



nano repellent

High Efficacy and Long Duration Repellent

Active ingredients: Essential oils of citronella and rosemary.

Nano Repellent is a blend of encapsulated essential oils. It has a prolonged release, ensuring repellent full protection for up to 2 hours for the user with just one application. Blend encapsulation through the Nanovetores Technology allows the stabilization of sensitive components, complex of being formulated in their free format. The usage of the product promotes repellency of mosquitoes in general, and due to its natural characteristics and no toxicity or chemical aggression, it ensures daily protection and safety for users.



Features

Aspect: Milky liquid from white to cream.

Usage Concentration: 5 to 10%

pH stability: 2.5 to 7.0

Solubility: Water Dispersible

Particle: Lipid

Release Trigger: Enzyme



Benefits

- Mosquito repellent
- Moisturizer



Usage

Creams and body sprays.

Description

Nano Repellent is a blend of active ingredients encapsulated in lipid nanoparticles, with an enzymatic release trigger.

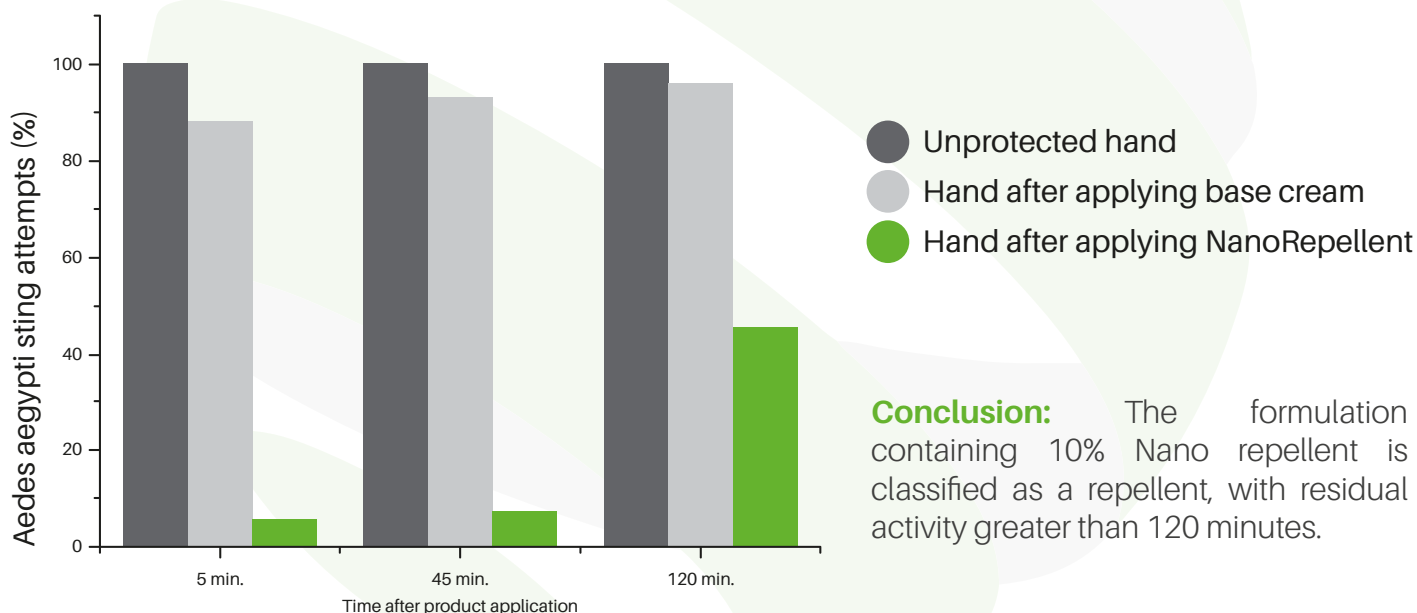
Citronella (*Cymbopogon winterianus*) is a grass grown in tropical and subtropical regions, whose oil extracted from its leaves is used as an insect repellent with insecticide, fungicide and bactericide action. These properties are attributed to the presence of volatile substances in its leaves, such as citronella, eugenol, geraniol and limonene, among others, generally known as monoterpenes. Studies conducted with the oil of this plant demonstrated its insecticide and repellent action against mosquitoes and flies (OLIVO et al., 2008). As it is highly volatile, citronella oil quickly loses its repellent activity - estimated action time between 1-2 hours (THORSELL et al., 1998; SRITABUTRA et al., 2011) significantly losing its properties after 30 minutes. To provide high protection levels, large citronella oil concentrations are required, e.g., at a concentration of 10% protection rate reaches 99%, but this protection lasts on average 20 minutes, no longer than 60 minutes (FRADIN; DAY 2002; BUENO; ANDRADE, 2010). Moreover, some components have caused irritation for skin and eyes (THORSELL et al., 1998). Encapsulation nullifies the potential harmful effects of citronella.

