

황칠 정유성분의 항고지혈 활성

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Hypolipidemic activity of *Dendropanax morbifera* essential oil in rats^aDepartment of Applied Life science, Kon Kuk University, Seoul, 143-701, South Korea^bCardiovascular Medical Research Center, College of Korean Medicine, Dongguk University, Gyeong-Ju 780-714, South Korea^cInam Neuroscience Research Center, Wonkwang University Sanbon Medical Center, Kyunggi-Do 435-040, South Korea.Ill-Min Chung^a, Won-Hwan Park^b, Hyung-In Moon^{b,c*}

실험목적 (Objectives)

Dendropanax morbifera Leveille (Araliaceae) is endemic to the south-western part of South Korea. The roots, leaves, seeds, and stems of this plant are used in folk medicines for headache, infectious diseases and general debility. Polyacetylene compounds isolated from *D. morbifera* stems are reported to exhibit anticomplement activity. However, the biological activity of *D. morbifera* has not been investigated in detail. This study aimed to investigate the hypolipidemic activity of *D. morbifera* essential oil (DMEO) in rats.

재료 및 방법 (Materials and Methods)

Plant material and essential oil extraction-Fresh *D. morbifera* flowers were provided by Korea Horticulture Sapling Company (Jeon-Ju, Jeollabuk-Do, South Korea) in July 2007.

Gas chromatography/mass spectroscopy analysis of the essential oils-Gas chromatography/mass spectroscopy (GC/MS) analysis of the essential oil was performed using a QP2010 spectrometer equipped with a splitless injector. The analytes were separated on a DB-1 MS capillary column (0.32 mm (internal diameter) × 60 m; Agilent Scientific) with a film thickness of 0.25 μm. The injector temperature was 300°C. The initial column temperature was 80°C for 5 min and was then increased to 280°C at a rate of 5.0°C/min and maintained at this temperature for 10 min. Helium was used as the carrier gas (flow rate, 1.0 mL/min). The sample (1 mL diluted 1:10 with acetone) was injected in the split mode at a ratio of 1:100. The percentage composition of DMEO was calculated from the GC peak areas. The ion source temperature was set at 200°C and injector temperature, 210°C. The interface temperature was maintained at 280°C, and mass spectra were obtained at 70 eV. The column effluent was directly introduced into the ion source.

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The sector mass analyzer was adjusted to scan 50 - 500 amu every 0.5 s. The DMEO components were identified by comparing each mass spectral peak with those of authentic samples in a massspectral library (Wiley Registry of Mass Spectral Data, 7th ed.). Animals-Male Wistar rats (weight, 160 ± 15 g) were purchased from Orient Bio Inc. (Sungnam, South Korea) and maintained under standard environmental conditions, with free access to water. All experiments conducted in this study were approved by the Animal Care Committee of the Wonkwang University School of Medicine. They were grouped as described by Hajhashemi and Abbasi (2008). Hypolipidemic Activity of Anethum graveolens in Rats *Phytother. Res.* 22: 372-375. Determination of serum lipid levels-The serum TC, TG, and HDL-C levels were colorimetrically measured (Bucolo and David, 1973; Allain et al., 1974; Rifai et al., 1992), using commercially available kits (Asan Pharmaceutical, South Korea). The LDL-C levels were estimated using Friedewald's (1972) formula: $LDL-C = TC - [HDL-C + (TG/5)]$. The atherogenic index was calculated as $(TC - HDL-C)/HDL-C$ (Choi et al., 1991).

실험결과 (Results)

The *D. morbifera* flowers yielded 0.72% (v/w) essential oil with a foul odor. In their order of elution from the column, these compounds were γ -elemene (18.59%), tetramethyltricyclo hydrocarbons (10.82%), β -selinene (10.41%), and β -zingiberene (10.52%). DMEO dose-dependently reduced the serum TC, LDL-C, and TG levels of the test rats. The Lipid Research Clinics Primary Prevention Trial has indicated that the plasma LDL-C concentrations and the risk of coronary artery disease are positively correlated. The fact that DMEO significantly lowered the serum TC, LDL-C, and TG levels of our test animals indicates that it is a promising protective agent against coronary artery disease. DMEO significantly increased the HDL-C levels and may therefore be an effective agent for the prevention of atherosclerosis and the management of coronary artery disease. Additional experiments are required to clarify the mechanism underlying DMEO's hypolipidemic activity.