Effect of Thirty Days Supplementation of Standardized Lingzhi Extract on Aerobic, Anaerobic and Strength Parameters in Trained Athletes

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The mushroom fungus lingzhi (Ganoderma lucidum) has been used for centuries as a traditional health tonic in the Far East. One of its reputed effects, albeit still unproven, is the ability to improve human physical performance. The purpose of this study was to assess the potential ergogenic effects of thirty days of standardized lingzhi extract supplementation on exercise performance. The study adopted a randomized, double-blind, placebo-controlled experimental design. Nineteen players from the men’s national field-hockey team were randomly divided into the experimental (LIN, n = 10) and control (CON, n = 9) groups. All players completed tests for percentage body fat, maximal oxygen uptake, 30 s anaerobic Wingate cycling, and hand-grip strength, at pre- and post-thirty days of supplementation. Throughout the 30 days, the LIN group consumed 440 mg lingzhi extract (dose equivalent to 1.5 g dry fruiting body) daily while the CON group was given an equivalent placebo. All players underwent a similar centralized training programme during the intervention period. There were no significant differences in the physical and performance parameters between the two groups, either at the pre- and post-supplementation stages. In conclusion, chronic daily supplementation days of 440 mg lingzhi extract for thirty-days did not enhance training related gains in the aerobic, anaerobic and strength parameters in well-trained field-hockey players.

key words: herbal extract, ergogenic, Chinese medicine, traditional medicine, Asia

Introduction

The mushroom fungus known as lingzhi by the Chinese, and reishi by the Japanese, enjoys a legendary and somewhat mystical status in traditional Chinese
medicine as a superior health tonic, and has been said to “lighten the spirit and prolong youthfulness” (Jong & Birmingham, 1992; Wong, 1996). There are six known sub-species of lingzhi, with the most widely used variety being the “red” lingzhi, or Ganoderma Lucidum. There are more than 150 chemical compounds found in lingzhi that have apparent medicinal value. These included polysaccharides, furanes, ribosides, peptides and triterpenes (Watchel-Galor et al., 2003; Wong, 1996). There are several types of Ganoderma Lucidum preparations currently available on the market. Preparation methods include grinding, drying, pulverizing or using hot water or alcohol extracts of the substrate, which may be the fruiting bodies, mycelium, and/or the mushroom primordial (Chang & Buswell, 1999). Dosages which have anecdotally been recommended range from 1.5 g to 9.0 g dry fruiting body daily, depending on preparation and intended use (Hsu, 1985; Liu & Bau, 1980; Matsumotto, 1979). Chang (1994), in a review that attempted to establish a standard and a rationale for Ganoderma dosages, used stimulation of B-glucan receptor activity on white blood cells by standardized extract of Ganoderma dry fruiting body as a measure of the biological activity of Ganoderma lucidum. He reported that such biological activity could potentially occur with extract from approximately 300 mg of Ganoderma dry fruiting body, although the dose dependant biological activity could encompass a relatively very large range (Chang, 1994).

Among the most clinically potent of the chemical constituents of lingzhi are the Polysaccharide - linked - Peptides (PSP’s) which are purported to help to modulate the immune system, and prevent or treat cancer (Teeguarden, 1998; Willard, 1990). The triterpenes, which cause the bitter taste of the fungi, are also thought to be “physiologically activating” (Willard, 1990). Other purported effects of Ganoderma include that of working as an anti-oxidant against free radicals, an anti-aging effect, reduction of triglyceride levels, anti-inflammatory properties, and even helping with insomnia and stress (Chen & Miles, 1996; Watchel-Galor et al., 2003; Watchel-Galor et al., 2004b; Willard, 1990).

Of particular interest to athletes would be the claim that lingzhi helps “oxygenate the blood to alleviate height sickness” (Willard, 1990). In one animal study, hot water extracts of Ganoderma Lucidum (GL-57 strain) were administered to three groups of mice in different dosages, and their survival times in the absence of oxygen were compared against that of a control group (Yang & Wang, 1994). There were significant improvements in survival times of the mice that were administered