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Protective Effect of Edible Plants on Alcoholic Liver Disease *In Vitro* System

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Chronic ethanol consumption is associated with an increased incidence of various liver diseases including alcoholic fatty liver, cirrhosis, and cancer. Several mechanisms have been suggested to play important roles in pathway of ethanol toxicity to the liver. The microsomal ethanol oxidizing system (MEOS) is strikingly inducible by chronic ethanol consumption with the key enzyme cytochrome P450 2E1 (CYP2E1), increased 4 to 10 fold in liver. Induction of CYP 2E1 and formation of reactive oxygen metabolite by chronic ethanol consumption is one of the factor in hepatotoxicity. We established four kinds of HepG2 cell lines constitutively expressed human CYP2E1 and NADPH-cytochrome P450 reductase (CYPR) and characterized those cell lines with immunoblotting for CYP 2E1 and CYPR expression, *p*-nitrophenol hydroxylation for CYP 2E1 activity in whole cells and *in situ*, enzyme activity of NADPH cytochrome c reductase for CYPR, and MTT test for cytotoxicity to several chemicals including ethanol. CYP 2E1 activity was significantly higher and the toxic response to ethanol was 30-40% sensitive than those of control HepG2 cell line. Then we selected one cell line showing highest cytotoxicity to ethanol and screened the protective effect to ethanol toxicity in a hundred of plant extracts prepared by solvent extraction based on polarity with this selected HepG2 cell line.

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Anti-Photoaging Effect of *Eucommia ulmoides* in Human Skin Fibroblasts

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The aging process of skin can be attributed to intrinsic aging and photoaging. Clinically, naturally aged skin was smooth, pale, and finely wrinkled. In contrast, photoaged skin was coarsely wrinkled and associated with dyspigmentation, and telangiectasia. Photoaging is influenced by several factors, including genetics, environmental exposure (ultraviolet irradiation, mechanical stress), hormonal changes, and metabolic processes (generation of reactive chemical compounds such as activated oxygen species). The influence of the environment, especially solar UVB irradiations have been demonstrated to produce reactive oxygen species (ROS) and induce the synthesis of matrix metalloproteinases (MMP) which degrade extracellular matrix. We investigated expression of MMP-1 in human foreskin fibroblast HS-68 cell line under UVB irradiation using enzyme-linked immunosorbent assay (ELISA) for selection and characterization of photoaging inhibitor, and A isolated from *Eucommia ulmoides*. Cytotoxic effect. was not shown in HS-68 cell line when we treated with A isolated from *Eucommia ulmoides* according to concentration. Furthermore cell viability according to varying degrees of UV exposure times were increased in A compared with control values. Up until now, the most intensively studied dietary antioxidants for prevention of skin photodamage have been vitamin C, vitamin E, and β -carotene. Compared with vitamin C and vitamin E, A isolated from *Eucommia ulmoides* showed similar or higher inhibitory activity of MMP-1 expression.