

Reishi Mushroom - Scientific Overview

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Introduction

Ganoderma lucidum is a large woody mushroom known in China as lingzhi or in Japan as reishi or mannentake (Wachtel-Galor et al 2011). The reishi mushroom, a staple in traditional Chinese medicine, has been utilized and treasured for more than 2,000 years. Commonly known as the “mushroom of immortality” and “the herb of spiritual potency”, the reishi/lingzhi mushroom symbolizes success, longevity, and well-being in China. It is celebrated as the “king of herbs” in stories and legend. The reishi mushroom is depicted in carvings, paintings, and embroideries along with gods and immortals to symbolize longevity, good fortune, and the divine (Gao et al 2008). Among Chinese herbalists, wild reishi mushrooms are recognized as benefiting Shen (spiritual radiance) more than any other herbal adaptogen (Sue & Yao 2015). In early days, wild reishi only were available to the nobility due to their rarity and cost (Wachtel-Galor et al 2011). Cultivation of the reishi mushroom was successful in the early 1970’s; various substrates have been utilized successfully to cultivate *G. lucidum* including grain, sawdust, wood logs, tree stumps, and cork residue to meet the demand for this prized mushroom (Cheung 2008, Wachtel-Galor et al 2011).

Highly regarded in traditional Chinese medicine, the reishi mushroom is linked to the following benefits:

- Antioxidant activity
- Helps boost the immune system
- Cardioprotective effect
- Helps improve learning/cognition

Adaptogen

What is an adaptogen? Adaptogens help the body adapt to environmental distress and avoid the associated damage. The concept of adaptogens has existed for nearly 60 years; adaptogens help optimize an individual’s ability to manage stress (Murthy G. 2008, Panossian 2017). Commonly used medicinal plants or adaptogens include: *Bacopa monnieri*, *Centella asiatica*, *Passiflora incarnata*, *Valeriana officinalis*, *W. somnifera*, *Humulus lupulus*, *Matricaria chamomilla*, *Galphimia glauca*, *Melissa officinalis*, *Piper methysticum*, *Scutellaria lateriflora*, and *Ziziphus jujube* (Gupta 2016). Fungi also can have adaptogenic properties. Well known species of fungi classified as adaptogens include: shiitake (*Lentinula edodes*), reishi (*Ganoderma lucidum*), maitake (*Grifola frondosa*), and caterpillar fungi (*Cordyceps sinensis*) (Hobbs 1995). The polysaccharides and triterpenes in the fungi are believed to drive the adaptogenic activity (Murthy G. 2008).

Antioxidative Effect – Boosts Immune System, Cardioprotective & Memory/Cognition

Several studies have demonstrated the antioxidant effects of the reishi mushroom (*G. lucidum*) (Liu et al 2010, Kim et al 2004). So why are antioxidants important? Free radicals have been associated with playing a role in the aging process. Free radicals can damage cells and tissues. Antioxidants interact with free radicals and prevent the chain reaction before vital molecules are damaged, thereby counteracting oxidative stress. Jones and Janardhanan (2000) determined that reishi mushroom (*G. lucidum*) from South India possessed antioxidant activity in-vitro.

Boosts Immune System

Research indicates that reishi mushrooms help boost the immune system by affecting the immune cells and immune-related cells, including B- and T-lymphocytes, dendritic cells, macro phages, and natural killer cells (Su and Yao 2015). Immune cells also receive protection from antioxidants which allows them to maintain immune surveillance and response (Wachtel et al 2011). The reishi mushroom components, in particular the polysaccharides and triterpenoids, exhibit antioxidant activity (Yuen and Gohel 2008). Total antioxidant activity in the plasma in human subjects also was observed after ingestion of reishi/lingzhi mushroom (Wachtel-Galor et al 2004).

Cardioprotective Effect

The reishi mushroom (*G. lucidum*) has been shown to have a cardioprotective effect. Rajasekaran and Kalaimagal (2012) reported increased levels of antioxidative enzymes and reduced glutathione levels in Wistar rats fed with *G. lucidum* extract indicating a cardioprotective role for the reishi mushroom. Wong et al (2004) studied the cardioprotective effect using hot water extracts of *G. lucidum* and administering doses at 10, 24 and 50 mg/kg (p.o) to mice in six groups of ten; a dose-dependent antioxidative effect on lipid peroxidation and superoxide scavenging activity in mouse heart homogenate was observed. Research by Wong and colleagues indicates that the antioxidative activity of the reishi (*G. lucidum*) appears to drive the cardioprotective effect.

Memory/Cognition

Due to its high consumption of oxygen, the brain is highly susceptible to oxidative stress and free radical damage. As such, ingredients that help fight free radicals and have antioxidative effects in the brain are extremely useful. Research suggests that the reishi mushroom may enhance learning and memory ability as well as promoting antioxidation activities (Gao et al 2008). Choi et al (2015) found that the fermentation of a reishi mushroom (*G. lucidum*) extract increased cognitive enhancing activity. Additionally, reishi mushroom polysaccharides (*Ganoderma lucidum* polysaccharides) were shown to improve cognition in transgenic AD mice (Huang et al 2017).

Summary

The reishi mushroom (*Ganoderma lucidum*), which is associated with traditional Chinese medicine and celebrated throughout history, offers an array of benefits. These benefits include boosting the immune system, providing anti-oxidative support, cardioprotection, and helping improve learning and memory with age. Extensive research has been published throughout the world on this well-known, revered ingredient, the reishi mushroom (*Ganoderma lucidum*).

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