



# Discovery Of A Highly Effective And Safe Insect Repellent

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## INVENTORS

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## OTHER INFORMATION

### KEYWORDS

insect, repellent, DEET,  
  
mosquito

### CATEGORIZED AS

- ▶ **Materials & Chemicals**
- ▶ Biological

### RELATED CASES

2024-872-0

**BACKGROUND**

CDC- and EPA-approved insect repellent ingredients include DEET, picaridin, IR3535, oil of lemon eucalyptus (OLE) and its synthetic version para-menthane-diol (PMD), and 2-undecanone. DEET is the gold standard, having been in use since the 1950s. It is effective against a wide variety of pests for long durations at concentrations of 10-30% and is generally safe. However, DEET has a strong odor, is an eye irritant, damages some plastics and fabrics, needs to be used in limited concentrations on children, and has shown some cases of neurological symptoms. A 20% concentration of IR3535 can provide 8 hours of mosquito protection and up to 12 hours of tick protection and has a long presence in the European market, with a good safety profile, but like DEET, it is a strong eye irritant and can damage some plastics and fabrics. A 20% concentration of picaridin can provide all day protection against mosquitos and ticks, is odorless and non-irritating, and does not damage plastics, but picaridin’s short duration on the market means safety data is more limited. OLE is an effective botanical repellent, but it can be a possible allergen, it can irritate lungs, and it cannot be used on children under the age of 3. PMD may be less allergenic than OLE but has the same drawbacks. Although 2-undecanone may be as effective as DEET, it has limited market availability and limited long-term safety data.

**DESCRIPTION**

Researchers at the University of California, Santa Barbara have formulated a novel mosquito repellent using a combination of safe natural compounds that together form long-lasting protection from mosquito bites (>10hrs). The formulation is cost-effective, robust, and is stable in a wide range of temperatures and conditions. Even if the formulation is destabilized through freezing, it can reform once it reaches its stable temperature range. The formulation creates a seal between a person’s epidermal layer and the repellent compounds wherein it drastically lowers the amount of absorption through the skin and forces the repellent to be slowly exposed to the environment, increasing the duration of its effectiveness. The nature of the formulation also allows for the possibility of including known repellents for even greater efficacy as well as use in other cosmetic or medicinal topical applications.

**ADVANTAGES**

- ▶ Low cost, thermostable
- ▶ Made with compounds known to be safe
- ▶ Long duration of protection
- ▶ Possible use for applications beyond insect repellency

**APPLICATIONS**

- ▶ Insect repellent

**PATENT STATUS**

Patent Pending

**ADDITIONAL TECHNOLOGIES BY THESE INVENTORS**

- ▶ [Discovery Of A New Class Of Taste Receptor In Mammals](#)

