



Ginseng - Siberian (*Astragalus membranaceus*)

Common Indications:

- Adaptogen (enhances mental and physical performance, improves learning ability, and decreases stress and fatigue)
- Athletic Performance
- Immune Deficiency
- Chronic Stress
- Chronic Fatigue
- Upper Respiratory Tract Conditions (URTI/Sinusitis and Acute Nonspecific Pneumonia)
- Neuroprotective Effects

General Comments:

Siberian ginseng (*Eleutherococcus senticosus*; *Acanthopanax senticosus*; *Astragalus membranaceus*) is a small, woody shrub that is native to southeastern Russia, northern China, Korea and Japan. It is different from true ginseng (*Panax ginseng*). Traditionally used as an adaptogen to increase a person's ability to adapt to their environment, (i.e. physical and environmental stress).²

Recent studies have shown this compound to have some beneficial effects in the treatment of prostate cancer, cognitive function, immunomodulation, regulation of blood pressure, menopause, and bone diseases.^{2,3}

Benefits & Mechanism of Action:

Mechanism of Action:

Siberian Ginseng is thought to alter the levels of multiple neurotransmitters and hormones that have vital roles in the stress response, mainly at the HPA axis.^{1,3}

Many different mechanisms have been suggested that may involve the hypothalamic pituitary adrenal (HPA) axis, causing decreases or normalizing of nitric oxide (NO) and cortisol. Modulation of the HPA axis may also regulate imbalances related to immunity, hormones, and stress.³

Athletic Performance

In a Russian study, athletes who took either 2 mL or 4 mL of the herb extract had significant increases in overall work performance, including maximal oxygen uptake ($p < 0.01$), oxygen pulse ($p < 0.025$), total work ($p < 0.005$) and exhaustion time ($p < 0.005$).⁵

Immune Deficiency

In a controlled trial, 36 subjects were randomized to receive 10 mL *Eleutherococcus senticosus* root extract or placebo three times daily after meals for one month. After four weeks of therapy, those in the active group had a significant increase in total lymphocyte ($p < 0.0001$), T-helper ($p < 0.00001$), T-suppressor ($p < 0.0001$), natural killer ($p < 0.1$), and B-lymphocyte ($p < 0.05$) cells compared to placebo.⁴

In a Russian study, 838 children were given the fluid extract daily for two months. Compared to patients receiving the placebo, these patients had a 25% increase in T-lymphocytes, a 20% increase in B-lymphocytes, a 10% reduction in overall infections, and a 60% decrease in the incidence of pneumonia.⁴

Chronic Stress

In a double-blind study, 20 men and 25 women between the ages 18-30, were randomized to receive two vials of *Eleutherococcus senticosus* or placebo for 30 days. Patients were subject to the Stroop Colour-Word (Stroop CW) test in order to assess their stress response, along with heart rate, and systolic and diastolic blood pressure, before and after treatment. Those receiving the herb had a 40% reduction in heart rate response to the Stroop CW stressor. Females in the group receiving the *Eleutherococcus* actually showed a 60% reduction in systolic blood pressure response to the cognitive challenge test.⁶

Upper Respiratory Tract Conditions (URTI/Sinusitis and Acute Nonspecific Pneumonia)

Siberian ginseng extract has shown immunological properties, including increasing cellular and humoral activity, the activation and proliferation of immunocompetent cells, and stimulation and inhibition of cytokine synthesis in human research. According to a review, immunomodulating polysaccharides or saponins isolated from Siberian ginseng stimulated macrophages, promoted antibody formation, activated complement, and increased T lymphocyte proliferation.^{2,4}

Neuroprotective effects:

According to a review, Siberian ginseng protects neurons and inhibits brain cell apoptosis. Saponins from Siberian ginseng have been shown to protect against ischemic injury through upregulation of HIF-1 α . In cultured human fibroblasts, AdMax[®] (containing dried ethanol-water extracts from roots of *Leuzea carthamoides*, *Rhodiola rosea*, *Eleutherococcus senticosus*, and fruits of *Schisandra chinensis*) caused significant (at least twofold, $p < 0.05$) upregulation of the *PANK2* gene. If a patient is deficient in their *PANK2* gene activity, it can lead to pantothenate kinase-associated neurodegeneration.²

Dose:

- 1 – 4 g/day dried root or equivalent preparations.¹
- Fluid extract (1:2): 2-8 mL/day (15-55 mL/week).¹
- Tincture (1:5): 10-15 mL/day.¹
- Acute dosing: 4 mL in a single dose before activity.¹

Standardization:

- Dosages of other extracts include the crude extract of the root at a dose of 2-3 g daily and extracts standardized to eleutheroside B and E at a dose of 300-400 mg daily.^{1, 11}

Cautions & Side Effects:

- Precautions:
 - High doses may cause drowsiness, irritability, anxiety, palpitations or tachycardia.¹
 - Avoid high-dose Siberian ginseng in patients with cardiovascular disease of hypertension (diastolic blood pressures higher than 80/90 mmHg).¹
- Drug-Botanical Interactions
 - Research has demonstrated standardized extracts of *E. senticosus* at generally recommended dosages do not significantly alter the metabolism of medications dependent on the cytochrome hepato-detoxification pathways, CYP3A4 or CYP2D6.^{7,11}
 - Warfarin: Ginseng interacts significantly with warfarin; avoid use in patients with heart failure.⁸
 - Other Anticoagulants and Antiplatelet agents – may enhance the risk of bleeding.⁹
 - Nonsteroidal Anti-Inflammatory Agents – may increase adverse effects, including risk for GI bleed.⁹
- Side Effects:
 - Skin irritation¹⁰
 - Headache¹⁰
 - Diarrhea¹⁰
 - Hypertension¹⁰
 - Pericardial pain in rheumatic heart patients¹⁰

References:

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