



NANO ICARIDINA BODY CARE

Active: Icaridin

Characteristics

Aspect: White to cream

Milky liquid.

Concentration of use: 25%.

Stability pH: 5.0 to 7.0.

Benefits

- Long-lasting repellent action
- Nanotechnological product
- Dose reduction
- Comfort of use

Application

Creams, lotions, emulsions, gels and body sprays.

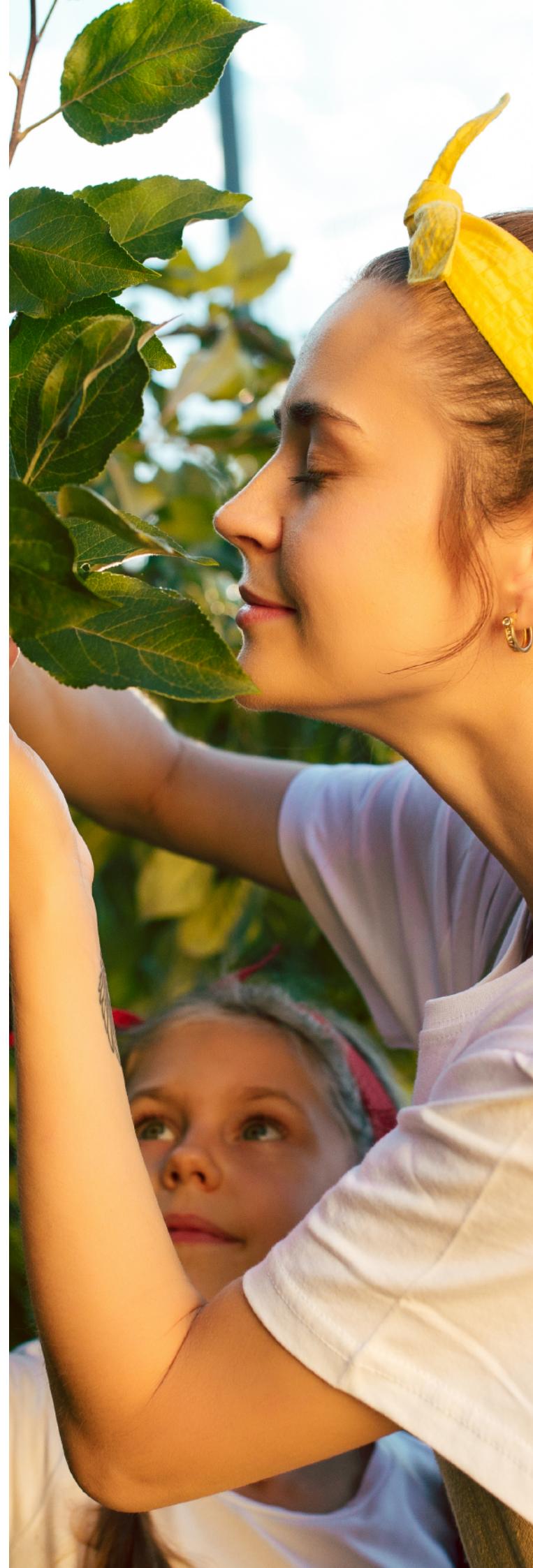


Nanolcaridina is an active encapsulated in lipid nanoparticles, with a particle diameter greater than 600 nm. The encapsulation of the active through the technology developed by Nanovetores allows the stabilization of sensitive and complex components to be formulated and a longer durability of its properties. Studies have shown that Icaridin can be used safely in children and pregnant women. The use of the product promotes mosquito repellency in general and is highly effective against Aedes aegypti, which transmits Zika, Dengue and Chikungunya.

Description

The active ingredient Icaridin is derived from pepper and stands out in the market for its repellency potential against Aedes aegypti, and may have up to 2 times more potency than other active ingredients used in the market ⁽¹⁾. Aedes aegypti is the mosquito that transmits the virus that causes Dengue, Zika and Chikungunya, serious diseases that can cause microcephaly and even death ^(2,3). The use of Icaridin is not restricted to a single group, being possible to use it by children and even women during pregnancy ^(2,3).

Nanolcaridina is an active encapsulated in lipid nanoparticles, in order to improve the performance and durability of the active repellent action on the skin in an effective and safe way.



Icaridin

The active Icaridin in the free form applied at a concentration of 10% provides protection for a period of 3 to 5 hours, and at a concentration of 20%, it protects for 8 to 10 hours⁽⁴⁾. Nanovetores encapsulation technology allows an increase in the time of repellent action using reduced concentrations. Clinical tests performed with a formulation containing only 5.5% Icaridin conferred a repellent action against insects for a period of up to 8 hours.

The product also did not induce significant or persistent adverse clinical reactions in any volunteer during the study period, being considered safe for both adults and children from 6 months.



Efficacy Test

Test 1: Nanolcaridina has been clinically tested for its repellent action against insects in a suitable laboratory.

