

# Study Finds Natural Mosquito Repellent. It Works as Well as DEET.



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**Key Takeaways:** A recent study found that adding patchouli oil to unscented cream to make an essential-oil-based lotion for the skin protects against mosquitoes just as effectively as DEET. This offers a natural alternative to chemical bug repellents. Entomologists and dermatologists explain why patchouli wards off mosquitoes and offer tips on how to make your own bug-repelling lotion at home.

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A mosquito bite or being surrounded by a [swarm of mosquitoes](#) makes any outdoor activity unpleasant. Many people, one-third of the United States' population, turn to insect repellents to keep bugs away. Common choices include [products containing DEET](#), a chemical that helps protect against mosquitoes and ticks. When it's applied to the skin, DEET doesn't kill insects; instead, it acts like an invisibility shield, making it tougher for bugs to detect people, according to the [Environmental Protection Agency](#) (EPA).

Even though DEET-based sprays and lotions are both safe and effective, according to the [Cleveland Clinic](#), some people might be put off by the odor, find it irritates their skin, or are just on the hunt for something natural.

**Trips Built by Outside Editors**

Recent research, published in the journal [ACS Omega](#), suggests an alternative to traditional mosquito repellents—and you may already have it at home. It's patchouli oil. The study concluded that this essential oil may be just as effective at keeping mosquitoes away as DEET when used properly.

Here's how patchouli oil repels bugs, and how it holds up against DEET, plus what entomologists and dermatologists have to say about it.

## How Does Patchouli Oil Compare to DEET?

Patchouli oil is [an essential oil used in aromatherapy practices](#) to relieve [stress, anxiety, and depression](#). Some traditional medicine methods use the oil to treat colds, fevers, and digestive issues.

The one drawback: patchouli oil breaks down when exposed to air, making it ineffective as a [bug repellent](#) for extended periods. As a solution, the researchers combined it with an unscented cream (a lotion they formulated themselves in the lab) to create a mosquito-repellent lotion.

The study participants,\* who were between the ages of 20 and 35, were asked to place their arms in a cage containing 50 *Aedes aegypti* mosquitoes, which is [a species](#) that can carry diseases such as the Zika virus and yellow fever, for three hours (broken into 30-minute segments) after the oil-based lotion was applied to their forearms. They were asked not to use any other lotion or skin products for 12 hours before testing, and they were able to protect their hands with gloves. The researchers also conducted an experiment using a commercial DEET-based repellent for comparison. The control group did not use DEET or patchouli-infused lotion.

The result? There were no bites on the arms treated with the patchouli-infused lotion and DEET formulations, whereas the bare, untreated arms [had many bites](#). The patchouli lotion and DEET protected the participants for three hours.

“These findings suggest that patchouli-based formulations may represent a promising natural alternative for topical mosquito repellents,” the researchers wrote in the study. It’s not clear if adding patchouli oil to over-the-counter unscented lotion or cream sunscreen would have similar results.

## Why Does Patchouli Oil Repel Mosquitoes?

The study didn’t specifically look at *why* patchouli oil prevented the mosquito bites—it simply discovered that the essential oil was effective at keeping hungry mosquitoes away. However, experts have some theories on why the oil warded off bugs.

It’s possible mosquitoes just don’t like patchouli’s signature strong scent. “It’s an odiferous material that could repel mosquitoes,” says [Elmer Gray](#), an entomologist, mosquito control researcher, and public health extension specialist for the University of Georgia College of Agricultural and Environmental Sciences.

According to the researchers, in a [press release](#), patchouli may block a mosquito’s sense of smell, preventing the insect from detecting people.

## Can You Make Your Own Patchouli-Infused Lotion at Home?

Like many essential oils, there is a risk of irritation when you apply patchouli oil to your skin, says [Dr. Gary Goldenberg](#), a dermatologist and assistant clinical professor of dermatology at Icahn School of Medicine at Mount Sinai Hospital. However, diluted, lower concentrations of patchouli are likely fine for most, he says. He suggests adding patchouli to an unscented lotion such as [Vanicream](#) or [CeraVe](#).

## How to Dilute an Essential Oil in Lotion

According to the [University of Minnesota’s essential oils guide](#), it’s best to make a one-percent solution for an oil-and-lotion mixture you plan to massage on the skin.

Let's say you have eight ounces of lotion; one percent of those eight ounces should be patchouli oil. You'll need to do some quick math to find out how much oil equals one percent; you can do that by dividing eight by 100, which equals 0.08 ounces or 2.4 milliliters of patchouli oil. You would then use a dropper to measure out 2.4 mL of patchouli to add to eight ounces of your lotion, and then shake it up and apply it to your skin.

## **Will Patchouli Oil Irritate Your Skin?**

“Low concentration products used in this study for short-term topical use on intact skin appear to have low risk of skin irritation,” Goldenberg says. Higher concentrations of patchouli or using the essential oil on people with sensitive skin may lead to irritation, though, he says.

Because the patchouli lotion was tested only on forearms, Goldenberg says it's unclear whether it can be used on the face. But if you're ever unsure of how your skin may react to a substance, you can always do a patch test.

## **How Do You Perform a Patch Test at Home?**

According to the American Academy of Dermatology Association, here's the [best way to do a patch test at home](#):

1. Take the product, in this case, the patchouli oil, and put a drop or two onto a discreet area of the body where it likely won't wash during regular activity. The inside of the elbow is a good option.
2. Do this twice a day for about seven to ten days.
3. Monitor the area each day.

If you don't notice any irritation or rash, you're likely safe to use the product on larger areas of skin.

## **What to Consider Before Creating Your Own Patchouli Bug Repellent**

“While some plant-based ingredients show early promise in lab settings, only a few have met the EPA’s efficacy and safety standards for registration as a repellent,” says Jim Fredericks, an entomologist and senior vice president of public affairs at the [National Pest Management Association](#). Patchouli oil isn’t one of them. A few of those approved include catnip oil, citronella oil, and eucalyptus oil. ([You can view the full list here.](#)) However, the study cited other research showing that combining multiple essential oils could protect against bug bites even more effectively than a single oil.

“Given that mosquitoes can carry numerous diseases, including West Nile virus, eastern equine encephalitis, and western equine encephalitis, people should continue to use insect repellent containing DEET or another EPA-registered ingredient,” Fredericks says.

However, if you happen to like the scent of patchouli, there’s no harm in wearing it outdoors, provided it doesn’t irritate your skin. But for now, Gray calls DEET the “gold standard” for mosquito-bite protection. That may change in the future, though. From here, the research team plans to conduct toxicological and clinical studies to assess the patchouli cream’s long-term safety.

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*\*The study did not clearly specify the number of participants involved in the repellency testing. Outside contacted the study authors and ACS publications for clarification, but did not receive a response prior to publication. This article will be updated if additional information is provided.*

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