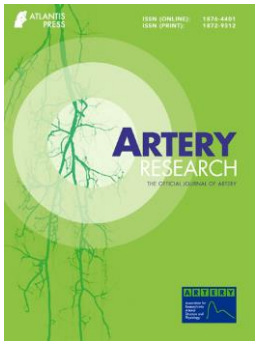

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# P4.11: SERUM UREA IS A NEW BIOMARKER OF CELLULAR AND VASCULAR AGING

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**Table 1**

| Predictor | β | Standard Error | p |
|---|---|---|---|
| Age | 0,099 | 0,028 | 0,001 |
| Telomere length | -0,658 | 0,309 | 0,037 |
| Fasting glucose | 0,388 | 0,160 | 0,017 |
| Hb1Ac | 0,801 | 0,362 | 0,031 |

**Table 2**

| Predictor | β | Standard Error | p |
|---|---|---|---|
| Age | -0,026 | 0,010 | 0,015 |
| HOMA-IR | -0,176 | 0,056 | 0,027 |
| Hb1Ac | -0,213 | 0,148 | 0,155 |

**In conclusion**: TL along with indicators of glucose metabolism mainly determine arterial stiffness. There is a considerable impact of glucose regulation on telomere dynamics. IR may be the main target in preventing accelerating arterial aging.

### P4.09
### DIFFERENT EFFECTS OF 7-NITROINDAZOLE AND L-NAME ADMINISTERED INDIVIDUALLY AND/OR TOGETHER ON CARDIOVASCULAR SYSTEM OF ADULT WISTAR RATS

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**Objectives**: We evaluate the effect of $N^G$-nitro-L-arginine methylester (L-NAME) and 7-nitroindazole (7NI) administered individually and/or together on cardiovascular system of adult Wistar rats.
**Methods**: L-NAME (50 mg/kg/day in tap water) and 7NI (10 mg/kg/day in pellets) was administered to Wistar rats from $10^{th}$-16th week of age. Blood pressure (BP) was measured by the plethysmographic method weekly. For morphological study the animals (n=10 in each group) were perfused with a fixative (120 mmHg) and carotid and coronary arteries were processed for electron microscopy. For functional investigation aortal rings (n=10 in each group) in organ bath were used.
**Results**: L-NAME administration to Wistar rats evoked increase of BP, hypertrophy of the heart and arterial wall, increase of cross sectional areas (CSA) of endothelial and muscle cells, increase of extracellular matrix, decrease of endothelial dependent relaxation (EDR) to acetylcholine, and increase of noradrenaline contraction. 7NI administration resulted in BP independent hypotrophy of the heart and arterial wall, decrease CSA of endothelial and muscle cells without affecting CSA of extracellular matrix, mild decrease of acetylcholine induced EDR, and noradrenaline contraction. Common administration of 7NI and L-NAME evoked (i) lower effect on BP, and trophicity of both arteries and heart compared to L-NAME, and (ii), similar decrease of EDR as in L-NAME group, and (iii) decreased contractile effect.
**Conclusions**: The results indicate that two different NO-synthase inhibitors L-NAME and 7NI via decreased synthesis of the same NO molecule evoked different and in many causes the opposite effects on cardiovascular system of normotensive Wistar rats.

### P4.10 Withdrawn by author

### P4.11
### SERUM UREA IS A NEW BIOMARKER OF CELLULAR AND VASCULAR AGING

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**Objective**: Large arteries stiffness is a feature of arterial aging and a predictor of cardiovascular diseases. The length of telomere (TL) in leukocytes is widely considered as a biomarker for cellular aging, cardiovascular aging and cardiovascular diseases. High concentrations of urea is known to increase oxidative stress. The aim of our study was to determine whether the indicators of renal function are associated with TL and arterial stiffness, evaluated by measuring aortic pulse wave velocity (PWV).
**Methods**: The study group included 150 subjects free of known cardiovascular diseases, kidney diseases, anti-diabetes, antihypertensive and lipid lowering medications. PWV was measured with the help of SphygmoCor (AtCor Medical). Telomere length has been determined by quantitative polymerase chain reaction. Renal function was assessed by creatinine clearance calculated with the MDRD formula . Microalbuminuria (MAU) and urea levels were determined using routine laboratory methods.
**Results**: Pearson's correlations are demonstrated in the table 1 and table 2.

**Table 1**

| | TL |
|---|---|
| Age | r= -0,2860<br>p= 0,0003 |
| Creatinine clearance (ml/min) | r= -0,4267<br>p= 0,0167 |
| MAU (mg/l) | r= -0,2718<br>p= 0,0175 |
| Urea (mmol/l) | r= -0,2521<br>p= 0,0098 |

**Table 2**

| | PWV |
|---|---|
| Age | r= 0,5223<br>p= 0,0001 |
| TL | r= -0,2657<br>p= 0,0096 |
| Creatinine clearance (ml/min) | r= 0,1964<br>p= 0,2814 |
| MAU (mg/l) | r= 0,0186<br>p= 0,8544 |
| Urea (mmol/l) | r= 0,1784<br>p= 0,0384 |

In conclusion, even physiological concentrations of plasma urea contribute to cellular and vascular aging. TL may play a role in kidney function. The relationship between TL and kidney repair and regeneration needs increasing studies.

### P4.12
### A COMPARISON OF DIFFERENT METHODS TO DETERMINE AORTIC PULSE WAVE VELOCITY IN ANEURYSMATIC AND CONTROL MICE

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**Introduction**: Accurate determination of aortic pulse wave velocity (PWV) in mice is not straightforward, due to the high resolution needed in both time and space. We compared different techniques in control and aneurysmatic mice.
**Methods**: N=30 male, 18 weeks-old C57Bl/6 mice were included. N=20 animals got implanted an osmotic pump delivering Angiotensin II, and were injected anti-TGF-beta antibodies to provoke aneurysm formation. PWV was determined using 4 different methods: (i) global foot-to-foot transit time based on ultrasound pulsed Doppler velocities (VisualSonics Vevo 2100) at the ascending aorta and 4 cm distal to it (tape-measured); (ii) abdominal foot-to-foot transit time based on 2 invasive pressure sensors placed exactly 2 cm apart (Sciscense catheter), considered the gold standard; (iii) abdominal, in vivo, invasive pressure-diameter (P-D) waveforms obtained via RF wall tracking; (iv) abdominal, ex-vivo P-D curves measured at in vivo stretch using an in-house myograph. The latter were restricted to the in vivo measured pressure range. P-D data were converted to PWV using the Bramwell-Hill equation and groups were statistically compared via a paired student-test.
**Results**: 13 complete datasets were available for analysis. In the control animals all in vivo methods yielded significantly different PWVs compared to the gold standard ($p<0.05$), and none of the investigated methods were found to correlate to each other. Moreover aneurysm presence was not picked up by transit-time methods, while it resulted in a significant increase in PWV ($p<0.0001$) in both P-D methods.