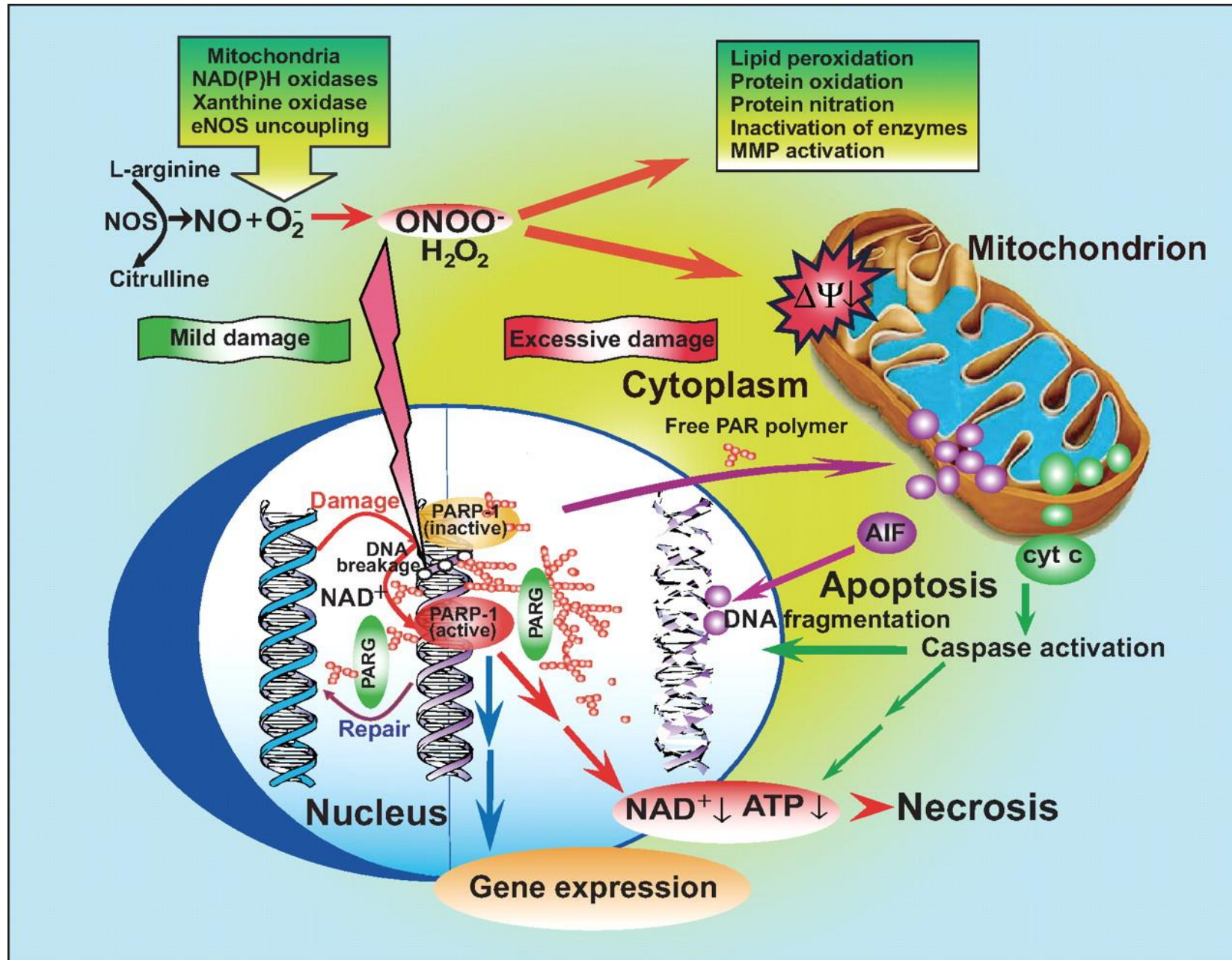


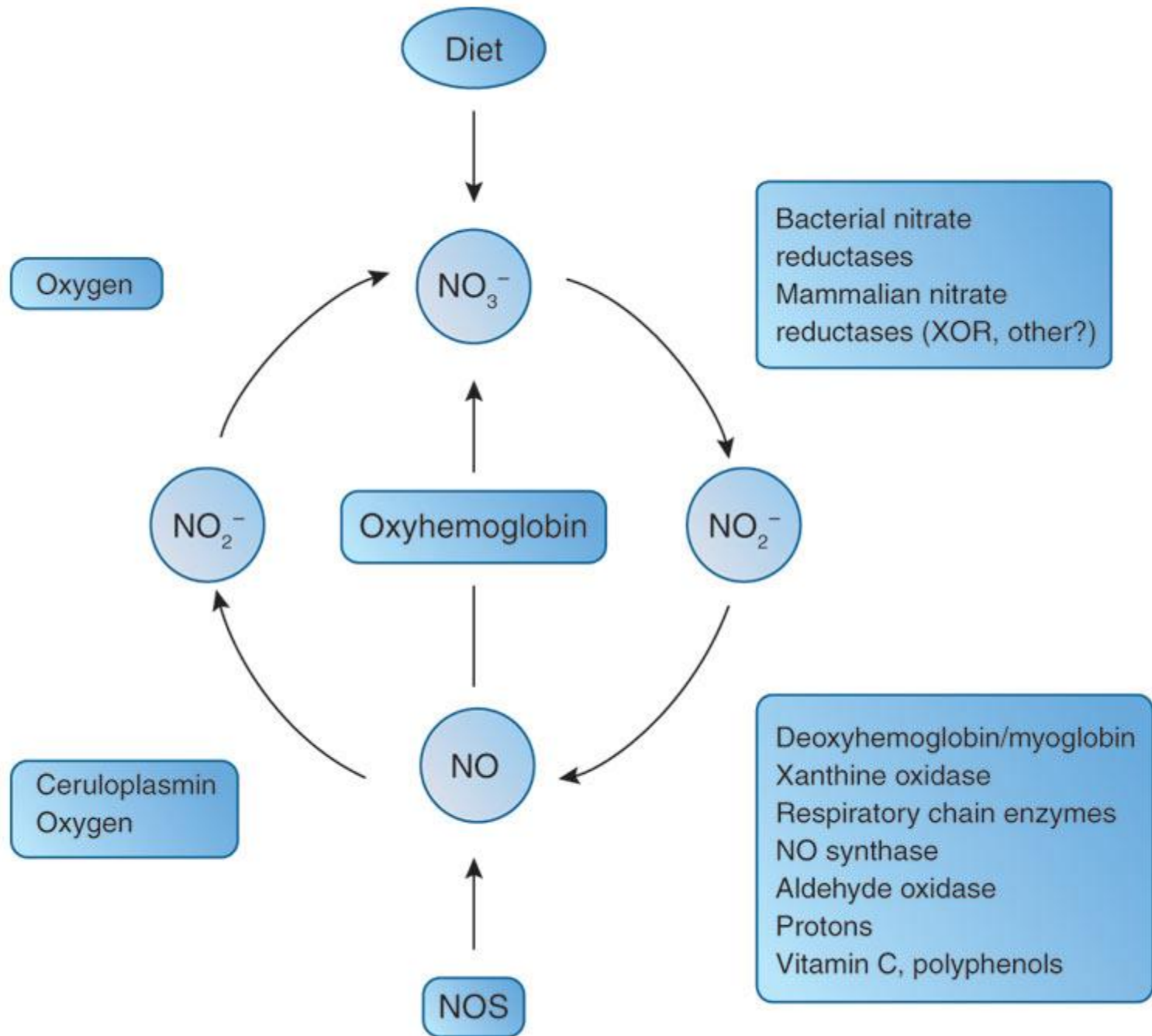
PARAMETERS OF NITRIC OXIDE METABOLISM AND DNA INTEGRITY IN