inorganic arsenic ($NaAsO_2$) exposure is a significant risk factor foremerging liver toxicity. However, the hepatoprotective effects of HM and itsunderlying mechanism remain unknown. This study aimedto investigate the effect of HM on $NaAsO_2$ inducedhepatotoxicity and the basic molecular mechanisms involved.

Materials and Methods: In vitro cytotoxicity activity of HM wasevaluated using HepG2 cells. Based on the cytotoxicity assay, HM (10, 20, 30μg/ml) was selected forhepatoprotective effects on $NaAsO_2$ induced cytotoxicity in HepG2cells by measuring cell viability (MTT), lactate dehydrogenase (LDH), reactiveoxygen species (ROS). Mitogen activated protein kinases (MAPKs) pathway was detected by western blotting.

Results: Our experimentaldata showed that HM significantly attenuatesthe $NaAsO_2$-induced cell viability loss, lactate dehydrogenase (LDH)release, suppress the intracellular ROS accumulation. Moreover HM extractsignificantly decrease the protein expression level of MAPKs (ERK, JNKand p38) in HepG2 cells.

Conclusions: The results suggested that HM preventing theaccumulation of ROS in a manner that depended on the activation of the MAPKspathway.

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In vivo and in vitro anti-inflammatory activities of *Rabdosia inflexa* methanolic extract

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Introduction: *Rabdosiainflexa (RI) (Thunb.) Hara* has beentraditionally used to treatment of various inflammatory diseases in Korea,Japan and China. However, no studies on the anti-inflammatory effects of *RI in HCl/EtOH-induced gastritis and itsinhibitory molecular mechanism have been reported*. Evaluation ofanti-inflammatory activities of *RI*using LPS induced inflammation in RAW264.7 cells and HCl/EtOH-induced gastritismodel in mice.

Materials and Methods: In order to assess the gastroprotective potential of RI, LPS-induced inflammation in murine macrophage RAW264.7cells and HCl/EtOH- induced gastritis model in ICR-mice were employed. Weinvestigated cell viability by MTT assay, nitric oxide (NO) release by Griessassay and intracellular reactive oxygen species (ROS) level by ROS assay. Moreover,macroscopic and histopathological analysis of gastric mucosa was determined. Quantitative PCR were performed to confirm the mRNA expression of various inflammatorycytokines.

Results: RI methanolic extract has not beenshown cytotoxicity in murine macrophage RAW264.7 cells. LPS-induced NO and ROS levelswere both significantly suppressed by the *RI* extract. Orallyadministrated RI improved HCl/EtOH-induced gastric symbol and histopathologicaldamages. Also, the RI extract down-regulated the mRNA expression of the cytokines;TNF-α, IL-6, IL-1 β, COX-2, and iNOS.

Conclusions: These results suggested that RI methanolic extract exerts asanti-inflammatory activities in LPS induced inflammation in RAW264.7 cells andHCl/EtOH-induced gastritis model in mice.

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Hangover Relieving Effect of Hovenia Dulcis and Sanghwang Mushroom Mycelium Cultured in Hordeum Vulgare

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Introduction: Alcohol causesmany negative effects on various organs in human body. To investigate functional materials which improve hangover-relieving and alcohol decomposition, a variety of medicinal plants and natural materials have been studied. Hovenia dulcis, Rubus coreanus, Curcuma longa, Cornus officinalis, mushroom mycelium that are known as a medical plant are known to various bioactive effects including diuretic effect, hepato protective effect, antibacterial effect, antioxidant effect and lipid peroxidation suppression. The present study was performed to evaluate hangover relieving effect of HD andSHV.

Materials and Methods: Mice were divided into four groups (10 mice each),and three groups were treated with water, HD or SHV (4 mL/kg) at 30 min afteralcohol (2 mL/kg) treatment. The control group was sham-treated with water at 30 minutes following initial administration of water. Hangover-relieving effects of HD and SHV extracts were evaluated through ALDH activity measurements, locomotor activity tests, blood alcohol

and acetaldehyde concentrations of mice pre-treated with alcohol. In addition, the differential gene expression patterns in mice liver were analyzed through cDNA microarray analysis to observe the effects of HD or SHV on gene expression related to alcohol metabolism.