Rosemary (*Rosmarinus officinalis*) is a plant of the Lamiaceae family, native to the Mediterranean region. It is used worldwide as a condiment in numerous food and has several pharmaceutical indications. Its essential oil is rich in monoterpenes α and β -pinene, substances with great repellent potential for several species of insects (RIBEIRO et al., 2012; FÁVERO, 2014).

The repellent activity of the Nano Repellent works against mosquitoes in general. The encapsulation of these oils in particles promotes a sustained and controlled release effect of the active ingredients, increasing the product's effectiveness and reducing the risk of irritation (NERIO et al., 2010; SENHORINI et al., 2012).

Effectiveness Test

Objective: Determine whether the test article presents repellent activity and its residual activity time



Conclusion: The formulation containing 10% Nano repellent is classified as a repellent, with residual activity greater than 120 minutes.

References

- 1- BUENO, V.S.; ANDRADE, C.F.S. Avaliação preliminar de óleos essenciais de plantas como repelentes para *Aedes albopictus* (Skuse, 1894) (Diptera: Culicidae). Revista Brasileira de Plantas Mediciniais, 12 (2): 215-219, 2010.
- 2 - FARIAS, M. P. O. et al. Cálculo da ci_{50} (concentração inibitória média) e cl_{50} (concentração letal média) do óleo da semente de andiroba (*Carapa guianensis*, aubl.) Sobre *Rhipicephalus* (*boophilus*) *Microplus* *canestrini*, 1887), *Anocentor nitens* (neumann, 1897) e *Rhipicephalus sanguineus* (latreille, 1806) (acarí: ixodidae). Arq. Inst. Biol., 79(2): 255-261, 2012.
- 3 - FÁVERO, R. Estudo de repelência com diversos produtos de origem natural em operárias de *Apis mellifera* em semi-campo. 2014. 46 f. Trabalho de conclusão de curso (Licenciatura e Bacharelado - Ciências Biológicas). Universidade Estadual Paulista. Instituto de Biociências de Rio Claro. Rio Claro, 2013.
- 4 - FRADIN, M. S.; DAY, J. F. Comparative efficacy of insect repellents against mosquito bites. The New England Journal of Medicine, 347(1): 13-18, 2002.
- 5 - FREIRE, D. C. B.; BRITO-FILHA, C. R. C.; CARVALHO-ZILSE, G. A. C. Efeito dos óleos vegetais de andiroba (*Carapa* sp.) e Copaiba (*Copaifera* sp.) sobre forídeo, pragas de colméias, (Diptera: Phoridae) na Amazônia Central. Acta Amazonica, 36(3): 365-368, 2006.
- 6 - MENDONÇA, F.A. et al. Activities of some brazilian plants against larvae of the mosquito *Aedes aegypti*. Fitoterapia, 76(7-8): 629-36, 2005.
- 7 - NERIO, L. S.; OLIVERO-VERBEL, J.; STASHENKO, E. Repellent activity of essential oils: A review. Bioresource Technology, 101: 372- 378, 2010.
- 8 - OLIVEIRA, B. R. Desenvolvimento e avaliação de nanoemulsões com óleos de *Carapa guianensis* e *Copaifera* sp. e estudo da ação repelente frente a *Aedes aegypti*. 2008 108 f. Dissertação (Mestrado em Ciências Farmacêuticas). Faculdade de Ciências Farmacêuticas de Ribeirão Preto. Universidade de São Paulo. Ribeirão Preto, 2008.
- 9 - OLIVO, C.J. et al. Óleo de citronela no controle do carrapato de bovinos. Ciência Rural, 38: 2(406-410), 2008.
- 10 - RIBEIRO, D.S. et al. Avaliação do óleo essencial de alecrim (*Rosmarinus officinalis* L.) como modulador da resistência bacteriana. Ciências Agrárias, 33 (2): 687-696, 2012.
- 11 - SENHORINI, G.A. et al. Microparticles of poly(hydroxybutyrate-co-hydroxyvalerate) loaded with andiroba oil: Preparation and characterization. Materials Science and Engineering C, 32: 1121-1126, 2012.
- 12 - SRITABUTRA, D. et al. Evaluation of herbal essential oil as repellents against *Aedes aegypti* (L.) and *Anopheles dirus* Peyton & Harrison. Asian Pacific Journal of Tropical Biomedicine, S124- S128, 2011.
- 13 - THORSELL, W. et al. Efficacy of plant extracts and oils as mosquito repellents. Phytomedicine, 5(4): 311-323, 1998.

