

Hericum Erinaceus SAP

Science-based hot-water mushroom extract for optimal health and immune support

Hericum Erinaceus SAP is a hot water-extracted mushroom. *Hericum erinaceus* (HE) is also known by its common name, lion's mane. *Hericum erinaceus* has been called "nature's nutrient for the neurons" because of its ability to stimulate production of nerve growth factor (NGF).^[1] NGF plays an important role in both the central and peripheral nervous systems, and low levels have been associated with early stages of disorders such as dementia and Alzheimer's disease.^[1] *Hericum erinaceus* has also demonstrated a beneficial effect on gastric mucosa damage seen with ulcerations.^[2] *Hericum erinaceus* has a positive impact on immune health and can support a healthy immune response.

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Lion's mane (*Hericum erinaceus*),
40% polysaccharides providing 35% β -glucans . . 500 mg

Note: Polysaccharide and β -glucan content may vary from lot to lot.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

DIRECTIONS OF USE

Adults: Take 1 capsule daily or as directed by your healthcare practitioner. To avoid digestive upset, take with food / a meal. **Immune support:** Use for a minimum of 4 weeks to see beneficial effects.

INDICATIONS

Hericum Erinaceus SAP:

- Provides a source of antioxidants.
- Is an herbal medicine used to support healthy immune function.
- May help protect gastric mucosa.
- May support nerve repair and myelination.

SAFETY AND SIDE EFFECTS

Consult a healthcare practitioner prior to use if you are pregnant or breast-feeding.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Hericum Erinaceus SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.



Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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HERICIUM AND GASTRIC MUCOSA

Hericium erinaceus (HE) is a mushroom frequently used in oriental medicine. Researchers explored the effects of an aqueous extract of HE for gastroprotection against ethanol-induced ulcers in rats.^[2] The effects of HE were explored on ulcer inhibition, ulcer areas, gastric wall mucous, gross and histological gastric lesions, and antioxidant levels and malondialdehyde (MDA) contents were measured.^[2] Researchers found that the treatment group had a significant reduction of the ulcer area as well as a reduction in depletion of antioxidants, therefore providing protection against injury. The amount of MDA was limited in the stomach tissues of the treatment group of rats compared to the controls.^[2] Researchers concluded that the aqueous extract of HE protected the gastric mucosa in vivo and speculated that the bioactive compounds in the extract may play a major role in the gastroprotective activity.^[2]

In an in vitro study, researchers explored the use of 14 mushrooms species and their effect against *Helicobacter pylori*.^[3] Ethanol extracts of 12 of the mushrooms inhibited the growth of *H. pylori* in vitro including HE, which also inhibited *Staphylococcus aureus*.^[3] The direct inhibition of *H. pylori* by HE could be another mechanism besides the immune-modulating effects of the polysaccharides that aid in the treatment of *H. pylori*-associated gastrointestinal disorders.^[3]

HERICIUM AND NERVE INJURIES

In a model case study, researchers looked at the activity of an aqueous extract of HE for promoting functional recovery after a crush injury of the peroneal nerve in rats.^[4] The analysis of the walking track showed that the rats in the treatment group had normal toe spreading and hind limb function earlier than the control group.^[4] Researchers also found that the regeneration of axons and reinnervation of motor endplates/neuromuscular junction in extensor digitorum longus muscle developed better in the treatment group versus control.^[4] Immunofluorescence studies showed that the dorsal root ganglia neurons in the treatment group expressed higher immune reactivity for Akt and MAPK signaling pathways as compared to the control group. Akt cascades play a role in mediating neurotrophin-promoted cell survival; MAPK is involved in mediating neurite outgrowth.^[4] Researchers concluded that oral doses of HE daily could promote regeneration of injured rat peroneal nerve during early stages of recovery.^[4]

Myelin sheaths provide several important functions within the nervous system, including support and protection of nerves.^[5] Injury to the myelin can lead to impairment and severe illness, but currently the mechanisms of the myelination process and damage have not been determined.^[5] There has been recent research showing that an extract from HE had activating action on the nerve tissue.^[5] Researchers explored the influence of HE on cerebellar cells and the myelination process in vitro.^[5] The process of myelination was at a higher rate and began earlier compared to controls. Therefore it was concluded that HE had a regulatory effect on the myelination process in vitro, as well as promoting normal development of cultivated cerebellar cells.^[5]

HERICIUM AND IMMUNE SYSTEM

Researchers investigated the antibacterial effect of four extracts from HE against murine salmonellosis.^[6] The extracts showed no effect on *Salmonella* growth in culture, or any toxicity against macrophage cells.^[6] Two of the extracts, including the hot-water extract (HWE) and the ethanol extract (MWE), of HE stimulated the uptake of bacteria into macrophage cells indicated by increased counts of colony-forming unit of the lysed macrophages infected with *Salmonella* for 30 and 60 minutes.^[6] At two hours postinfection, the bacterial counts has increased in the macrophages; however, at four and eight

hours postinfection, the HWE- and MWE-treated cells demonstrated increased activity against the bacteria compared to controls. Both the HWE- and MWE-treated noninfected macrophages had altered morphology and elevated inducible nitric oxide (NO) synthase mRNA expression.^[6] This expression was increased in the presence of *S. typhimurium*, and there was an increase in NO production. Mice were administered daily intraperitoneal injections which, based on histology assays of the livers of the mice, protected against necrosis.^[6] The lifespans of mice infected with a lethal dose of *S. typhimurium* were extended by HWE and MWE.^[6] There is a high amount of β -glucan found in the active extracts of HE, which is known to stimulate the immune system.^[6] The results of this study show that the HE extract has activity against bacterial infection in mice via activation of innate immune cells.^[6]

Hericium erinaceum has a long history of use due to its immune-regulating effects, which result in anticarcinogenic and antimicrobial efficacies.^[7] Dendritic cell maturation is an important component in both the initiation and regulation of immune responses.^[7] Researchers explored the ability of aqueous extracts of HE on dendritic cell maturation.^[7] Immature dendritic cells were prepared from human peripheral blood then stimulated with water-soluble components from HE for 48 hours to determine the expression of indicative maturation markers.^[7] The dendritic cells stimulated with HE demonstrated features representative upon maturation: enhanced expression of CD80, CD83, and CD86, and both MHC class I and II molecules, as well as decreases in endocytic capacity of dendritic cells and decreased expression of CD206.^[7] The HE, however, did not induce production of TNF- α and IL-12 p40, but the lipopolysaccharide substantially increased the production of both the cytokines.^[7] These results show that HE is able to induce the maturation of human dendritic cells, which may reinforce the host innate immune system.^[7]

In another study, researchers explored the mechanism of the immune-modulating activity of HE.^[8] Researchers looked at the ability of water-extracted *H. erinaceus* to induce the expression of intercellular adhesion molecules-1 (ICAM-1), which regulates the migration of immune cells.^[8] Human monocytic cell-line THP-1 or human peripheral blood mononuclear cells (PBMC) were stimulated with HE (1–30 μ g/mL), and then analyzed using flow cytometry looking at the expression of ICAM-1 protein.^[8] HE was able to induce ICAM-1 expression in the CD14⁺ monocytes in human PBMC as well as at the protein and mRNA levels in THP-1 cells.^[8] The results suggest that HE is able to induce ICAM-1 expression in human monocytes through ERK- and ROS-dependent signaling pathways.^[8]

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