

Personal Repellent for Everyday Living

Research has demonstrated NootkaShield™ nootkatone can repel many of the mosquitoes and ticks that transmit diseases.

Why the need?

The number of people affected by diseases spread by mosquitoes and ticks is increasing. The United States Centers for Disease Control and Prevention (CDC) has determined vector-borne disease cases (diseases transmitted by mosquitoes, ticks, fleas, etc.) doubled from 2004 to 2018.¹



A new approach for protection against insects

Mosquitoes and ticks are not only annoying when they disrupt outdoor activities, they also can transmit diseases that seriously harm human health. The news is full of reports of Lyme disease, West Nile virus, Zika, and others. Applying repellents to prevent mosquito and tick bites is a key part of keeping safe from these diseases.

NootkaShield contains nootkatone, a naturally-occurring compound in various plants, including grapefruit, Alaskan yellow cedar, and some grasses and herbs. Evolva has developed a proprietary method to reliably produce nootkatone in large quantities without the necessity of cutting down trees or extraction from fruit.

Nootkatone is as effective as DEET on deer ticks

Nootkatone was compared against DEET and 13 other natural compounds for repellency against deer tick nymphs (*Ixodes scapularis*). Four hours after treatment the repellency of nootkatone was statistically equivalent to DEET.²

Nootkatone is highly active against ticks when applied to fabric

The CDC has demonstrated nootkatone can effectively repel ticks from clothing. Field trials on repellency against *Ixodes scapularis* (deer tick) and *Amblyomma americanum* (lone star tick) were performed with coveralls treated with nootkatone, carvacrol, EcoSMART® and Permanone. After day seven of the first treatment of the coveralls, results indicate that nootkatone is the most effective treatment against exposure to both species of ticks.⁴

Nootkatone is powerful against ticks that transmit Lyme disease

The CDC has demonstrated that nootkatone is a highly effective agent against the ticks that transmit Lyme disease and a variety of other insects including nuisance pests.³

Nootkatone is effective against mosquitoes at concentrations between 1 and 10 percent

Laboratory trials conducted by Evolva and by researchers contracted by Evolva have demonstrated NootkaShield™ nootkatone is effective at repelling mosquitoes at concentrations between one and ten percent. Tests of repellency against *Aedes aegypti* (yellow fever mosquito) which transmits the Zika virus, *Culex quinquefasciatus* (southern house mosquito), and *Anopheles quadrimaculatus* (common malaria mosquito) showed a formulation containing one percent NootkaShield was nearly as effective as a solution of 20% DEET on collagen membranes or filter paper in laboratory testing.⁵



NootkaShield properties:

- Purity ≥ 99%
- EPA Reg. No.: 91873-1
- Molecular weight: 218.34 g/mol
- Appearance: pale yellow to white solid
- CAS #: 4674-50-4
- Toxicity: Class IV
- Shelf life: 3 years

NootkaShield™ nootkatone from Evolva is a fresh alternative for the pest control industry



Manufacturers rely on consistent quality and purity, ingredient safety, and reliable sourcing. NootkaShield is:

- Produced at metric ton scale with aggressive expansion plans in place
- Produced at high purity
- Consistent from batch to batch
- Not classified as a carcinogen, not genotoxic and Class IV for toxicity, the lowest possible acute toxicity classification
- Backed by a strong IP portfolio and access to CDC patents
- Supported by the CDC
- US EPA for registration as a new biopesticide active ingredient

CDC support:

Evolva received US federal funds from the Office of Assistant Secretary for Preparedness and Response (ASPR), Biomedical Advanced Research and Development Authority (BARDA), through CDC, under Contract No. HHSO100201700015C. Funds were awarded to Evolva to develop nootkatone-based end-user products against select mosquito-borne diseases like Zika.

About Evolva:

NootkaShield is produced by Evolva, a Swiss biotech company focused on the research, development and commercialization of products based on nature. We have leading businesses in flavors and fragrances, health ingredients and health protection. Evolva's employees are dedicated to producing the best ingredients that can contribute to health, wellbeing and sensory enjoyment. Find out more at www.evolva.com.

For more information:

We have sales support in the US and Europe, with distribution worldwide where approved. Our technical team can advise on formulations and ideal combinations and our marketing team can help you plan your marketing strategy for NootkaShield. We are happy to supply samples for testing and formulation guidance.

Evolva's website: www.evolva.com

NootkaShield website: www.nootkashield.com

For general inquiries and customer service inquiries please email:
nootkashield@evolva.com

Connect with us:

LinkedIn: www.linkedin.com/showcase/nootkashield

Twitter: [@NootkaShield](https://twitter.com/NootkaShield)

Facebook: www.facebook.com/NootkaShield/

Or phone us at:

Evolva (U.S.A. Toll Free): +1.844.PST.CTRL (1.844.778.2875)

Evolva (Europe/R.O.W.): +41.61.485.2099

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