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The Effect of Hypertension on ET-1 Signaling Pathway Activation in Trabecular Meshwork of Hypertension Rat Model

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Abstract: This study aims to evaluate the effect of hypertension model induced by Deoxycorticoacetate (DOCA) on ratio of endothelin (ET-1)/eNOS, expression of ET-1 Receptor A (ETRA) and ET-1 Receptor B (ETRB), expression of phosphorylated Myosin Light Chain Kinase (MLCK) and Caldesmon (CaD) in endothelial cells of TM. Experimental study was performed on 20 male rats, divided into control group (1) and hypertension group (2-4): DOCA subcutaneous 10 mg/kg BW twice a week + NaCl 0.9% for 2, 6, and 10 weeks. Blood pressure was measured by BP analyzer. ET-1 signaling were evaluated by immunofluorescent staining under confocal microscope observation. Data were analyzed by one way Anova or Kruskal Wallis Test and Mann Whitney Test. Blood pressure was significantly increased in all of hypertension groups compare to control ($p = 0.001$). The average ratio of ET-1/eNOS were highest in 2 weeks (1.31±0.025). The ETRA were significantly increased in 2 and 6 weeks after treatment (1476.3±20.9 Au and 1209.7±6.1 Au), while ETRB only in 2 weeks (1160.5±18.2 Au). The highest average of MLCK (1916.68±6.41 Au) and CaD (1676.37±7.72 Au) were also found in 2 weeks of hypertension. Hypertension induced by DOCA-salt stimulation activated ET-1 signaling pathway in TM. Activation peak was achieved at 2 weeks hypertension, as a development phase of hypertension.

Keywords: Deoxycorticoacetate-salt, ET-1 signaling pathway, hypertension, trabecular meshwork.

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