Oil of Oregano

Properties and Uses
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Introduction
*Origanum vulgare* (the scientific name of oregano) has been studied in depth due to a number of interesting and exciting potential clinical uses. There is also an ongoing interest in a number of industries to replace synthetic chemicals with natural products that have similar properties. Many bioactive compounds can be found in aromatic plants, and there are a number of different ways they can be extracted. In one study, the major components of oregano essential oils were found to be carvacrol, beta-fenchyl alcohol, thymol, and *gamma*-terpinene.[1] A hot-water extraction was found to be the best method of extracting antioxidant properties and provided the highest phenolic content. This study also tested the oregano extracts against seven bacterial cultures, but they were ineffective. However, the essential oil itself was able to inhibit the growth of all bacteria, causing greater reductions on both *Listeria* strains that were tested.

In another study looking at the composition of oregano, the most important components that were identified were limonene, *gamma*-cariofilene, *rho*-cymene, canfor, linalol, *alpha*-pinene, carvacrol, and thymol.[2] Some of these overlap with the previous study, but others do not; this may be because the oregano spice includes a number of different plant species. The most common are the genus *Origanum*, which is native to Europe, and the *Lippia* genus, native to Mexico. The oregano composition also depends on the climate, altitude, time of collection, and stage of growth (which is similar to most other herbs when they are cultivated). In this review, they identified that oregano has a good antioxidant capacity, and also has antimicrobial activity against a number of harmful microorganisms like *Salmonella*, *E. coli*, and *Staphylococcus*. As a result, the addition of oregano to certain foods may enhance their safety and stability. There are also a few reports regarding the antimitogenic and anticarcinogenic effects of oregano, meaning it
may have potential uses as an adjunctive cancer therapy. A separate report found that one of the active ingredients (beta-caryophyllin) had anti-inflammatory properties, which could be useful for osteoporosis and arteriosclerosis. Interestingly, there are also reports of oil of oregano being used topically as insect repellent. In this article, we will explore some of the evidence behind these claims.

**Antimicrobial Effects**

One recent study found that Mexican oregano (*Lippia berlandieri* Shauer, to be specific) had antifungal activity. The antifungal compounds are part of the plant’s secondary metabolism, and the action of these compounds can be used to inhibit the spoilage of certain foods. In this study, fungi were isolated from spoiled fruit and vegetables and identified according to morphological characteristic. The oregano was added as dried oregano, ranging from 0.25% to 4%. Twenty-one fungal strains were isolated. In seven of the 21 strains, no inhibitory effect was seen. In 12 strains, a strong inhibitory effect was found. The oregano essential oil was inhibitory to all strains, but there were differences in the extent of the effect. Similar effects have been seen with other strains of oregano as well, including the more common *Origanum vulgare*.[4] In this study, the oil of oregano was tested on mold that had developed on the surface of Spanish fermented sausages. The results showed a dramatic reduction in the contaminant mold. Similarly, certain strains were more effected than others. It also did not affect the sausage drying process, pH, water activity, or colour changes during ripening.

Oregano has a good deal of evidence supporting its use as an antimicrobial in food, as well as in a number of in vitro and animal studies, but what about when it comes to human health? One study tested the use of oil of oregano on parasites in humans.[5] Oil of oregano was orally administered to 14 adult patients whose stool tested positive for enteric parasites (including *Blastocystis hominis*, *Entamoeba hartmanni*, and *Endolimax nana*). After six weeks of supplementation with 600 mg of emulsified oil daily, there was complete disappearance of *Entamoeba hartmanni* (four cases), *Endolimax nana* (one case), and *Blastocystis hominis* (eight cases). Gastrointestinal symptoms also improved in seven of the 11 patients who had tested positive for *Blastocystis hominis*. That is pretty much the only piece of human data available, leaving the evidence for oil of oregano as a human antimicrobial to be promising, but very limited. It is also possible
to kill bacteria in a Petri dish in a number of different ways, but that doesn’t mean that it would also be effective in humans, so we advise caution in jumping to conclusions.

