorways, other entry points, counters and surfaces where they land with a 1 to 2% solution of frankincense essential oil. I suggest making up a 1 to 2% solution of frankincense oil and water in a spray bottle by adding 6 (1%) or 12 (2%) drops per ounce of water. There are 50 drops in a teaspoon. Add a few drops of dish soap (preferably unscented) to help the oil and water mix.

Essential oils can be effective insect repellents, inside or out. However, when trying to repel insects *outside*, focus on repelling the insects from whatever is drawing them to the area, rather than trying to treat everything.

Miscellaneous Uses

Sleep aromatherapy: Add a few drops of frankincense oil to a small cloth and place it inside your pillow case.

Massage: Use 2 or 3 drops of frankincense per teaspoon of carrier oil, such as rosehip or jojoba.

Chapstick: Mix frankincense oil (2 to 5%) with coconut oil as a carrier to make your own chapstick for chapped lips or hands. Warm the coconut oil initially for better mixing, then refrigerate to harden.

Closet, Suitcase, and Drawer Freshener: Place a few drops of frankincense oil on cotton balls or small cloths and place in closet, suitcases, and/or drawers to scent clothes and repel moths and other insects.

Fountains: Place a few drops of frankincense and/or other essential oils in your indoor or outdoor fountain to keep the water clean and lengthen time between cleanings (but not a good idea in fish aquariums or ponds).

Vacuum Aromatherapy: Put a few drops of frankincense oil on you vacuum cleaner bag to scent the room while vacuuming. Success varies w/ vacuum make and model.

Spray Air Freshener: Make up your own bottle of spray air freshener with distilled water, a dropper of frankincense oil, and 2 or 3 drops of unscented dish soap to help the oil and water mix. Shake and spray.

Room or Window Air Conditioner Freshening: Run the air condition and spray the intake with the spray described above to freshen the cooled air and reduce mold and mildew. Also works with humidifiers.

Shoe Freshener: Sprinkle frankincense oil in your shoes to keep them smelling fresh.

Stationary: Scent letters, cards, and gifts with a little essential oil.

Car Freshener: Make your own car air freshener by cutting your shape of choice out of a cardboard coaster (because it's absorbent), dosing it with frankincense or another essential oil and hanging or placing it in your car. You could also spray the cabin air filter with the spray described above.

Aromatherapy

There are several options for getting essential oil aroma into the air.

1. Sniff it from the bottle (not the best choice; it always smells better to me outside the bottle).
2. Apply a small amount beneath the nostrils (be careful if you're sensitive).
3. Place shallow open containers of oil around the house or office.
4. Use a diffuser, steam humidifier, or simmering pot.

I have also seen scientific studies in which aromatherapy was performed by wearing a small oil sachet on the lapel, by use of oxygen mask infusion. I have sprinkled a few drops of essential oil on a surgical mask and worn it for just a few deep breaths and found it very effective.

Diffusers do not heat the oil, which is considered as an advantage by some. However, I have been unable to find evidence that moderate heating in a water bath alters the characteristics of the oil. Diffusers require more attention. Depending on size, they must be refilled as often as every few hours. They also go through more oil.

I maintain a small heated "simmering" pot in my office which I purchased at WalMart for $10. It is easily maintained. It contains mostly water. I add a few drops of oil each morning (from a large selection), and about a half cup of distilled water every 3 to 4 days. I do empty it and clean it occasionally, but it isn't really necessary, as the oils keep it clean. It is set on a timer that comes on an hour before we arrive, and goes off an hour before we leave. Rarely a day goes by that someone doesn't say "It always smells so good in here!" I vary the oils I add each day, so it's always a little different, changing over time.

Dilution Ratio Chart

Always remember that essential oils are very concentrated. It's best to start with a lower dilution than you think will be necessary. You can always add more.

There are about 100 drops in a teaspoon.

