S-C16

허혈후 재관류 급성신장손상에서 COMP-Ang1의 보호효과

전북대학교 의학전문대학원 내과학교실 신장재생연구실[1], 전북대학교 의학전문대학원 영상의학교실[2]
전북대학교 의학전문대학원 병리학교실[3], 한국식품연구원[4]

정유진[1] · 김덕훈[1] · 이애신[1] · 이 식[1] · 강경표[1] · 이상용[2] · 장규윤[3] · 성미정[4] · 박성광[1] · 김 원[1]

Peritubular Capillary Preservation with COMP-Angiopoietin-1 Decreases Ischemia/reperfusion-induced Acute Kidney Injury

Yu Jin Jung[1], Duk Hoon Kim[1], Ae Sin Lee[1], Sik Lee[1], Kyung Pyo Kang[1]
Sang Yong Lee[2], Kyu Yun Jang[3], Mi Jeong Sung[4], Sung Kwang Park[1], Won Kim[1]

Renal Regeneration Laboratory[1] and Department of Internal Medicine Research Institute[2]
of Clinical Medicine and Diabetic Research Center Chonbuk National University Medical School
Department of Diagnostic Radiology[3]; Department of Pathology[4];
Food Function Research[5] Center Korea Food Research Institute

Ischemia followed by reperfusion induces microvascular endothelial cell injury, leading to the loss of functions such as regulation of vascular tone, tissue perfusion, permeability, and inflammation in kidney. Improvement of this endothelial dysfunction could be a good approach to treating ischemia/reperfusion-induced renal injury. COMP-angiopoietin-1 is a variant of native angiogenic factor Angiopoietin-1 engineered to have higher activity. We evaluated the protective effect of COMP-Angiopoietin-1 in an ischemia/reperfusion renal injury model. COMP-Angiopoietin-1 preserved renal peritubular capillaries after ischemia/reperfusion injury without recruiting pericytes. Pretreatment with COMP-Angiopoietin-1 attenuated the increase of blood urea nitrogen and serum creatinine levels after ischemia/reperfusion. In addition, the morphologic examination indicated less tubular injury in mice pretreated with COMP-Angiopoietin-1 than in those treated with the vehicle. COMP-Angiopoietin-1 treatment reduced the increase in the number of ER-HR positive macrophages infiltrating kidneys, increased phosphorylation of Akt, and preserved renal tissue perfusion flow and microvascular permeability. Furthermore, COMP-Angiopoietin-1 decreased renal interstitial fibrosis 30 days after the ischemia/reperfusion injury. In conclusion, COMP-Angiopoietin-1 can be a possible endothelial cell targeted therapy for preventing ischemia/reperfusion-induced acute kidney injury.

Key Words : 허혈성 재관류 손상, 혈관내피세포, COMP-Ang1
Ischemia/reperfusion-injury, Endothelial cells, COMP-Ang1