Evaluated Product: Nanolcaridina in Ultra Fluid Nanostructured Base.

Methodology

The methodology used to evaluate the repellent effect of products or equipment usually comes down to the introduction of the hand of a volunteer impregnated with the product or the hand holding

the repellent equipment inside a cage with a high number of mosquitoes, with a test time that may vary, and at the end, is carried out the count of the bites or species attracted.

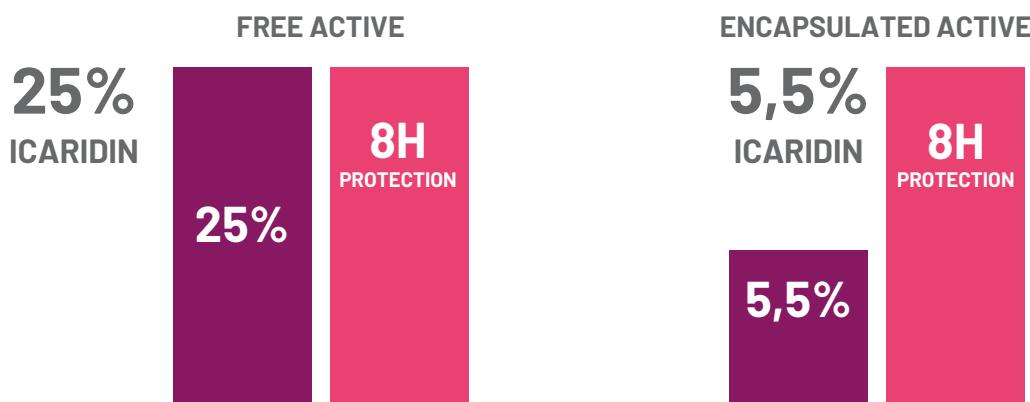
Results

The product Nanolcaridina in Ultra Fluid Nanostructured Base showed 100% repellency against mosquitoes of the Anopheles species, An. Albimanus and Culex species Quinquefasciatus, for 480 minutes after its application, and 100% repellency for 360 minutes for

the Aedes aegypti species Culicidae according to the methodology EPA - Insect Repellents to be Applied to Human Skin - Product Performance Test Guidelines - OPPTS 810.3700 - EPA Environmental Protection Agency 712 - C-10-001 July 7, 2010.

Test 2: Comparative study between the use of icaridin in its free and encapsulated form, the results are shown in Graph 1.

Evaluated Product: Free Icaridin x Encapsulated Icaridin.



Graph 1: Comparative graph of dose reduction and repellent action for 8 hours. **Source:** Nanovetores.

Conclusion:

It was concluded that 5.5% of encapsulated icaridin is equivalent to 25% of free icaridin to guarantee 8 hours of repellency against mosquitoes of the Anopheles species An. Albimanus and Culex species Quinquefasciatus, that is, evaluating the concentration evaluating the concentration of the active used in

the free form and encapsulated, for the same protection, there was a drastic 4.5 fold reduction in the dose of icaridin. Nanovetores encapsulation technology allows dose reduction with the same efficiency in repellency results, promoting more comfort of use and safety for the user (use allowed from 6 months of age).

Suggested Formula

Spray with Nanolcaridina 25%

PHASE I %	PHASE II %
Nanolcaridina.....25%	Nanostrucutre ultra fluid base.....75%

1- Add phase I gradually on phase II and mix.

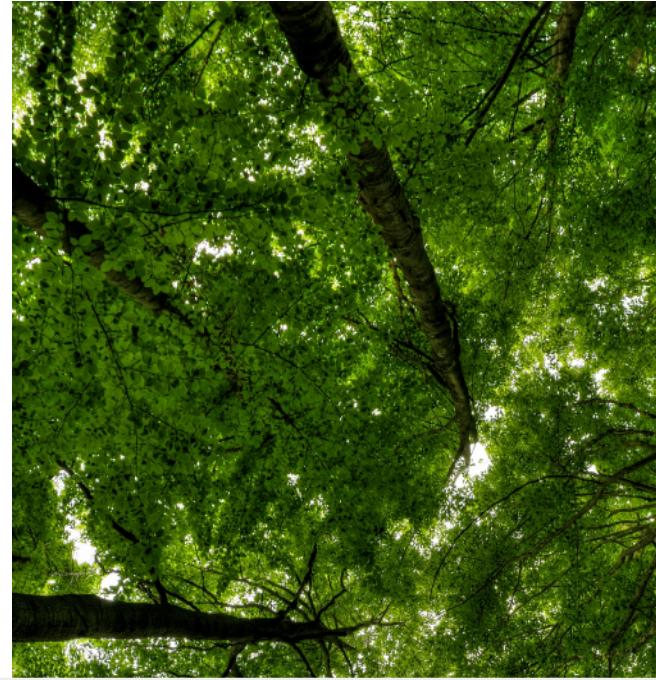
Mode of Use

1. Apply the spray to clean, dry skin, pressing the applicator at a distance of approximately 15 cm from the area you wish to protect, in sufficient quantity to obtain a good coverage.
2. Spread the area with your hands until the product is completely absorbed.



