P38

Diminished Renal Expression of Atrial Natriuretic Peptide and Nitric Oxide System in Rats with Licorice-induced Hypertension

Department of Internal Medicine, Chonnam National University Medical School,
*Department of Physiology, Chonnam National University Medical School**

Seong Kwon Ma · YoonWha Oh* · ChoonSoon Park* · Soo Wan Kim
Ki Chul Choi · JongUn Lee*

Background : The present study was aimed to examine whether there exists an altered regulation of atrial natriuretic peptide (ANP) and nitric oxide (NO) systems in the kidney in rats with licorice induced-hypertension.

Methods : Male Sprague-Dawley rats were experimentally induced of hypertension by treatment with glycyrrhizic acid (GA) in drinking water (300 mg/dL) for 3 weeks. Systolic blood pressure (SBP) was measured by the tail-cuff method. Plasma renin activity (PRA) and serum aldosterone levels were determined by radioimmunoassay. Plasma arginine vasopressin (AVP) levels and serum osmolality were also determined. The tissue expression of ANP mRNA was determined by reverse transcription-polymerase chain reaction (RT-PCR) in the kidneys. Tissue contents of NO metabolites (nitrite/nitrate, NOx) were examined in the kidneys.

Results : SBP was significantly increased following the GA treatment (119±5 vs 143±7 mmHg, n=6 each, $p<0.05$). In the GA group, PRA was significantly decreased (3.7±1.0 vs 1.2±0.6 ng/mL/hrs, n=5 each, $p<0.05$). Serum aldosterone levels were significantly decreased (19.6±2.5 vs 5.3 ±0.8 ng/dL, n=5 each, $p<0.05$). Levels of plasma AVP and serum osmolality were did not differ between the control and the GA group. Following the treatment with GA, the expression of ANP mRNA was significantly decreased in the kidney. The renal tissue contents of NOx were also significantly decreased (372.7±72.9 vs 122.4±7.7 mmol/mg protein, n=10 each, $p<0.05$).

Conclusion : These results suggest that the decreased activities of local ANP and NO systems may be related with licorice-induced hypertensive rats.