

TECHNICAL DATA SHEET

Product Name: Standardized Rosemary Leaf Extract Powder – Carnosic Acid 10%

INCI Name: Rosmarinus Officinalis (Rosemary) Leaf Extract

CAS: 84604-14-8

Synonyms: Rosemary Leaf Extract; Rosemary Extract; Rosmarinus Officinalis Leaf Extract; Rosemary Carnosic Acid Extract; Carnosic Acid 10% Rosemary Extract

Product Quality: Standardized rosemary leaf extract containing 10% carnosic acid

IUPAC Name: Not applicable to the extract as a whole, as it represents a complex mixture of plant-derived compounds. The IUPAC name of the standardized component, carnosic acid, is (4aR,10aS)-5,6-dihydroxy-1,1-dimethyl-7-propan-2-yl-2,3,4,9,10,10a-hexahydrophenanthrene-4a-carboxylic acid. The CAS number of carnosic acid is 3650-09-7, and its molecular formula is C₂₀H₂₈O₄.

Description: Standardized Rosemary Leaf Extract Powder is a concentrated botanical raw material obtained from the leaves of rosemary (*Rosmarinus officinalis* L.), standardized to 10% carnosic acid. Carnosic acid is one of the most important lipophilic phenolic diterpenes naturally occurring in rosemary and, together with carnosol, represents a significant part of its antioxidant fraction. The extract may also naturally contain rosmarinic acid, ursolic acid, flavonoids and other phenolic compounds, with their relative content depending on the extraction and standardization process. It is characterized by pronounced antioxidant and protective properties and is particularly suitable for formulations intended to protect the skin and cosmetic oils from oxidative processes. Fine powder, typically greenish-brown, yellowish-brown to brown in colour, with a characteristic herbal rosemary odour. Standardized to contain at least 10% carnosic acid. Unlike rosmarinic acid, carnosic acid is considerably more lipophilic and poorly soluble in water, meaning that extracts standardized to this component do not behave like conventional water-soluble botanical extracts. Its limited solubility is a known technological characteristic and may be improved by the use of suitable carriers or complexation systems. The exact solubility of the complete extract, however, depends on the carrier and the manufacturing process of the specific product.

Bioactive Compounds: The main standardized component is carnosic acid, an abie-

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tane-type phenolic diterpene characteristic of rosemary. Its molecular structure contains a catechol group that enables efficient free-radical scavenging, making it one of the most important lipophilic antioxidants in rosemary. Carnosic acid is particularly significant in protecting lipid structures against oxidation, while studies on skin cells have also demonstrated its ability to reduce UV-induced expression of matrix metalloproteinases associated with extracellular matrix degradation. Carnosol is a structurally related phenolic diterpene and one of the characteristic accompanying constituents of rosemary extract. It may also be formed through the oxidative transformation of carnosic acid and, together with carnosic acid, significantly contributes to the overall antioxidant capacity of the extract. Rosmarinic acid is a more hydrophilic polyphenol characteristic of rosemary and other plants of the Lamiaceae family. Due to its phenolic structure, it contributes to the neutralization of reactive oxygen species and complements the antioxidant activity of lipophilic diterpenes. In rosemary extracts, carnosic acid, carnosol and rosmarinic acid are among the most significant bioactive components. The accompanying fraction may include ursolic acid, oleanolic acid and various flavonoids, although their content is not the same in all standardized extracts. The extraction process significantly determines the chemical profile of the product, meaning that an extract standardized to carnosic acid may have a substantially different composition from an extract standardized to rosmarinic acid or ursolic acid.

Benefits

- Strong antioxidant activity – helps neutralize free radicals and protect the skin from oxidative stress.
- Protection against premature skin ageing – helps maintain the structure and healthy appearance of skin exposed to oxidative and UV-related stressors.
- Support for collagen preservation – carnosic acid may help reduce processes associated with UV-induced degradation of the extracellular matrix.
- Soothing effect – carnosic acid shows potential to modulate inflammatory processes in the skin.
- Protection of the lipid phase of formulations – lipophilic rosemary antioxidants help slow oxidative changes in lipid components.

Directions for Use: Standardized rosemary leaf extract containing 10% carnosic acid should primarily be considered a more lipophilic botanical extract rather than a conventional water-soluble extract. Carnosic acid has limited solubility in water, so direct addi-

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tion of the powder to the aqueous phase may result in incomplete dissolution, cloudiness or sedimentation. If the extract is not water-soluble, pre-dissolution or dispersion in a suitable oil phase or compatible cosmetic solvent is recommended, depending on the composition and carrier of the specific extract. In emulsions, it may be incorporated through the lipid phase, while aqueous serums and toners require an appropriate solubilization or dispersion system. Ethanol and certain organic solvents may increase the solubility of carnosic acid, but their selection must be adapted to the final cosmetic formulation. For facial serums and emulsions, a practical starting range for an extract standardized in this way is approximately 0.1–0.5%, while approximately 0.2–1.0% may be used in more intensive antioxidant and anti-age formulations. In creams, balms and lipid-rich products, a suitable starting level is 0.1–0.5%, while lower concentrations of approximately 0.05–0.2% may be used in formulations intended primarily for antioxidant protection of the oil phase. For hair and scalp products, approximately 0.1–0.5% may be considered. These values represent formulation guidelines. Due to the oxidative sensitivity of phenolic diterpenes, unnecessarily prolonged heating should be avoided, and the extract should be incorporated as late as possible in the manufacturing process when the formulation technology allows. The formulation should be protected from intense light and prolonged exposure to air.

Animal Testing: In accordance with current European legislation (Regulation (EC) No 1223/2009 on cosmetic products), the substance has not been tested on animals. The safety assessment of the raw material is based on available toxicological data, scientific literature and validated alternative testing methods (in vitro and in silico). In silico is a term used for testing and assessment methods carried out using computer models and simulations, rather than in laboratories on living organisms (in vivo) or on cell cultures (in vitro). This statement confirms compliance with the ban on animal testing and is provided solely for informational purposes regarding the further use of the raw material in cosmetic formulations.

GMO: Non-GMO

Vegan: Does not contain components of animal origin

Country of Origin: China

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