Dietary effect of *Lentinus edodes* on fat metabolism in hypercholesterolemia-induced mice

Hyun Yang and Eui-Bae Jeung

*Laboratory of Veterinary Biochemistry and Molecular Biology, College of Veterinary Medicine, Chungbuk National University, Cheongju, Chungbuk, 361-763, Republic of Korea.*

**Introduction and objectives:** *Lentinus edodes*, generally known as the shiitake mushroom, has an established history of use in time-honored oriental therapies. Eritadenine is an adenosine analogue alkaloid and lentinacin is a purine alkaloid that reduces cholesterol levels, the main cause of the hypocholesterolemic action of eritadenine seems to be associated with a modification in hepatic phospholipid metabolism. In this study, we investigated the impacts of supplementation with *Lentinus edodes* on hypercholesterolemic mice by biochemical and histological ways.

**Methodology:** ICR male mice (5 groups, n = 10) were fed with diet containing eritadenine (1g/kg) or 5, 10 and 20% *Lentinus edodes* to hypercholesterolemic mice for 2 weeks.

**Results and discussion:** The serum levels of LDL-cholesterol and triglyceride were increased in hypercholesterolemia mice (fed a high-lipid diet only). In *Lentinus edodes* (5, 10 and 20%) dietary group, LDL-cholesterol and triglyceride serum levels were decreased in a dose dependent manner. The mRNA of CYP7A1 was reduced by hypocholesterolemic condition and the reduction was inhibited by eritadenine and *Lentinus edodes* (5, 10 and 20%). In the liver, the accumulation of fat was highly observed in hypercholesterolemic mice, and both eritadenine and *Lentinus edodes* reversed the accumulation.

**Conclusions:** These results indicated that hypocholesterolemic diet inhibited CYP7A1 expression in the liver following an increase of serum LDL-cholesterol and triglyceride and eventually caused fatty liver. *Lentinus edodes* may be involved in lipid metabolism by regulating of CYP7A1 in the liver, and have recovery effects on hypercholesterolemia.