



# nv caffeine

## Improved Microcirculation

**Active ingredient:** Caffeine.

NV Caffeine is an active ingredient encapsulated in biopolymeric capsules with a particle diameter greater than 200nm. The encapsulation of the caffeine through the technology developed by Nanovetores allows the stabilization of sensitive and complex components to be formulated in its free form. NV Caffeine can be used daily granting, in continuous applications, promotion of lipolysis with significant improvement in microcirculation, the appearance of cellulite and periorbital hyperpigmentation (dark circles).



### Características

**Appearance:** Colorless to slightly yellowish transparent liquid.

**Usage Concentration:** up to 10%

**Stability pH:** 4.0 to 8.0

**Dispersibility:** Dispersion of actives encapsulated in water.

**Particle:** Biopolymer

**Release Trigger:** Enzyme



### Benefits

- Improved appearance and skin firmness;
- Improved microcirculation;
- Reduction of measures;
- Lipolytic action
- Helps in the reduction of dark circles;



### Usage

- Creams, lotions, emulsions, serums, gels and body sprays.

## Description

Gynoid lipodystrophy, commonly known as cellulite, is a change in fatty tissue with the appearance of deformations in the skin similar to the "orange peel" aspect.

This aesthetic dysfunction can occur in any region of the body, however, it is more frequent in the region of the glutes, thighs and abdomen, affecting mainly the female population after puberty. <sup>(1)</sup>

Caffeine is an alkaloid from the group of methylxanthines, substances that are characterized by being agents that reduce lipogenesis and promote lipolysis. In addition to having an astringent action, promoting cleanliness and skin balance, caffeine is regenerative and improves blood microcirculation. <sup>(2,3,4)</sup>

The lipolytic action of caffeine is due to the mobilization of free fatty acids from tissues or intramuscular stores. It works by inhibiting the phosphodiesterase enzyme in addition to antagonizing adenosine receptors, thereby increasing levels of cyclic adenosine monophosphate (cAMP), promoting lipolysis and, consequently, reducing measures. <sup>(2-6)</sup> In addition, caffeine also stimulates fibroblasts for the synthesis of collagen and other components of the extracellular matrix, causing an increase in skin firmness. <sup>(7)</sup>

The skin on the eyelids is very thin and is an area abundantly irrigated by blood vessels. It is common to have a dark and swollen appearance that is triggered by several factors, such as hereditary and poor blood circulation. Caffeine has a vasoconstrictive action and is rich in antioxidants that help fight inflammation and free radicals. In this way, caffeine encapsulated by Nanovetores, with greater stability and permeation power, can penetrate the skin more effectively, minimizing the aging process by stimulating cell regeneration, activating blood circulation and decreasing edema and pigmentation. These effects can be further enhanced if combined with other antioxidant actives, maximizing their benefits and improving the appearance and texture of the skin. <sup>(8, 9, 10)</sup>

## Regulatory Information

INCI NAME	CAS NUMBER
AQUA	7732-18-5
CAFFEINE	58-08-2
SODIUM BENZOATE	532-32-1
PHENOXYETHANOL	122-99-6
CAPRYLYL GLYCOL	1117-86-8
ALGIN	9005-38-3
CALCIUM CHLORIDE	10043-52-4

## Physical-Chemical Information

PHYSICAL STATE	LIQUID
FORM	COLORLESS
COLOR	COLORLESS TO SLIGHTLY YELLOWISH LIQUID.
ODOR	CHARACTERISTIC
pH	6,0 - 8,0
DISPERSIBILITY	DISPERSION OF ACTIVES ENCAPSULATED IN WATER.
RELATIVE DENSITY	0,9 A 1,1 g/ML
CHARACTERIZATION	BLEND

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



### STORAGE:

KEEP AT ROOM TEMPERATURE BETWEEN 20 AND 25 °C.



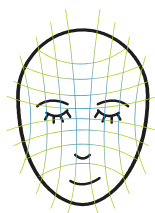
### INCOMPATIBILITY:

ETHANOL AND OTHER ORGANIC SOLVENTS

## References

1. LUPI, O.; et al. Evaluation of the effects of caffeine in the microcirculation and edema on thighs and buttocks using the orthogonal polarization spectral imaging and clinical parameters. Journal of Cosmetic Dermatology, v. 6, n. 2, p. 102-107, 2007.
2. HEXSEL, D.; SOIREFMANN, M. Cosmeceuticals for cellulite. Semin Cutan Med Surg; 30 (3): 167-170, 2011.
3. RAWLINGS, A.V. Cellulite and its treatment. Int J Cosmet Sci; 28 (3): 175-190, 2006.
4. HEXSEL, D.; ORLANDI, C.; ZECHMEISTER DO PRADO, D. Botanical extracts used in the treatment of cellulite. Dermatologic Surg; 31 (7 Pt 2): 866-872, 2005.
5. TERRA, R. S.; MININ, M. M.; CHORILLI, M. Desenvolvimento e avaliação da estabilidade físicoquímica de formulação anticelulítica acrescida de lipossomas contendo sinefrina e cafeína. Rev Bras Farm., v. 90, n. 4, p. 303-308, 2009.
6. RANG & DALE. Farmacologia. 6. ed. Rio de Janeiro: Elsevier, p. 57, 612, 615 e 620, 2007.
7. PESSOA, R. B. et al. Ling. Acadêmica, Batatais, v. 8, n. 2, p. 39-57, 2018.
8. BUCAY, V. W.; DAY, D. Adjunctive skin care of the brow and periorbital region. Clin Plast Surg, 40(1), 225-236, 2013.
9. VRCEK, I.; OZGUR, O.; NAKRA, T. Infraorbital Dark Circles: A Review of the Pathogenesis, Evaluation and Tratament, Journal of Cutaneous and Aesthetic Surgery, 9(2), 65-72, 2016.
10. AMNUAIKIT, T.; MANEENUAN, D.; BOONME, P. Evaluation of caffeine gels on physicochemical characteristics and in vivo efficacy in reducing puffy eyes. J Appl Pharm Sci. 2011;1:56.

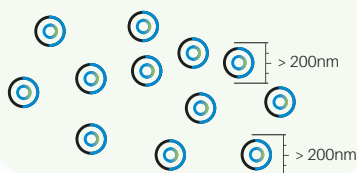
# Nanovetores Encapsulation Technology



**Multifunctional Biopolymer Particles** that promote skin firmness.



**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.



**Enzymatic Specific Release Trigger**, where enzymes present on the skin disintegrate particles, releasing the active ingredient specifically where it needs to act.

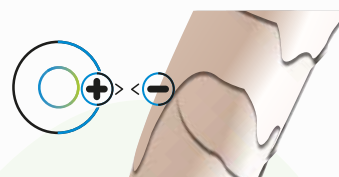


Active ingredient deposition when applied in free form



Greater permeation of the active ingredient when encapsulated

**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 compability in the formulation

Occlusion of odors

Increased skin permeation

Reduced dose

Use of sensitive active ingredients (without refrigeration)

Increased Solubility

Prolonged release

Increased effectiveness