192

Evaluation of Vasorelaxation and Antioxidant Activity of *Rhodiola Rosea*

Li-Min Liu[1], Tzong-Der Way[2], Sheng-Chu Kuo[1], Daih-Huang Kuo[3]

[1]*Graduate Institute of Pharmaceutical Chemistry, China Medical University, Taichung*
[2]*School of Biological Science and Technology, China Medical University, Taichung*
[3]*Graduate Institute of Pharmaceutical Technology, Tajen University, Pingtung*

Rhodiola rosea L. is a herb for anti-fatigue, anti-aging, heart protection, anti-hypoxia, and other related activity. The study was investigated the vasorelaxation effect and potential mechanism of *Rhodiola rosea* and their fraction extracts in isolated porcine coronary artery model, and evaluated antioxidant activity and related free radical-scavenging effects. The methanolic extract (ME) and its five fractions of n-hexane (HxF), dichloromethane (DcF), ethyl acetate (EaF), n-butanol (BtF) and water (WtF) were prepared for vasorelaxation evaluation. Contents of total phenols (gallic acid) and total flavinoids (Rutin), DPPH free radical-scavenging assay and Xanthine oxidase inhibitory activity were evaluated among these frations.

The results revealed that ME possessed significant relaxation effect in porcine coronary artery at the concentration of 1mg/ml. HxF and WtF showed strong vasorelaxation activity. So we performed mechanism studies by HxF. The result indicated that HxF relax coronary artery by endothelium-dependent pathway promotion of NO synthesis, activation of cGMP-independent pathway and inhibition of calcium influx.

The contents of total phenols and total flavonoids were DcF and EaF. In DPPH free radical-scavenging assay IC_{50} value of each fraction was 101.3μg/mL, 35.7μg/mL, 28.1μg/mL, 45.4μg/mL and 39.3μg/mL respectively. DcF and EaF were more obvious than other in Xanthine oxidase inhibitory activity. The relationship between antioxidant activity and contents of gallic acid and rutin was evaluated. Correlation coefficients (R^2) of DPPH free radical-scavenging assay and total phenols and total flavanoids each were 0.7945 ($p < 0.05$) and 0.1324 ($p < 0.01$). Similarly, R^2 values for Xanthine oxidase inhibitory activity and contents of total phenols and total flavanoids were 0.5941 ($p < 0.01$) and 0.0288 ($p < 0.001$). So we could suggest these frations positive relationship was exhibited between antioxidant activity (DPPH free radical-scavenging and Xanthine oxidase inhibitory activity) and antioxidant material contents (gallic acid).

193

Laser-induced Carotid Artery Injury Model in Rat to Study the Effects of Ferulic Acid

Chin- Hsien Chang , Yen-Lin Chang and Hen-Hong Chang*

Center for Traditional Chinese Medicine, Chang Gung Memorial Hospital, Taipei
Graduate Institute of Traditional Chinese Medicine, Chang Gung University, Taipei

Aim: The purpose of this study was to establish a novel, laser-based microplatform for inducing carotid artery thrombosis in rats. Our method uses a rat model of laser-induced cerebral embolism to evaluate stroke treatment. Based on different cerebral embolism models, we altered dye dosage and laser light source to create different embolic conditions. Our study provides a new research platform for the development of novel therapeutic modalities and new drug development.

Method: WKY rats were anaesthetized, catheter inserted into the femoral vein. Next, the neck skin was incised and the junction of the internal carotid artery and the external carotid artery identified. DPSS Green Laser was used to irradiate the middle of carotid arteries for 10 min and rose Bengal dye (60 mg/kg) injected in the femoral vein to induce thrombosis.After surgery, rats were fed with ferulic acid daily. On Day 0 and After Day week 1, week 3 and week 4, the rats were sacrificed and carotid arteries were removed and carotid artery sections with H&E staining and vessel thickness was analyzed using Image software.

Results: Our data showed that control group rats exposed to 600 seconds of 532 nm DPSS green laser light together with 60 mg/kg rose bengal demonstrated significant hyperplasia in the carotid artery after 28 days. Hyperplasia of carotid arteries was significantly decreased in the rats IP ferulic acid (80mg/Kg) compared with the control group.

Keywords: stroke, carotid artery, thrombosis, laser, ferulic acid