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RESEARCH AREA

Effects of endocannabinoid signaling on vascular functions and remodeling

It has been known that endogenously produced cannabinoids (endocannabinoids) play a role in the physiological functions. It has also been known that consuming exogenous cannabinoid-derived drugs may induce alterations of cardiovascular and hormonal system. Effects of endocannabinoids in the nervous system and other tissues are mediated mostly via CB1 cannabinoid receptors (CB1R). We have reported before that CB1Rs influence vascular control mechanisms in some vascular beds.

Thus we aim to investigate the roles of endocannabinoid system and CB1 cannabinoid receptor signaling on the vascular functions and remodeling induced by pathological states (e.g. hypertension, hormonal and metabolic diseases).

Research experimental work is performed in the Laboratory of Molecular Physiology, Department of Physiology of Semmelweis University. Blood pressure of rats and transgenic mice (CB1R knockout) is measured and functions of vessels are measured with myography. Vascular remodeling is detected by tissue staining methods.

Beneficial outcomes of the research project targeting endocannabinoid system and cannabinoid signaling may reveal physiological mechanisms and give a therapeutic potential.

TECHNIQUES AVAILABLE IN THE LAB

Research experimental work is performed in the Laboratory of Molecular Physiology, Department of Physiology of Semmelweis University. Blood pressure of rats and transgenic mice (CB1R knockout) is measured and functions of vessels are measured with myography. Vascular remodeling is detected by tissue staining methods.

SELECTED PUBLICATIONS

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Nádasy, G. L., Balla, A., Dörnyei, G,, Hunyady, L., Szekeres, M. (2025) Direct Vascular Effects of Angiotensin II (A Systematic Short Review). **Int J Mol Sci 26(1):** 113.

Süli, A., Magyar, P.*,Vezér, M., Bányai, B., Szekeres, M., Sipos, M., Mátrai, M., Hetthéssy, J. R., Dörnyei, G., Ács, N. et al. (2023) Effects of Gender and Vitamin D on Vascular Reactivity of the Carotid Artery on aTestosterone-Induced PCOS Model. **Int J Mol Sci 24(23):** 16577.

Nádasy, G. L., Balla, A., **Szekeres, M.** (2023) From Living in Saltwater to a Scarcity of Salt and Water, and Then an Overabundance of Salt—The Biological Roller Coaster to Which the Renin–Angiotensin System Has Had to Adapt: An Editorial. **Biomedicines 11(11):** 3004.

Vezér, M., Jósvai, A., Bányai, B., Ács, N., Keszthelyi, M., Soltész-Katona, E., **Szekeres, M.**, Oláh, A., Radovits, T., Merkely, B. et al. (2023) Impact of Sex and Exercise on Femoral Artery Function: More Favorable Adaptation in Male Rats. **Life-Basel 13(3):** 778.