International Journal of Medicinal Mushrooms, Vol. 3, p. 192 (2001)

Evaluation of Alcoholic Beverages Based on *Ganoderma lucidum* (Curt.: Fr.) P. Karst. Extract

Miomir Niksic,[1] Ninoslav Nikicevic,[1] Vele Tesevic,[2] and Anita Klaus[1]

[1]Department of Industrial Microbiology, Faculty of Agriculture, University of Belgrade, Nemanjina 6, 11080 Zemun, Yugoslavia, and [2] Faculty of Chemistry, University of Belgrade, 11000 Belgrade, Yugoslavia

Extracts of fruiting bodies of *Ganoderma lucidum* (Curt.: Fr.) P. Karst. were shown to have a strong therapeutic effect on hepatophaty, hypertension, hyperlipemia, neurasthenia, ulcer, arthritis, modulating the functions of immune systems, and in other applications. Pharmacological effects are attributable to different components of the mushroom such as triterpenoids, polysaccharides, sterols, proteins, and trace elements. In some cases soaking *Ganoderma* in alcoholic drink can make effective compositions and dissolve more components than soaking in water. At the same time, alcoholic drinks can promote circulation of the blood, thus improving the curative effect.

Extractions of fruiting bodies of *G. lucidum* were performed with 40%, 50%, 60%, and 70% molasses alcohol, 40% plum brandy, vine distillate, and grape brandy. Analyses showed that the best colors (such as cognac) were quickly obtained with 60% alcohol and that this method can serve for quick "aging" for various spirits. The highest sensory value (clarity, color, odor, taste), 17.8 out of 20 points, was attained with samples extracted with 40% plum brandy and 40% vine distillate.

Continual extraction of beverage extracts was performed with methylene chloride. Fractions were evaporated to dryness and chemical properties and spectral data were analyzed with infrared spectroscopy (IR) using a Perkin-Elmer 1725x instrument and nuclear magnetic resonance (NMR) spectroscopy with a Varian Gemin 2000 at 200 MHz.

IR data from the methylene chloride fraction showed major absorption bands at 1500–3600, 1712, 1680, and 1220 cm^{-1}, displaying characteristic absorption that is similar to that of known triterpenoids. IR data from the water fraction showed the major absorption bands at 3000–3600, 2900, and 1110 cm^{-1}, displaying characteristic absorption of polysaccharides and showing very similar characteristics in all five extracts.

The ^{1}H-NMR spectra of all organic extracts with signals between δ1 and 1.5 ppm for the CH_3 group and a signal at δ5.4 ppm also showed characteristics of triterpenoids and are also comparable with each other in all five extracted samples. The water-soluble extracts of ^{1}H-NMR spectra with signals between δ3 and 4 ppm confirmed characteristics of polysaccharides.

Results showed that with the same alcohol concentration (40%) from alcohols of different origins, alcoholic drinks with very agreeable sensory characteristics and possible pharmacological activity could be obtained.

1521-9437/00/$5.00