2-Y-E3-1 YIA

Chemerin/CMKLR1 in the brain of spontaneously hypertensive rats mediates systemic hypertension

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Chemerin is one of the adipocytokines involved in inflammatory responses via G protein-coupled receptor, chemokine-like receptor (CMKLR)1. The important nuclei regulating systemic blood pressure (BP) exist in the brain. We previously reported that acute intracerebroventricular injection of chemerin-9, an active fragment of chemerin, to normal Wistar rats induced pressor responses through activating sympathetic nerves. In the present study, we test the hypothesis that chemerin/CMKLR1 mediates systemic high BP in spontaneously hypertensive rats (SHR). Systolic BP and heart rate of CMKLR1 small interfering (si) RNA-treated SHR were measured by a tail cuff method. Expression of CMKLR1 in the brain tissues and plasma chemerin in control Wistar Kyoto rats (WKY) and SHR were examined by Western blotting. The expression of CMKLR1 in the brain tissues of SHR was increased compared with WKY. Systolic BP but not heart rate in the CMKLR1 siRNA-treated SHR was significantly decreased. The plasma chemerin was not different between SHR and WKY. In conclusion, it is suggested that chemerin/CMKLR1 in the brain may mediate increases in systemic BP in SHR.