Desired Dilution Ratio	1%	2%	3%	5%	10%	25%
Drops of oil per 1 teaspoon (5 ml, 1/6 oz.)	1	2	3	5	10	25
Drops of oil per 2 teaspoons (10 ml, 1/3 oz.)	2	4	6	10	20	50
Drops of oil per 3 teaspoons (15 ml, 1/2 oz.)	3	6	9	15	30	75
Drops of oil per 4 teaspoons (20 ml, 2/3 oz.)	4	8	12	20	40	100
Drops of oil per 5 teaspoons (25 ml, 5/6 oz.)	5	10	15	25	50	125
Drops of oil per 6 teaspoons (30 ml, 1 oz.)	6	12	18	30	60	150

Research Addendum

There is a large body of scientific research showing health benefits of essential oils. These studies nearly always end with the statement that larger trials need to be performed before recommending the oils for such uses. However, larger studies are never performed, because essential oils are not patentable, and there is no potential monopoly and profit for the large drug companies that fund such studies.

Though research is often clear in showing benefit, it is not possible for me to offer specific recommendations or to advocate use of our essential oils in any human or animal health related capacity. To do so would place our product in the category of a drug, subject to FDA approval and regulation. However, I can provide information, and that is the purpose of this addendum.

This research were discovered by exhaustive word search at www.pubmed.com, a great resource that few people know about. It is somewhat eclectic, because it it guided by the research that has actually been performed. If there is a particular topic of interest, you may find more information by performing word searches at pubmed.com. Unfortunately, many of the uses you may have read about on the internet have never been researched, but it only takes a minute to check.

If you want to read the full abstract of any reference included here, it will be available free at pubmed.com. Just search the title information. If you wish to read the full article, you'll sometimes be able to access it free, and it's almost always available for a fee, usually $25 to $35. Just follow the links. Some of the references below include a note below them indicating that the full article is available free at pubmed.com.

I have loosely organized these abstracts into categories, but you'll find there is a lot of overlap. Please don't let the technical terminology discourage you. This is the best information available on these topics.

Dr. Steve Foster

Note: The information provided in this guide is not intended to diagnose, treat, mitigate, or cure any human or animal health complaint or disease that is under the regulation of the FDA.

Cognitive Function

Res Pharm Sci. 2014 Sep-Oct;9(5):351-8.
The effects of aqueous extract of Boswellia Serrata on hippocampal region CA1 and learning deficit in kindled rats.
"administration of Boswellia extract, especially at high doses can eliminate adverse effects of seizures on cognitive function in hippocampal area CA1 in rats."
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Anat Sci Int. 2015 Jan;90(1):47-53.
Effect of Boswellia serrata gum resin on the morphology of hippocampal CA1 pyramidal cells in aged rat.
"The results of the present study show that long-term administration of Boswellia resin can attenuate age-related dendritic regression in CA1 pyramidal cells in rat hippocampus."

Skin Disorders / Photo-Aged Skin

Phytomedicine. 2007 Aug;14(7-8):508-16.
Screening of plant extracts for antimicrobial activity against bacteria and yeasts with dermatological relevance.
"..Boswellia- and Harpagophytum-extracts proved to be effective against a panel of bacteria. It is concluded that due to their antimicrobial effects some of the plant extracts may be used for the topical treatment of skin disorders like acne vulgaris and seborrhoic eczema."

Clin Cosmet Investig Dermatol. 2014 Nov 11;7:321-7.
A cosmeceutical formulation based on boswellic acids for the treatment of erythematous eczema and psoriasis.
BACKGROUND: Boswellic acids (BAs) show anti-inflammatory properties in a variety of inflammatory diseases, including rheumatoid arthritis, osteoarthritis, and asthma. A topical administration route is currently used to deliver active compounds in psoriatic and eczematous patients.
Free PMC Article

Dermatol Ther. 2010 Jan-Feb;23 Suppl 1:S28-32.
Topical Boswellic acids for treatment of photoaged skin.
"Significant improvements of the Dover's global score for photoaging, tactile roughness, and fine lines, as well as, with noninvasive diagnostic techniques, an increase of elasticity, a

decrease of sebum excretion, and a change of echographic parameters were observed with topical BAs in comparison with placebo."

Planta Med. 2010 Apr;76(6):555-60.
Effects of topical boswellic acid on photo and age-damaged skin: clinical, biophysical, and echographic evaluations in a double-blind, randomized, split-face study.
"We registered a significant improvement of tactile roughness and fine lines in the half side of the face treated with BAs; noninvasive instrumental diagnostic investigations showed an improvement of elasticity, a decrease of sebum excretion, and a change of echographic parameters suggesting a reshaping of dermal tissue."