**Anti-Inflammatory Activity**

Oil of oregano may have anti-inflammatory activity. Researchers in Zurich discovered that one of the active compounds we mentioned previously (beta-caryophyllin or E-BCP) has anti-inflammatory activity.\(^6\) The researchers administered the E-BCP to mice with inflamed paws. In seven out of ten cases, there was an improvement in symptoms. Interestingly, E-BCP is also found in other spices, including basil, rosemary, cinnamon, and black pepper. E-BCP connects with specific receptors in the cell membrane (called cannabinoid CB2 receptors), and produces changes in cell behaviour. The researchers suggest that E-BCP could possibly form the basis for new drugs. Unlike other substances that affect the same receptor, E-BCP does not lead to intoxication. E-BCP may also help control chronic disorders such as osteoporosis and Crohn’s disease (due to the inflammation found in the gastrointestinal tract).

Essential oils in general can be used topically, and oil of oregano is no exception. Applying essential oils topically can help promote anti-inflammatory actions and also act as anesthetics. As a result, it can bring relief to bruises and sprains, or other injuries like tendonitis and carpal tunnel syndrome. People with arthritis may also see benefit by applying the oil topically on joints. If you notice a skin reaction, you may have an allergy to one of the constituents, and that would be a sign that this therapy is not right for you. Also in terms of safety, make sure to avoid sensitive skin areas, mucous membranes, and the eyes.

There are limited human studies available on the anti-inflammatory actions of oregano, but other studies have shown promise. In one study, investigators showed that oregano extracts and constituents can suppress inflammation both in a test tube and in animals. The thymol constituent inhibited the release of elastase (a marker of inflammatory disease activity) from human immune cells.\(^7\) In another animal study, oil of oregano was administered intrarectally in rats or was incorporated in their diets, and was shown to have protective effects against induced colon damage, inflammatory cell infiltration,
and vascular dilation, as well as suppressing inflammatory cytokines.[8] Once again, this doesn’t necessarily mean that these effects would translate exactly the same way for human health, but these are very promising results.

**Anticancer Effects and Conclusion**

Many of the oregano constituents we’ve discussed have antiproliferative properties (or anticancer properties). In some cell studies, oregano extracts protected cells from oxidative stress damage and radiation-induced DNA damage.[9] Thymol in particular has been shown to protect DNA from a variety of damaging agents and has been reported to suppress the proliferation of cancer cells with active oncogenes. It has also been shown to suppress melanoma cells in a test tube.

Overall, oregano has been used in a number of traditional medicines for conditions such as asthma, diarrhea, and indigestion. Based on the evidence available, there appear to be a variety of constituents and compounds that can be extracted from oregano through various methods. However, it appears that the essential oil has the most clinically impressive effects. Oregano can be added to a number of foods in small quantities to help prevent spoiling. In terms of human health, many of the constituents possess antimicrobial properties. Although we focused on antifungal and antiparasitic effects, there are many studies available that outline additional antimicrobial properties, including antibacterial and antiviral actions. The only human study on oil of oregano is a small one showing it is effective in treating intestinal parasites.

Many of the constituents in oregano, especially E-BCP, have shown anti-inflammatory activity. Although the studies have not been conducted directly in humans, they are quite promising, as they show decreases in inflammation across the board, including working through the cannabinoid CB2 receptors, all the way to suppressing inflammatory cytokines. Finally, oil of oregano possesses a number of different properties we have not discussed particularly in this article; some preliminary studies show benefits to the cardiovascular and nervous systems, and actions such as the modulation of glucose and lipid levels.[10] It is important to remember that although many of the studies are extremely promising, it is not a guarantee that oil of oregano will work for you. It is always advised that you see your naturopathic doctor for a thorough assessment and for a complete treatment plan.
References


