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Effect of the Leaves of *Zanthoxylum piperitum* on Hepatic Drug Metabolizing Enzymes in Rats and Bioactive Compound

Jong Moon Hur*, Jong Cheol Park and Jong Won Choi¹.

Department of Oriental Medicine Resources and Research Institute of Korean Oriental Medicine, Suncheon National University, ¹Department of Pharmacy, Kyungsung University

Bromobenzene is a xenobiotic liver toxin that is known to produce centrilobular hepatic necrosis through the formation of reactive epoxides as the toxic intermediates. The electrophilic bromobenzene 3,4-oxide acts as a liver toxin. The harmful epoxide is metabolized to a nontoxic bromobenzene 3,4-dihydrodiol by epoxide hydrolase. The bromobenzene 3,4-oxide can also be converted to bromobenzene glutathione by the action of glutathione S-transferase and excreted thereafter. The effect of methanol extract and protocatechuic acid from the leaves of *Zanthoxylum piperitum* on lipid peroxidation and drug metabolizing enzymes were investigated in the liver of bromobenzene-treated rats. The rats were orally administered daily with a methanol extract (250 or 500 mg/kg) of the leaves of *Zanthoxylum piperitum* or with protocatechuic acid (5, 10 or 20 mg/kg) for one week prior to the bromobenzene treatment. Protocatechuic acid was isolated from ethyl acetate-soluble fraction of the methanol extract of the leaves of *Zanthoxylum piperitum* by column chromatography. The methanol extract and protocatechuic acid reduced the level of lipid peroxide induced by bromobenzene. The methanol extract and protocatechuic acid reduced the activity of aniline hydroxylase that had been increased by bromobenzene. And the extract and compound effectively restored the activity of epoxide hydrolase which had been decreased by bromobenzene.

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Inhibitory Effects of Medicinal Plants and Their Components on the 1,1-Diphenyl-2-picrylhydrazyl Radical

Dong Young Rhyu, Takako Yokozawa and Jong Cheol Park^{1*}.

Institute of Natural Medicine, Toyama Medical and Pharmaceutical University, Japan,

¹Department of Oriental Medicine Resources and Research Institute of Korean Oriental Medicine, Suncheon National University

Free radicals are now widely accepted as factors that contribute to the pathogenesis of a wide range of common and age-related degenerative diseases through the oxidative modification of DNA, proteins and vital molecules. Antioxidants, which protect against oxidative damage induced by free radicals, prevent the onset and progression of disease. Therefore, interest has been focused on the development of safe, effective and non-toxic antioxidant. In this study, we used a simple and rapid method, a 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical-generating system. In the screening of Rosaceae plants, *Rosa davurica* showed strong DPPH radical-scavenging activity. The most effective medicinal plant from families other than Rosaceae was *Cedrela sinensis*, followed in order by *Eucommia ulmoides*, *Cudrania tricuspidata* and *Houttuynia cordata*. And we tested out the radical scavenging effect on DPPH radical using the constituents isolated from medicinal plants. Among compounds, aromatic acids and catechin dimer showed the strong scavenging activity against DPPH radical.