Asthma

Eur J Med Res. 1998 Nov 17;3(11):511-4.
Effects of Boswellia serrata gum resin in patients with bronchial asthma: results of a double-blind, placebo-controlled, 6-week clinical study.
"70% of patients showed improvement of disease as evident by disappearance of physical symptoms and signs such as dyspnoea, rhonchi, number of attacks, increase in FEV subset1, FVC and PEFR as well as decrease in eosinophilic count and ESR."

Int J Clin Exp Pathol. 2015 Jan 1;8(1):236-43.
Boswellic acid attenuates asthma phenotypes by downregulation of GATA3 via pSTAT6 inhibition in a murine model of asthma.
We found that Boswellic acid treated groups suppressed allergic airway inflammation.."
"Boswellic acid effectively treats asthma.."

Clin Biochem. 2010 Jul;43(10-11):887-90.
Natural anti-inflammatory products and leukotriene inhibitors as complementary therapy for bronchial asthma.
"There was a statistically significant decrease in the plasma levels of LTC(4), (MDA), and NO in target therapy group when compared with placebo group." "..pronounced effect in the management of bronchial asthma."

Inflammation / Arthritis

Crit Rev Food Sci Nutr. 2013;53(5):507-16.
Plant food supplements with anti-inflammatory properties: a systematic review (II).
"Boswellia serrata Roxb. was found to be the most promising, since it shows the best efficacy for the treatment of pain/inflammatory conditions."

Int Immunopharmacol. 2007 Apr;7(4):473-82. Epub 2007 Jan 8.
Pure compound from Boswellia serrata extract exhibits anti-inflammatory property in human PBMCs and mouse macrophages through inhibition of TNFalpha, IL-1beta, NO and MAP kinases.
"..the crude methanolic extract and the isolated pure compound are capable of carrying out a natural anti-inflammatory activity at sites where chronic inflammation is present by switching off the pro-inflammatory cytokines and mediators.."

Indian J Pharm Sci. 2011 May;73(3):255-61. doi: 10.4103/0250-474X.93507.
Boswellia serrata, a potential antiinflammatory agent: an overview.
"Gum-resin extracts of Boswellia serrata have been traditionally used in folk medicine for centuries to treat various chronic inflammatory diseases."
Free PMC Article

Planta Med. 2015 Mar;81(4):259-71.
Prospects of boswellic acids as potential pharmaceutics.
"Boswellic acids have long been considered the main bioactive components of frankincense, and many studies in vitro and in animals as well as several clinical studies have confirmed their various bioactivities. In particular, a large number of mechanistic studies have confirmed their anti-inflammatory and antitumor activities."

Phytother Res. 2011 Sep;25(9):1375-80.
Antiarthritic activity of a standardized, multiherbal, Ayurvedic formulation containing Boswellia serrata: in vitro studies on knee cartilage from osteoarthritis patients.
"This formulation significantly reduced damage of articular knee cartilage from chronic osteoarthritis patients."

Wien Med Wochenschr. 2002;152(15-16):373-8.
[Boswellic acids (components of frankincense) as the active principle in treatment of chronic inflammatory diseases].
"In clinical trials promising results were observed in patients with rheumatoid arthritis, chronic colitis, ulcerative colitis, Crohn's disease, bronchial asthma und peritumoral brains edemas."

Clin Pharmacokinet. 2011 Jun;50(6):349-69.
Boswellia serrata: an overall assessment of in vitro, preclinical, pharmacokinetic and clinical data.
"It underlines BSE as a promising alternative to NSAIDs, which warrants investigation in further pharmacological studies and clinical trials."

Curr Med Chem. 2012;19(14):2088-103.
Anti-inflammatory agents from plants: progress and potential.
"The use of medicinal plant therapies to treat chronic illness, including rheumatoid arthritis (RA) and inflammatory bowel disease (IBD), is thus widespread and on the rise."

Phytomedicine. 2010 Sep;17(11):862-7.
Modulation of the immune system by Boswellia serrata extracts and boswellic acids.
"From the pharmacological properties of BEs and BAs it is not surprising that positive effects of BEs in some chronic inflammatory diseases including rheumatoid arthritis, bronchial asthma, osteoarthritis, ulcerative colitis and Crohn's disease have been reported."

