RE: Rhodiola Supplementation Benefits Stress-induced Conditions


Rhodiola (*Rhodiola rosea, Crassulaceae*) is a yellow-flowered herbaceous perennial that naturally grows at high altitudes in harsh conditions of the Arctic regions of Europe and high-altitude regions of Asia and the eastern coastal regions of North America. It is an adaptogenic herb that enhances the body’s resistance to stress in nonspecific ways. In this way, rhodiola may offer protective benefits against conditions associated with stress, such as depression, cardiovascular disease, and nervous system disorders. This article aims to review the clinical efficacy of rhodiola preparations in managing various aspects of stress-induced conditions.

At least 140 compounds have been isolated from rhodiola. Among them, salidroside (rhodioloside), the trans-cinnamyl alcohol glycoside compounds (rhodiolin, rosin, rosavin, rosarin, and rosiridin), and tyrosol are the primary bioactive compounds and thought to be responsible for the herb’s pharmacological effects.

The adaptogenic properties of rhodiola may be useful for conditions associated with asthenia and mental fatigue. Several studies using standardized extracts of rhodiola in doses ranging from 100 to 660 mg supplemented daily for one to eight weeks have demonstrated reductions in mental fatigue, stress and burnout symptoms, and improved sleep patterns in various populations, including medical practitioners, college students, cadets, and people experiencing life-stress symptoms. These effects are primarily attributed to rhodiola’s capacity to influence levels and activity of the stress-response system and its components, including monoamine neurotransmitters such as serotonin and catecholamines, and opioid peptides such as β-endorphins.

Encouraging results suggest a role of rhodiola preparations for managing mild-to-moderate depression and generalized anxiety by hindering physiological stress responsivity. Rhodiola also modulates the expression and release of neuropeptide-Y in neuroglial cells, which controls genes involved with behavior and mood and is associated with key mediators of the stress response. Additionally, rhodiola has been shown to act as a monoamine oxidase inhibitor. To these effects, rhodiola preparations
have been shown to improve anxiety- and depression-related symptoms in doses ranging from 340 mg to 680 mg supplemented daily for two to 12 weeks.

Rhodiola has a long history of use for improving physical work capacity and physical stress endurance. As such, rhodiola may have ergogenic benefits for athletes to enhance exercise performance and recovery through actions related to energy storage and production. In doses ranging from 600 mg 2,000 mg daily for three days to 12 weeks Rhodiola has been shown to increase various measures of exercise performance, including time to fatigue, work capacity, and strength. Other studies have demonstrated an acute performance-enhancing effect of rhodiola when taken in a single dose before exercise.

The potential cardioprotective effects of rhodiola have been investigated in preclinical trials, which have demonstrated anti-arrhythmic, hypotensive, and antisclerotic effects. Clinical trials have shown that rhodiola increases total antioxidant capacity and decreases creatine kinase and C-reactive protein in response to exhausting exercise. Preclinical studies have also investigated the reproductive effects of rhodiola since stress is an overlooked obstacle to fertility. One clinical study showed that rhodiola preparations (100 mg of dried rhodiola extract twice daily for 14 days, or 1 mL liquid rhodiola extract intramuscularly for 10 days) restored menstrual cycles in 63% of amenorrheic cases, 44% resulting in pregnancy. Additionally, 150-200 mg of rhodiola extract supplemented for three months was shown to improve sexual function, normalize prostatic fluid, and increase urinary 17-ketosteroids (suggesting increased androgen production) in 26 of 35 cases of chronic erectile dysfunction, premature ejaculation, or both.

This review demonstrates the utility of rhodiola for managing various stress-related conditions and factors related to asthenia, mental fatigue, depression, anxiety, and exercise performance. Preclinical and limited clinical trials have also demonstrated cardioprotective and fertility benefits with rhodiola preparations. The authors report no conflicts of interest.

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