PATIENTS WITH AUTOIMMUNE DISEASES

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Evita Rostoka^{1,2}, Jeļizaveta Sokolovska^{1,2}, Larisa Baumane², Nikolajs Sjakste^{1,2}*

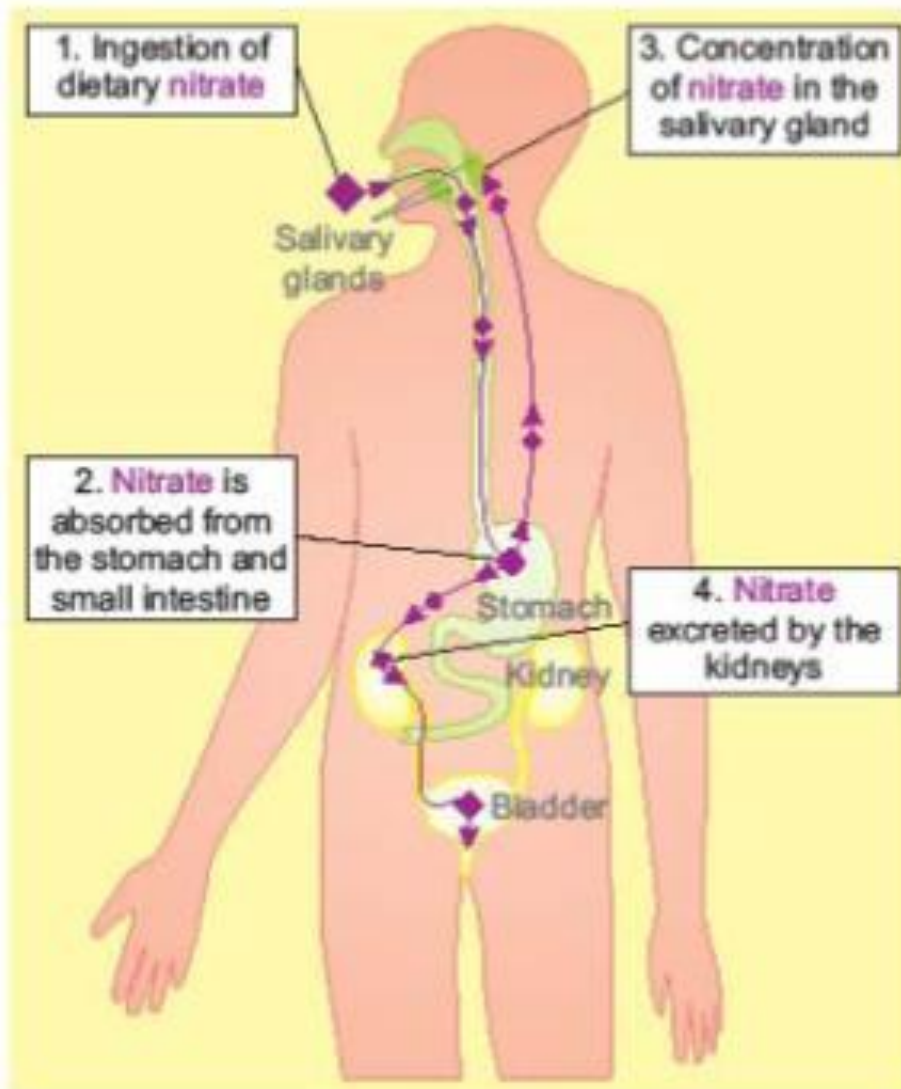
¹University of Latvia, Faculty of Medicine, Jelgavas 1a, Riga, Latvia, LV-1004

