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Sizing Up Mosquito Repellents

Botanical Products Don't Work as Well as DEET

By [Salynn Boyles](#)

July 3, 2002 -- Legions of swarming, bloodsucking, flying vermin can really ruin that summer picnic or outdoor party. So what's the best way to fend off the mosquitoes and no-see-ums intent on making you their next meal? A host of products claim to effectively repel the nasty critters without chemicals. But timely research shows that insecticides containing the long-relied-on chemical DEET are more effective and last longer.

"DEET is not exactly the perfect product, so people are always looking for alternatives," dermatologist Mark S. Fradin, MD, tells WebMD. "But it has been proven effective over 45 years of use, and there is almost no science to support the notion that it is highly toxic."

Always a summer annoyance, mosquitoes became more of a health threat in the U.S. three years ago when the first cases of West Nile virus were discovered. By the end of last year, the mosquito-spread virus had been documented in 28 states and was blamed for 18 deaths.

In the latest research, reported July 4 in *The New England Journal of Medicine*, Fradin and colleague John F. Day, PhD, of the University of Florida, recruited 15 brave volunteers who agreed to test 16 different repellents by getting up close and personal with hungry, female mosquitoes. The test included seven botanical-based repellents, four products containing DEET, a product containing a newer insecticide, three repellent wristbands, and Avon's Skin-So-Soft Bath Oil.

The volunteers endured 48 separate tests, evaluating each product three times over an average of 10 days.

Each repellent was placed on a volunteer's forearm and the forearm was placed in a cage filled with 10 disease-free mosquitoes

Family

mosquitoes.

The DEET-based products were found to provide complete protection for the longest time. Products containing 24% DEET protected for an average of five hours, while those containing 4.75% DEET kept the mosquitoes away for an average of 1.5 hours. The newly available insecticide IR3535, found in Avon's Skin-So-Soft Bug Guard Plus, protected for about 23 minutes.

The best performing non-DEET repellent was a soybean-oil-based product called Bite Blocker for Kids, which protected for about 1.5 hours. Botanical products with active ingredients such as citronella, cedar, eucalyptus, peppermint, or lemongrass gave very short-lived protection, ranging from an average of 3 to 30 minutes.

Skin-So-Soft Bath Oil, which became a popular insect repellent largely through consumer word of mouth, was found to protect for only about nine minutes. But the wristbands fared worse. The three tested bands offered virtually no protection whatsoever.

"They just didn't work at all, and they make some of the most outrageous claims about their effectiveness," Fradin says. "It's not like they provide a force field to protect you. I guess if you slapped the mosquito with your wrist it might work."

Fradin, associate professor of dermatology at the University of North Carolina in Chapel Hill, says most people turn to alternative products because they mistakenly believe DEET-based repellents are not safe.

"The alternatives are promoted as being safe, implying that DEET is not," he says. "But there have been fewer than 50 reported cases of any significant toxicity related to DEET in the medical literature. That is out of approximately 8 billion applications over more than 40 years."

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