



# HerbClip™

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**FILE: ■ Reishi mushroom (*Ganoderma lucidum*)  
■ Antioxidant Activity**

**HC030345-259**

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## **RE: Reishi Study Confirms Bioavailability of Antioxidant Components**

Wachtel-Galor S, Szeto YT, Tomlinson B, Benzie IF. *Ganoderma lucidum* ('Lingzhi'); acute and short-term biomarker response to supplementation. *International Journal of Food Sciences and Nutrition* 2004;55(1):75-83.

*Ganoderma lucidum* is a woody mushroom known as Lingzhi in China and Reishi in Japan. In the American market, it is best known as Reishi. In Asia, Reishi is used to promote health and longevity. Reishi contains triterpenes and polysaccharides, which may have antioxidant, lipid lowering, anticancer, and antiviral properties. Reishi has antioxidant properties in vitro. It is unknown whether the antioxidants can be absorbed and utilized by the human body to lower risk of chronic diseases. Reishi has no reported toxic effects, even at high doses. There are few published human studies, and the existing health claims require scientific validation. The purpose of this study was to examine the potential cardioprotective effect of Reishi and to examine the antioxidant properties.

Fourteen healthy, normotensive adults participated in this double-blind, placebo-controlled crossover intervention study. There were two studies: the acute post-ingestion study to assess absorption and systemic distribution of antioxidants and the short-term supplementation study to assess biomarkers of antioxidant status, coronary heart disease (CHD) risk, and DNA damage. In the acute post-ingestion study, 10 subjects took 1.1 grams of Reishi powder (Vitagreen Co Ltd, Hong Kong) and 7 subjects took 3.3 grams of Reishi powder. In the short-term supplementation study, 10 subjects ingested 0.72 gram per day of Reishi powder (the equivalent of 6.6 grams of fresh mushroom) or placebo for 10 days and then switched groups. There was a two-week washout period between the crossover. Blood and urine samples were taken.

If dietary antioxidants are absorbed and enter the systemic circulation, an increase in the plasma antioxidant capacity will occur. The magnitude of the increase is reflected in the amount of antioxidants absorbed. The FRAP assay is used to monitor absorption and excretion of antioxidants. The Reishi powder showed antioxidant capacity with FRAP value of 360 micromol per gram. For comparison, the FRAP value of pure ascorbic acid (vitamin C) is 11,364 micromol per gram. There was a significant increase in FRAP values post-ingestion of 3.3 grams of Reishi ( $P < 0.05$ ), with a peak at 90 min post-ingestion. This indicates that there was absorption and systemic distribution of antioxidants from Reishi. Also, there was an increase in plasma antioxidant capacity.

Many biomarkers of oxidant:antioxidant balance were measured pre- and post- 10 day supplementation. After 10 days of supplementation, the fasting plasma lipid standardized alpha-tocopherol concentration and urine antioxidant capacity increased ( $P < 0.05$ ). However, there was no significant change in fasting plasma ascorbic acid and total alpha-tocopherol concentrations, erythrocyte superoxide dismutase and glutathione peroxidase, or resistance to DNA damage. There was a trend for the biomarker profile to improve in terms of antioxidant status and coronary heart disease risk.

The authors conclude that Reishi has antioxidant capacity. The FRAP value of Reishi was fairly high compared to 81 micromol per gram for orange, 70 micromol per gram for onion, and 132-654 for black tea. This study showed for the first time that Reishi contains absorbable antioxidants that enter the circulating plasma and cause a significant acute increase in plasma antioxidant capacity. These bioavailable antioxidants may contribute to the reputed, but not yet scientifically validated, health effects of Reishi. Additional studies are needed to evaluate the long-term effects of this mushroom.

—*Heather S. Oliff, Ph.D.*

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