

# Stimulating Effect of Adaptogens: An Overview With Particular Reference to Their Efficacy Following Single Dose Administration

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## Abstract

Plant adaptogens are compounds that increase the ability of an organism to adapt to environmental factors and to avoid damage from such factors. The beneficial effects of multi-dose administration of adaptogens are mainly associated with the hypothalamic-pituitary-adrenal (HPA) axis, a part of the stress-system that is believed to play a primary role in the reactions of the body to repeated stress and adaptation. In contrast, the single dose application of adaptogens is important in situations that require a rapid response to tension or to a stressful situation. In this case, the effects of the adaptogens are associated with another part of the stress-system, namely, the sympatho-adrenal-system (SAS), that provides a rapid response mechanism mainly to control the acute reaction of the organism to a stressor. This review focuses primarily on the SAS-mediated stimulating effects of single doses of adaptogens derived from *Rhodiola rosea*, *Schizandra chinensis* and *Eleutherococcus senticosus*. The use of these drugs typically generates no side effects, unlike traditional stimulants that possess addiction, tolerance and abuse potential, produce a negative effect on sleep structure, and cause rebound hypersomnolence or 'come down' effects. Furthermore, single administration of these adaptogens effectively increases mental performance and physical working capacity in humans. *R. rosea* is the most active of the three plant adaptogens producing, within 30 min of administration, a stimulating effect that continues for at least 4-6 h. The active principles of the three plants that exhibit single dose stimulating effects are glycosides of phenylpropane- and phenylethane-based phenolic compounds such as salidroside, rosavin, syringin and triandrin, the latter being the most active.

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