

SACUBITRIL/VALSARTAN PROVIDES CARDIOPROTECTION AGAINST ISCHEMIA/REPERFUSION INJURY IN EXPERIMENTAL METABOLIC SYNDROME

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This study was designed to investigate the ameliorative effect of synergism between sacubitril, as an inhibitor of natriuretic peptide-degrading enzyme and valsartan, an angiotensin II type 1 receptor blocker, on cardiac function in rats with metabolic syndrome exposed to ex vivo-induced ischemia/reperfusion injury (I/R). Adult-male Wistar albino rats (n=40) were equally categorized into healthy control group (CTRL), rats with metabolic syndrome (MetS), healthy rats treated with sacubitril/valsartan (Sac/Val) and rats with metabolic syndrome treated with sacubitril/valsartan (MetS + Sac/Val). Animals from Sac/Val groups received oral suspension of these drugs every day in dosage of 68 mg/kg during 4 weeks. Cardiac function and dimension of the left ventricle (LV) were evaluated via echocardiograph. Moreover, blood pressure and heart rate were estimated. By completing experimental protocol, animals from all groups were sacrificed and following cardiodynamic parameters were collected: maximum rate of pressure development in the left ventricle (dp/dt max), minimum rate of pressure development in the left ventricle (dp/dt min), systolic left ventricular pressure (SLVP), diastolic left ventricular pressure (DLVP), heart rate (HR) and coronary flow (CF). Our results demonstrated for the first time that combined sacubitril/valsartan administration preserved cardiac contractility, systolic and diastolic function of the MetS hearts exposed to I/R injury. Moreover, it was observed that examined drugs decreased blood pressure in diabetic rats while no significant differences in the heart rate values were observed. Obtained results indicate promising potential of combined sacubitril/valsartan use for the management of metabolic syndrome.

Keywords: sacubitril; valsartan; ischemia/reperfusion injury; metabolic syndrome; rat.