



Rhodiola: *Rhodiola rosea*, Artic root, Golden root

Common Indications:

- Adaptogen/Adrenal stress
- Immunoprotection
- Fatigue
- Improving Cognition
- Depression
- Antioxidant

General Comments:

Rhodiola has a long history of use throughout Russia and China as an adaptogen and as an element for sports performance enhancement. It has shown itself to be an aid in supporting resilience, stress management, and enhancing mental and physical work capacity. Its actions have been used to fight stress induced depression, support nervous and immune system function, and even use in prevention of high altitude sickness.^{1,2,3,4,5,6,7,8,9}

Benefits & Mechanism of Action:

Adaptogen/Anxiety

The activity of neurotransmitters such as serotonin, dopamine, and norepinephrine have been reportedly influence by use of Rhodiola. There is an adaptogenic effect that appears cardio protective and stabilizes central nervous system activities, possibly thru its impact on heat shock proteins.^{10,11,12,13,14,15,16} It is believed the changes in monoamine levels are due to inhibition of the activity of enzymes responsible for monoamine degradation and facilitation of neurotransmitter transport within the brain.

A clinical study found that an extract of rhodiola significantly improved generalized anxiety disorder symptoms, with a reduction in HARS scores similar to that found in clinical trials.¹⁷ When administered to physicians, supplementation of rhodiola favorably influenced fatigue and mental performance during the first two weeks on night duty.¹⁸

In addition to these central effects, rhodiola has been reported to prevent both catecholamine release and subsequent cyclic AMP elevation in the myocardium, and the depletion of adrenal catecholamines induced by acute stress.^{19,20,21} Rhodiola's adaptogenic activity might also be secondary to induction of opioid peptide biosynthesis

and through the activation of both central and peripheral opioid receptors.²²

Immunoprotection

Rhodiola may also help improve immune function through regulation of IL-2 in Th1 cells and IL-4, IL-6, IL-10 in Th2 cells.^{23,24}

Fatigue

A 2009 phase III clinical trial found that a standardized rhodiola extract had anti-fatigue activity that increases mental performance, particularly the ability to concentrate, and decreases cortisol response to awakening stress in burnout patients with fatigue syndrome.²⁵

Improving Cognition

Rhodiola extract initiates the release of monoamine neurotransmitters. This activates the cerebral cortex and limbic system. This activation improves cognitive function, memory, attention, and learning. An extract of rhodiola in combination with vitamins/minerals was administered to 120 adults aged 50-89 years and reported to improve cognition in 81% of patients.^{26,27}

Depression

A review of the clinical studies supporting the effectiveness of rhodiola supplements was conducted in 2011. Eleven randomized, placebo-controlled human studies were investigated. It was found that rhodiola supplements may have beneficial effects on physical performance, mental performance, and mental health conditions like depression.^{28,29} The authors concluded that more research seems warranted.

A 2012 systematic review supported the antidepressant effects of *Rhodiola rosea*.³⁰ A 2015 phase II randomized placebo controlled trial found that rhodiola may be a potential treatment alternative for patients with mild to moderate depression who are intolerant to the adverse effects of conventional antidepressants.³¹

Students receiving a standardized extract of rhodiola demonstrated significant improvements in physical fitness, psychomotor function, mental performance, and general well being. Subjects receiving the rhodiola extract also reported statistically significant reductions in mental fatigue, improved sleep patterns, a reduced need for sleep, greater mood stability, and a greater motivation to study.³²

Antioxidant

In human and animal studies, rhodiola extract reduced oxidative stress and increased endogenous antioxidant production. It also protects human erythrocytes from glutathione depletion and glyceraldehyde-3-phosphate dehydrogenase

inactivation.^{33,34,35,36}

Dose: 100-300mg, 1-3 times daily

Standardization: Rhodiola should be standardized to contain at least 3% rosavins and 1% salidroside.

Cautions & Side Effects: Rhodiola has been reported to be safe in recommended doses.

Symptoms that may indicate acute toxicity include:

- Insomnia
- Irritability
- Fatigue
- Headache

Rhodiola rosea is a mild stimulant, with no addictive potential, and should be taken in the morning to avoid sleep problems.

It may induce temporary vivid dreams and mild nausea.³⁷

Medication interactions

Medications with increased effects while taking rhodiola include:

- Adriamycin - reduced toxicity
- Cyclophosphamide
- Antidepressants
- P-glycoprotein substrates
- Cytochrome 3A4 substrates
- Losartan

Patients with the following disease states or conditions should not use rhodiola:

- Bipolar depression

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General Comments

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Adaptogen/Adrenal stress

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Immunoprotection

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Improving Cognition

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Cautions & Side Effects

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