Osteoarthritis Cartilage. 2014 Jan;22(1):128-32.
Oral and topical boswellic acid attenuates mouse osteoarthritis.
"Significant synovial concentration and therapeutic efficacy can be achieved with topical boswellic acid treatment. These findings suggest that boswellic acid has potential as a disease-modifying agent in OA."

Musculoskelet Surg. 2015 Sep;99 Suppl 1:43-52.
Co-analgesic therapy for arthroscopic supraspinatus tendon repair pain using a dietary supplement containing Boswellia serrata and Curcuma longa: a prospective randomized placebo-controlled study.
"..significantly lower overall pain scores in group T versus group P at 1 week.."

Asia Pac J Clin Nutr. 2006;15(2):143-52.
Natural products and anti-inflammatory activity.
"..Boswellia serrata.." "Natural products play a significant role in human health in relation to the prevention and treatment of inflammatory conditions."
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Phytomedicine. 2003 Jan;10(1):3-7.
Efficacy and tolerability of Boswellia serrata extract in treatment of osteoarthritis of knee--a randomized double blind placebo controlled trial.
"BSE is recommended in the patients of osteoarthritis of the knee with possible therapeutic use in other arthritis."

Phytomedicine. 2008 Jun;15(6-7):400-7.
Boswellic acids: A leukotriene inhibitor also effective through topical application in inflammatory disorders.
"The results of the study revealed that the effect observed through this route is in accordance to the study conducted with the systemic route, thus establishing that BA when used through topical application is as effective as through the systemic route."

Ayu. 2011 Oct;32(4):478-82.
Clinical evaluation of Boswellia serrata (Shallaki) resin in the management of Sandhivata (osteoarthritis).
"After a course of therapy for 2 months, symptomatic improvement was observed in both the groups at various levels with promising results in the patients of first group."
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Phytomedicine. 2014 May 15;21(6):847-56.
Boswellia serrata extract attenuates inflammatory mediators and oxidative stress in collagen induced arthritis.
"The protective effects of BSE against RA were also evident from the decrease in arthritis scoring and bone histology."

Oral Pathogens

BMC Res Notes. 2011 Oct 13;4:406.
Acetyl-11-keto-ß-boswellic acid (AKBA); targeting oral cavity pathogens.
"AKBA can be useful compound for the development of antibacterial agent against oral pathogens and it has great potential for use in mouthwash for preventing and treating oral infections."
Free PMC Article

Daru. 2011;19(4):288-94.
The effect of Frankincense in the treatment of moderate plaque-induced gingivitis: a double blinded randomized clinical trial.
"Frankincense, a safe and low-cost herbal medicine, may be feasibly applied to improve inflammation based disease of gingival as an adjunct to the conventional mechanical therapy."
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Anti Bacterial

BMC Microbiol. 2011 Mar 16;11:54.
Antistaphylococcal and biofilm inhibitory activities of acetyl-11-keto-ß-boswellic acid from Boswellia serrata.
"AKBA inhibited the formation of biofilms generated by S. aureus and Staphylococcus epidermidis and also reduced the preformed biofilms by these bacteria."
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Phytomedicine. 2007 Aug;14(7-8):508-16. Epub 2007 Feb 8.
Screening of plant extracts for antimicrobial activity against bacteria and yeasts with dermatological relevance.
"..Boswellia- and Harpagophytum-extracts proved to be effective against a panel of bacteria. It is concluded that due to their antimicrobial effects some of the plant extracts may be used for the topical treatment of skin disorders like acne vulgaris and seborrhoic eczema."

Anti Protozoal

Planta Med. 2011 May;77(8):849-50. doi: 10.1055/s-0030-1250612. Epub 2010 Dec 14.
Complete structural assignment of serratol, a cembrane-type diterpene from Boswellia serrata, and evaluation of its antiprotozoal activity.
"It was found active against T. brucei and P. Falciparum."