Results: Both HD and SHV showed DPPH radical scavenging activities and showed significantly increased ALDH activities (up to 142% and 148% respectively) at their concentrations of 16 μL/mL. In locomotor activity test, both alcohol-SHV and alcohol-HD groups showed improved motor activities compared with thealcohol-water group at 90 min post-administration. Both alcohol-HD and alcohol-SHV groups showed a significantly reduced ($p< 0.01$) alcohol (23.76 ± 10.07 μg/mL, 120.13 ± 33.04 μg/mL) and aldehyde (18.06 ± 4.30 μg/mL,5.96 ± 0.41 μg/mL) concentrations in blood compared to alcohol-water group (199.75 ± 33.83 μg/mL, 50.43 ± 13.88 μg/mL) at 90 min post-administration. Based on cDNA microarray analysis, a family of cytochrome (CYP450)gene CYP4a30b and Aldh18a1 were up-regulated in alcohol-HD and alcohol-SHV groups compared to the control group.
Conclusions: The levels of acetaldehyde in the blood of mice at 90 min pre-administration were inversely proportionalto the motor activities of mice, which suggest that improved motor activities of mouse were the result of reduced blood acetaldehyde concentration by HD and SHV. cDNA microarray analysis showed that differentially expressed genes associated with alcohol metabolism included CYP450 genes.

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Hangover-Relieving Effect of Sanghwang Mushroom Mycelium Cultured in Germinated Buckwheat

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Introduction: Alcohol is closely related to human life, and drinkingalcohol causes many negative effects on our society and economic growth. To investigate functional materials which improve antioxidant activity and alcohol decomposition, a variety of medicinal plantsand natural materials have been studied. In particular, various physiological activities of Sanghwang mushroom mycelium (SGB)have been reported including its antioxidant effect, anticancer effect, and immune-stimulating effect. In addition, germinated buckwheat (GB) has been reported for its antioxidant effects, anti-hypertensive and anti-hyperlipidemic effects. The present study was performed to evaluate the hangover- relieving effectof GB and SGB.

Materials and Methods: The mice were divided into fourgroups (10 mice each), and three groups were treated with water, GB or SGB (4 mL/kg) 30min after alcohol (2 mL/kg) treatment. The control group was sham-treated with water at 30 minutes following initial administration of water. Hangover-relieving effects of GB and SGB extracts were evaluated through ALDH activaty measurements, locomotor activity tests, blood alcohol and acetaldehyde concentrations of mice pre-treated with alcohol. In addition, the differential gene expression patterns in mice liver were analyzed through cDNA microarray analysis to observe the effects of GB or SGB on gene expression related to alcohol metabolism.

Results: Both GB and SGB showed DPPHradical scavenging activities and showed significantly increased ($p < 0.001$) ALDH activities up to 140% at their concentrations of 16 μL/mL. In locomotor activity test, both alcohol-SGB and alcohol-GB groups showed improved motor activities compared with the alcohol-water group at 90 min post-administration. Both alcohol-GB and alcohol-SGB groups showed a significantly reduced ($p< 0.01$) alcohol (40.02 ± 33.38 μg/mL, 66.01 ± 22.04 μg/mL) and aldehyde (5.72± 0.47 μg/mL, 6.72 ± 1.70 μg/mL) concentrations in blood compared to alcohol-watergroup (199.75 ± 33.83 μg/mL, 50.43 ± 13.88 μg/mL) at 90 min post-administration. Based on cDNA microarray analysis, a family of ALDH genes ALDH1a7 and ALDH18a1 were up-regulated, and family of cytochrome (CYP450) gene CYP4a30b was up-regulated in alcohol-GB and alcohol-SGB groups compared to the control group.

Conclusions: The levels of acetaldehyde in the blood of mice at 90 min pre-administration were inversely proportional to the motor activities of mice, which suggest that improved motor activities of mouse were the result of reduced blood acetaldehyde concentration by GB and SGB. cDNA microarray analysis showed that differentially expressed genes associated with alcohol metabolism included ADH, ALDH and CYP450 genes.

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Hair Growth Effect of *Eclipta Prostrata L.* onC57BL/6N Mice

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