Regulatory Information

INCI Name	Cas Number
AQUA	7732-18-5
HYDROXYETHYL ISOBUTYL PIPERIDINE CARBOXYLATE	119515-38-7
OLEIC ACID	112-80-1
PPG-15 STEARYL ETHER	25231-21-4
STEARIC ACID	57-11-4
POLYSORBATE 80	9005-65-6
STEARETH-2	9005-00-9
BEHENIC ACID	112-85-6
POLOXAMER 407	9003-11-6
STEARETH-21	9005-00-9
PHENOXYETHANOL	122-99-6
PALMITIC ACID	57-10-3
CAPRYLYL GLYCOL	1117-86-8
BHT	128-37-0



Marketing Appeals

- High performance in repellency;
- Less dose, more effectiveness;
- Long-lasting;
- Zero alcohol;
- Safety: use permitted for children from 6 months and pregnant women;
- Non-greasy sensory;
- Comfort of use;

Approved in international regulations:



China - IECIC

Europa - EC Cosing



USA - CIR

Australia - AICS Inventor



Physical - Chemical Information

Aspect	Milky Liquid
Color	White to Cream
Olor	Characteristic
pH	5,0 to 7,0
Dispersibility	Dispersion of encapsulated actives in water
Relative Density	0,9 to 1,1 g/mL
Characterization	Blend

* As it contains natural actives, the product may undergo changes in color and odor.

Storage

Keep at a temperature of around 25 ° C.

Incompatibility

Ethanol and other organic solvents.



Our production process is based on Green Chemistry, being water-based and free of organic solvents, totally sustainable. We do not generate waste that could be harmful to users or the environment



We do not test on animals. All tests are conducted in trustworthy laboratories with human volunteers.



Essential oils, Vitamins, Acids and Natural Extracts are highly oxidative substances that degrade quickly and react constantly with the medium and other cosmetic compounds (light, oxygen, packaging, preservatives, fragrances, surfactants, etc.). By encapsulating it, we guarantee the stability of the active ingredients and protect them from potential reactions with the formulation or the environment.

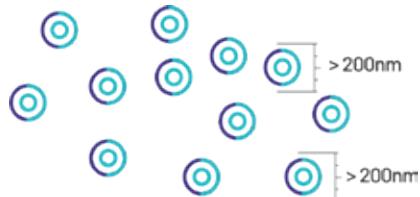
Bibliographic References

- 1.** BADOLO, A.; ILBOUDO-SANOGO, E.; OUÉDRAOGO, A. P.; CONSTANTINI, C. Evaluation of the sensitivity of *Aedes aegypti* and *Anopheles gambiae* complex mosquitoes to two insect repellents: DEET and KBR 3023. *Trop Med Int Health*; 9:330-4, 2004.
- 2.** CDC. Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Vector-Borne Diseases (DVBD).
- 3.** STEFANI G. P.; PASTORINO A. C.; CASTRO A. P. B. M.; FOMIN A. B. F.; JACOB C. M. A. Repelentes de insetos: recomendações para uso em crianças. *Rev Paul Pediatr.* V.27, nº1, p.81-9, 2009.
- 4.** BAYREPEL. The new active ingredient in AUTANâð. Disponível em: http://www.autan.com/nqcontent.cfm?a_name=Info.

Nanovetores Encapsulation Technology



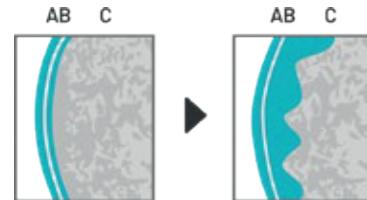
Active Ingredient Protection against oxidation resulted from interaction with external environment and other components of the cosmetic formulation.



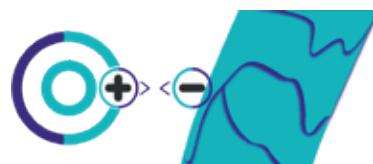
Monodispersity, that ensures control of the particle size, providing adequate permeation to its proposed action.



Secure particles larger than 200nm, biocompatible and biodegradable.



Greater Permeation on the contact surface due to the small size of the capsule.



Surface Charge Control of the particle, promoting greater affinity with the contact surface.



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 compatibility in the formulation
- Occlusion of odors
- Increased skin permeation
- Reduced dose
- Use of sensitive active ingredients (without refrigeration)
- Increased Solubility
- Prolonged release
- Increased effectiveness



Nanovetores Tecnologia S.A.

Sapiens Parque - InovaLab. Av. Luiz Boiteux Piazza, 1302
Cachoeira do Bom Jesus, Florianópolis - SC, 88056-000

Tel.: +55 (48) 3205-6262 | Cel.: +55 (48) 9664-0099
[contato@nanovetores.com.br](mailto: contato@nanovetores.com.br) | nanovetores.com.br



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