

HEALTH IN THE GARDEN II: MOSQUITO REPELLENTS

BY MARY MASTIN

All states in the Rocky Mountain District, of the American Rose Society including our friends in Alberta Canada, have reported human cases of West Nile Virus with mortality, especially in people over the age of 60.

State or Province	Alberta	Colorado	Idaho	Utah	Wyoming
Cases / (Deaths) 2006	40/(0)	345/(7)	996/(21)	158/(5)	65/(2)
Cases / (Deaths) 2007	320/(2)	576/(7)	132/(1)	70/(2)	181/(2)
Cases / (Deaths) 2008	pending	93/(1)	33/(1)	26/(0)	8/(0)

Choosing the best mosquito repellent and using it effectively is a serious matter. Consumers face a bewildering array of formulations that contain diverse active ingredients. What “works”? What is “safe”? How do natural products compare with synthetic preparations?

Currently, the Center for Disease Control (CDC) recommends using products that stand up to scientific trials published in peer-reviewed scientific literature. The studies involve both field trials and arm-in-cage studies, in which volunteers insert their repellent treated arms into a cage with a fixed number of unfed mosquitoes and the elapsed time to the first bite is recorded. Conducting such studies indoors makes it possible to reduce variables such as wind speed, temperature, humidity, density and type of mosquito.



The latest review of the results of these studies show that the GOLD STANDARD in mosquito repellents is still DEET (N,N-diethyl-m-toluamide, now called N,N-diethyl-3-methylbenzamide).

DEET has been used world wide since 1957. The U.S. Environmental Protection Agency (USEPA) did a comprehensive reevaluation of safety in 1998. Based on extensive testing and 40 years of commercial use of the product, the Agency states that DEET does not present a health concern to the general population. In the majority of studies, DEET-based products provided complete protection for the longest duration. Higher concentrations of DEET provided longer lasting protection up to about 50 percent DEET. Most commercially available formulations now contain 40 percent DEET or less.



The American Academy of Pediatrics (2003) approves of the use of DEET in children older than 2 months when used according to the product guidelines.

A very small percentage of people may have an allergic skin reaction to DEET products but the major problem with DEET is the damage it can do to plastics, specifically lenses, cameras and synthetic fabrics that typically are in the same backpack as the container of DEET that leaked just a tiny bit ruining an otherwise perfect walk in the woods! The oily nature and odor of the products are also considered unpleasant to some people.

Another active ingredient recommended by the CDC as of 2005 is PICARIDIN. This is available in the United



States (US) since 2005 (Cutter Advanced, Baypel). Picaridin has been used in Europe and Australia for many years and has an excellent safety and efficacy profile. The first product released in the US was a 7% solution but a 20% solution is now also available. It is odorless, not greasy or sticky, less likely to cause skin irritation and will not harm plastics or fabrics. The few US studies so far, show picaridin products, to be close to DEET in their ability to repel mosquitoes.

In the realm of plant based repellents, the “natural” products, the clear winner as far as proven effectiveness is OIL OF LEMON EUCALYPTUS (active ingredient: p-menthane 3,8-diol PMD) It is also registered with the EPA. In two recent scientific publications, when oil of lemon eucalyptus was tested against mosquitoes found in the US, it provided protection similar to repellents with low concentrations of DEET. Oil of lemon eucalyptus products should NOT be used on children under 3 years.

No ingested compound including garlic and thiamine (vitamin B1) has been found to be capable of repelling biting arthropods.

It is NOT recommended to use a single product that combines sunscreen and insect repellents. In most situations, insect repellent does not need to be reapplied as frequently as sunscreen.



Eucalyptus Tree

PERMETHRIN is a highly effective insecticide and repellent. Permethrin treated clothing repels and kills ticks, mosquitoes and retains this effect after repeated laundering. Buzz-OFF clothing is pretreated with permethrin but you can also apply the product to your favorite gardening clothes. DO NOT apply directly to skin.

Remember: If you are lucky enough to grow beautiful roses, don't push your luck when dealing with mosquitoes this summer. When applied with common sense, the products named in this article can be expected to provide safe as well as long lasting protection. Further information is on the Center for Disease Control web site www.cdc.gov.



Mary Mastin is a retired general surgeon who came to Colorado in the early 1970s. She did her surgical residency at the University of Colorado Health Science Center in Denver- one of the first few women in the program. Mary practiced general surgery for 30 years in Grand Junction and Salt Lake City, and is now based in Grand Junction. She travels for a good part of the year, but returns home in the summer to grow roses in Grand Junction and to also to study the native Colorado flora. Mary is a consulting rosarian and member of the Denver Rose Society. Reprinted with permission, Mary Mastin 02/02/09.