



## Conference Abstract

# P.39 The Role of Advanced Glycation End Products in Vascular Ageing. Which Parameter is the Most Suitable as Biomarker?

Otto Mayer\*, Július Gelžinský, Jitka Seidlerová, Jan Filipovský

2nd Dept. of Internal Medicine, Medical Faculty and University Hospital

### Keywords

sRAGE  
AGEs  
arterial stiffness

### ABSTRACT

**Background:** Advanced glycation end products (AGEs) are involved into several pathophysiologic processes in vascular diseases, including progressive loss of elasticity of vessel wall (arterial stiffness). Circulating soluble receptor for AGEs (sRAGE) act as a decoy and counterbalanced the harmful properties of AGEs as the natural protective factor [1,2]. We compared the role of circulating or skin-deposited AGEs and sRAGE regarding natural course of arterial stiffening.

**Methods:** In a prospective cohort study, we longitudinally followed 536 general-population-based subjects (subsample of Czech post-MONICA study). Aortic pulse wave velocity (PWV) was measured twice (at baseline and after ~8 years of follow-up) using a SphygmoCor device (AtCor Medical Ltd.), and the intraindividual change in PWV per year ( $\Delta$ PWV/year) was calculated. Concentrations of sRAGE and carboxymethyl lysine (circulating AGEs) were assessed at follow-up visit by ELISA, while skin AGEs were measured using autofluorescence-based device AGE Reader.

**Results:** Using multiple regressions, we found significant association between  $\Delta$ PWV/year as dependent variable and both, sRAGE and skin AGEs as independent ones (each on its own model). However, the closest association to  $\Delta$ PWV/year were found for ratio of these two factors (skin AGEs/sRAGE) [coeff = 0.0747 (SE 0.0189),  $p < 0.0001$ ]. In categorized manner, subjects with skin AGEs/sRAGE ratio  $\geq 3.3$  showed about two-fold higher risk having PWV/year  $\geq 0.2$  m/sec [adjusted odds ratio was 2.09 (95% CI: 1.35–3.22),  $p = 0.001$ ]. In contrast neither circulating AGEs nor circulating AGEs/sRAGE showed any significant relation to PWV/year.

**Conclusions:** Skin AGEs/sRAGE ratio seems to be more sensitive biomarker of vascular ageing than these single factors themselves or circulation status of AGEs [3].

### REFERENCES

- [1] Prasad K. Low levels of serum soluble receptors for advanced glycation end products, biomarkers for disease state: myth or reality. *Int J Angiol* 2014;23:11–16.
- [2] Geroldi D, Falcone C, Emanuele E, D'Angelo A, Calcagnino M, Buzzi MP, et al. Decreased plasma levels of soluble receptor for advanced glycation end-products in patients with essential hypertension. *J Hypertens* 2005;23:1725–9.
- [3] Mayer O, Gelžinský J, Seidlerová J, Mateřánková M, Mareš Š, Svobodová V, et al. The role of advanced glycation end products in vascular aging: which parameter is the most suitable as a biomarker? *J Hum Hypertens* 2020.

© 2020 Association for Research into Arterial Structure and Physiology. Publishing services by Atlantis Press International B.V. This is an open access article distributed under the CC BY-NC 4.0 license (<http://creativecommons.org/licenses/by-nc/4.0/>).