Insecticide

Rev Inst Med Trop Sao Paulo. 2008 Mar-Apr;50(2):107-12.
Potential of biologically active plant oils to control mosquito larvae (Culex pipiens, Diptera: Culicidae) from an Egyptian locality.
"..olibanum (Boswellia serrata).." "Potency of the applied plant oils provided an excellent potential for controlling C. pipiens."
Free full text
Parasitol Res. 2006 Sep;99(4):466-72. Epub 2006 Apr 27.
Larvicidal effects of various essential oils against Aedes, Anopheles, and Culex larvae (Diptera, Culicidae).
"Thirteen oils from 41 plants (camphor, thyme, amyris, lemon, cedarwood, frankincense, dill, myrtle, juniper, black pepper, verbena, helichrysum and sandalwood) induced 100% mortality after 24 h, or even after shorter periods."

Anxiety / Depression

Taehan Kanho Hakhoe Chi. 2008 Aug;38(4):493-502.
[Effects of aroma hand massage on pain, state anxiety and depression in hospice patients with terminal cancer]. [Article in Korean]
"Aroma hand massage had a positive effect on pain and depression in hospice patients with terminal cancer."

Immunity

Z Naturforsch C. 2003 Mar-Apr;58(3-4):230-8.
Chemistry and immunomodulatory activity of frankincense oil.
"Biologically, the oil exhibited a strong immunostimulant activity (90% lymphocyte transformation) when assessed by a lymphocyte proliferation assay."

Cancer

Cancer Biol Ther. 2012 May;13(7):542-52.
Boswellic acid induces epigenetic alterations by modulating DNA methylation in colorectal cancer cells.
"These results suggest that not only boswellic acid might be a promising epigenetic modulator in the chemoprevention and treatment of CRC, but also provide a rationale for future

investigations on the usefulness of such botanicals for epigenetic therapy in other human malignancies."
Free PMC Article

J Pharm Bioallied Sci. 2015 Jan-Mar;7(1):21-5. doi: 10.4103/0975-7406.148784.
Prediction of anticancer property of bowsellic acid derivatives by quantitative structure activity relationship analysis and molecular docking study.
"..bowsellic acid can also be treated as a potential anticancer compound."
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Mol Cancer Res. 2009 Jan;7(1):118-28.
Boswellic acid blocks signal transducers and activators of transcription 3 signaling, proliferation, and survival of multiple myeloma via the protein tyrosine phosphatase SHP-1.
"Overall, our results suggest that AKBA is a novel inhibitor of STAT3 activation and has potential in the treatment of cancer."
Free PMC Article

Food Chem Toxicol. 2011 Sep;49(9):1924-34.
Antitumor properties of Boswellic acid against Ehrlich ascites cells bearing mouse.
"The present study sheds light on the potent antitumor property of the boswellic acid and can be extended further to develop therapeutic protocols for treatment of cancer."

Mol Pharm. 2013 Jan 7;10(1):225-35. doi: 10.1021/mp300385m. Epub 2012 Dec 13.
Enhanced anticancer potential of encapsulated solid lipid nanoparticles of TPD: a novel triterpenediol from Boswellia serrata.
*"A pentacyclic triterpenediol (TPD) from Boswellia serrata has significant cytotoxic and apoptotic potential in a large number of human cancer cell lines.***"**

<u>Radiation Therapy Burn</u>

Eur Rev Med Pharmacol Sci. 2015 Apr;19(8):1338-44.
Clinical evaluation of safety and efficacy of Boswellia-based cream for prevention of adjuvant radiotherapy skin damage in mammary carcinoma: a randomized placebo controlled trial.
"..use of a boswellia-based cream is effective in reducing the use of topical corticosteroids and is able to reduce the grade of erythema and the skin superficial symptoms.."
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Pain

Indian J Pharmacol. 2014 Sep-Oct;46(5):475-9.
A randomized, double blind, placebo controlled, cross over study to evaluate the analgesic activity of Boswellia serrata in healthy volunteers using mechanical pain model.
In the present study, Boswellia serrata significantly increased the Pain Threshold and Pain Tolerance force and time compared to placebo.
Free PMC Article

Cephalalgia. 2012 Jul;32(9):719-22.
Long-term efficacy of Boswellia serrata in four patients with chronic cluster headache.
"The results provide Class IV evidence that oral B. serrata reduces the intensity and frequency of headaches in patients with CCH."