



Roseroot (*Rhodiola rosea* L.) Plant Stem Cell Extract

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Roseroot a Potent Medicinal Plant

Roseroot (*Rhodiola rosea* L.), also called golden root or arctic root, is a perennial plant with succulent leaves, yellow flowers and thick rhizomes. The plant originates from Russia (South Siberia) and is distributed in cold temperate or subarctic areas in the Northern hemisphere^{1, 2}. The name roseroot originates from the rose like scent that the rhizomes spread when they are divided^{1, 3}.

The rhizomes from roseroot have since long been used as an adaptogen within traditional medicine. It was described during the 1st century AD by the Greek physician Dioscorides and was used by the Vikings for strength and endurance. The plant is used to increase physical and mental performance, as well as to counteract tiredness, stress and depression^{1, 4}. It also holds anti-inflammatory, antioxidant and cardiovascular protective properties^{1, 4}. Roseroot also has a positive effect on sensitive skin and improves overall skin condition⁵.

New Production of Extract

In vitro Plant-tech is producing plant extracts by sustainable bioreactor based cultivation of plant cells. This production method does not deplete the natural populations and uses less water than field cultivation. Furthermore, bioreactor based cultivation enables production of uniform, high quality plant material, free from pests, hazardous chemicals and unwanted plant species.

* DPPH assay, is a spectrophotometric analysis method based on reduction of the colorimetric 2,2'-diphenyl-1-picrylhydrazyl (DPPH) reagent.

** Scavenging activity of the extract is correlated with the antioxidant activity and is quantified as EC50. EC50 value refers to how many mg extract that is required for a 50% decrease in absorbance of a DPPH solution.

Plant Stem Cell Extracts

Our extracts are derived from plant stem cells. A plant stem cell is an undifferentiated precursor cell (callus cell), which has not yet started to differentiate. Our plant stem cells are produced in bioreactors under controlled laboratory conditions, resulting in high quality products. The extracts originating from plant stem cells are becoming increasingly popular to use as an active ingredient, especially within cosmetics. An active ingredient has a biological beneficial effect. The substances produced will vary between plant species and within different organs of the plant. By selecting plant stem cell extracts and materials from plants which have a traditional beneficial use within wound healing, skin care and/or as health supplements, we believe that the beneficial effect of the plant stem cell technology can be even greater.

Antioxidant Properties

We are confirming the antioxidant activity of our plant stem cell extracts using the DPPH* assay. Through this method the free radical scavenging ability of a given substance is determined. We standardize our extracts to the total phenolic content and scavenging activity**.

The metabolic profile of our extract is verified by HPLC*** to assure the highest quality and reproducible composition of our products.

*** HPLC (high performance liquid chromatography) is a powerful analysis methods allowing separation, characterization and quantification of organic molecules and ions.

¹ Ampong-Nyarko (2010), AGRI-FACTS, Agdex 188/20-2.

² Galambosi (2006), Medicinal and Aromatic Plants, 223–236.

³ Diermen et al. (2009), J. Ethnopharmacol., 122, 397–401.

⁴ Panossian et al. (2010), Phytomedicine, 17, 481–493.

⁵ de Campos Dieamant et al.(2008), J. Cosmet. Dermatol., 7, 112–119.

⁶ Brand-Williams et al. (1995), Food Sci. Technol., 28, 25–30.



In vitro cultivated *Rhodiola rosea*

PRODUCT SPECIFICATION

INCI: Rhodiola Rosea Callus Extract

Botanical name: *Rhodiola rosea* L.

Description: Extract obtained from *in vitro* produced roseroot plant stem cells

Plant part used: Plant stem cell (undifferentiated cell)

Extraction solvent: Ethanol/water

Composition: 10% dried natural extract in glycerol OR maltodextrin

Appearance: viscous liquid OR powder

Country of origin: Sweden

CONTACT INFORMATION

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