Supplementation of *Lentinus edodes* has beneficial effects in homocysteinemia-induced mice model

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**Introduction and objectives:** Homocysteinemia is related with cardiovascular and neurodegenerative disease. In this study, we induced homocysteinemia by feeding folate and vitamin B12 deficient food in mice and the effects of *Lentinus edodes* on the biomarkers of homocysteinemia in the blood and liver were tested.

**Methodology:** In this study, ICR male mice (5 groups, n = 10) were fed vitamin B12 and folate-deficient diet to induce homocysteinemia and treated the mice with 1 g/kg eritadenine that has been reported as one of components of *Lentinus edodes*, and 5%, 10% and 20% crude powder of *Lentinus edodes* for 6 weeks.

**Results and discussion:** Folate and vitamin B12-deficient diet induced a significant increase in the concentration of serum homocytine. The levels were decreased by both eritadenine and *Lentinus edodes* (5, 10 and 20%) in mice. The hepatic levels of SAH were significantly higher in vitamin B12 and folate deficient condition, and dose-dependently declined by *Lentinus edodes*. In addition, the expression of DNMT1 and DNMT3a was reduced in vitamin B12 and folate deficient group, and the reduction was prohibited by supplementation of eritadenine and *Lentinus edodes*.

**Conclusions:** Our results indicate that folate and vitamin B12-deficiency induced homocysteinemia and this phenomenon was rescued by administration of eritadenine and *Lentinus edodes*. The effects of *Lentinus edodes* inhibited DNA methylation by regulating DNMT1 and DNMT3a gene expression which may augment the accumulation SAH in the liver. Taken together, components of *Lentinus edodes* including eritadenine may have beneficial effects on homocysteinemia by regulating DNA methylation in the liver.