Regulatory Information

Physical-Chemical Information

INCI NAME CAS NUMBER

| | |
|---------------------------------|------------|
| AQUA | 7732-18-5 |
| CYMOPOGON WINTERIANUS HERB OIL | 91771-61-8 |
| OLEIC ACID | 112-80-1 |
| STEARIC ACID | 57-11-4 |
| SORBITAN OLEATE | 1338-43-8 |
| POLYSORBATE 80 | 9005-65-6 |
| ROSMARINUS OFFICINALIS LEAF OIL | 84604-14-8 |
| PPG-15 STEARYL ETHER | 25231-21-4 |
| STEARETH-2 | 9005-00-9 |
| STEARETH-21 | 9005-00-9 |
| POTASSIUM CETYL PHOSPHATE | 84861-79-0 |
| PHENOXYETHANOL | 122-99-6 |
| CAPRYLYL GLYCOL | 1117-86-8 |
| HYDROXYPROPYL GUAR | 68442-94-4 |
| BHT | 128-37-0 |

PHYSICAL STATE

LIQUID

FORM

MILKY

COLOR

WHITE TO CREAM

ODOR

CHARACTERISTIC

pH

3.0 TO 6.0

SOLUBILITY

WATER DISPERSIBLE

RELATIVE DENSITY

0.9 TO 1.1 g/ml

CHEMICAL IDENTITY

ORGANIC

CHARACTERIZATION

BLEND

*As it contains natural active ingredients, the product may change in color and odor.



STORAGE:

KEEP AT ROOM TEMPERATURE, AROUND 25°C.



COMPATIBILITY:

EMULSIONS O/W AND W/O TO 25%. IN ENAMELS UP TO 5%.



INCOMPATIBILITY:

ETHANOL AND OTHER ORGANIC SOLVENTS.

Approved by International Regulations:



Brazil - Anvisa



China - IECIC



Europe - EC Cosing

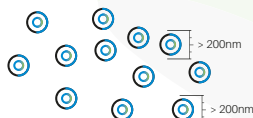


USA - CIR



Australia - AICS Inventor

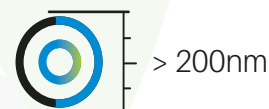
Nanovetores Encapsulation Technology



Monodispersity, that ensures control of the particle size, providing adequate permeation to its proposed action.



Enzymatic Specific Trigger Release, where enzymes present on the skin disintegrate particles, releasing the active ingredient specifically.



Secure particles larger than 200nm, biocompatible and biodegradable.



Active Ingredient Protection against oxidation resulted from interaction with external environment and other components of the cosmetic formulation.



Water Base. Active ingredients are manufactured without the use of organic solvents, ensuring safety for users and the environment.

Use Encapsulated Active Ingredients and Ensure:

Stability Improvement

Increased compability in the formulation

Occlusion of odors

Reduced dose

Use of sensitive active ingredients (without refrigeration)

Increased Solubility

Prolonged release

Increased effectiveness



nanovetores
INOVANDO NATURALMENTE