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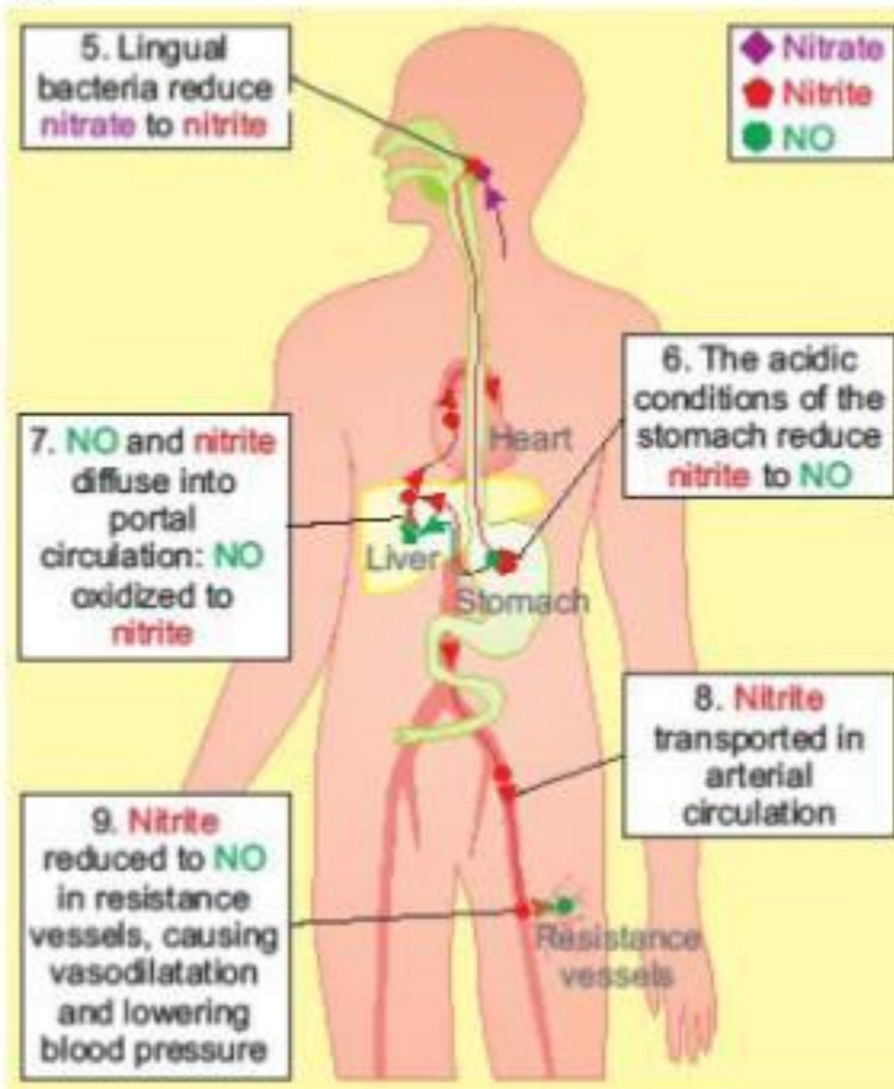




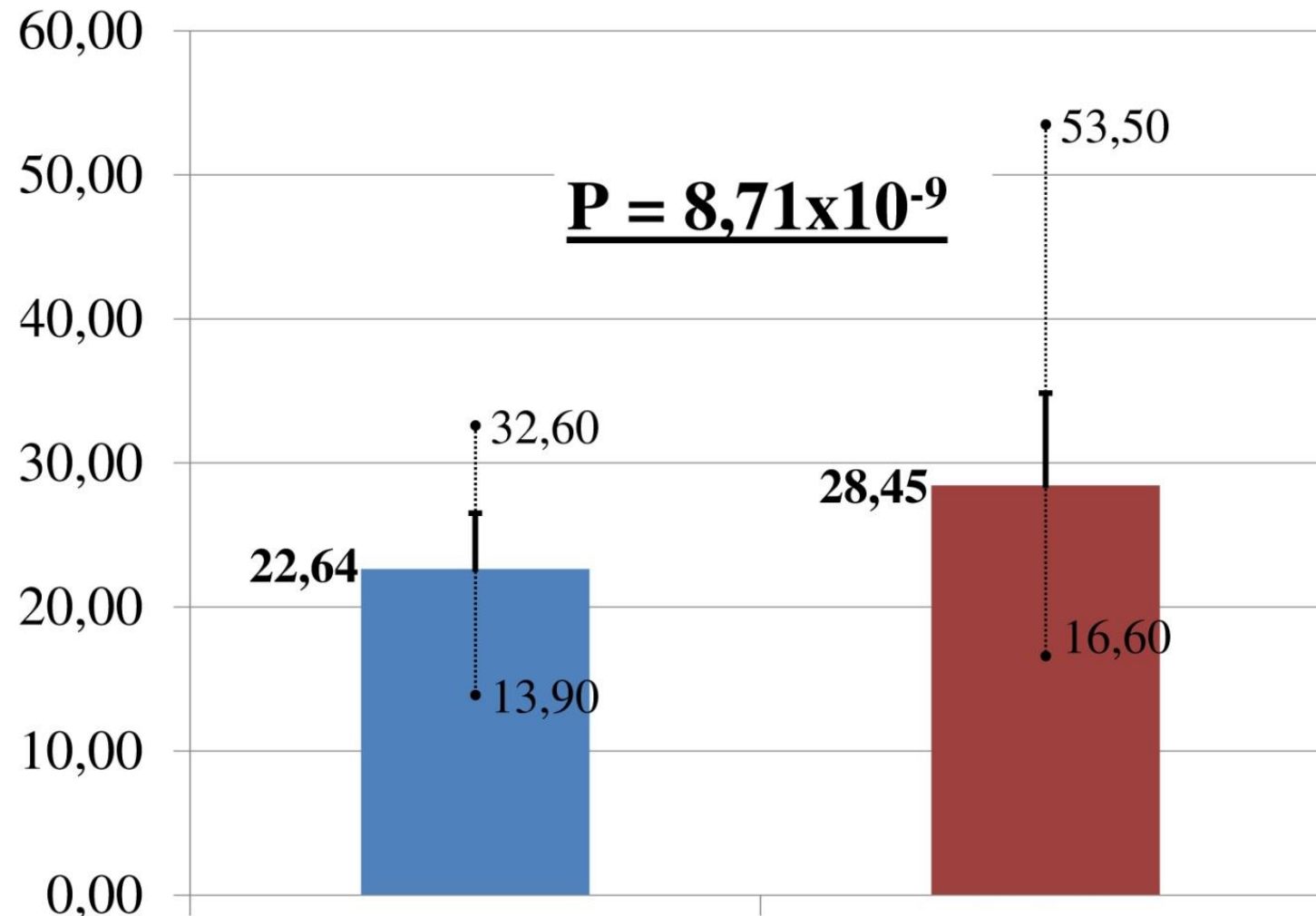
a



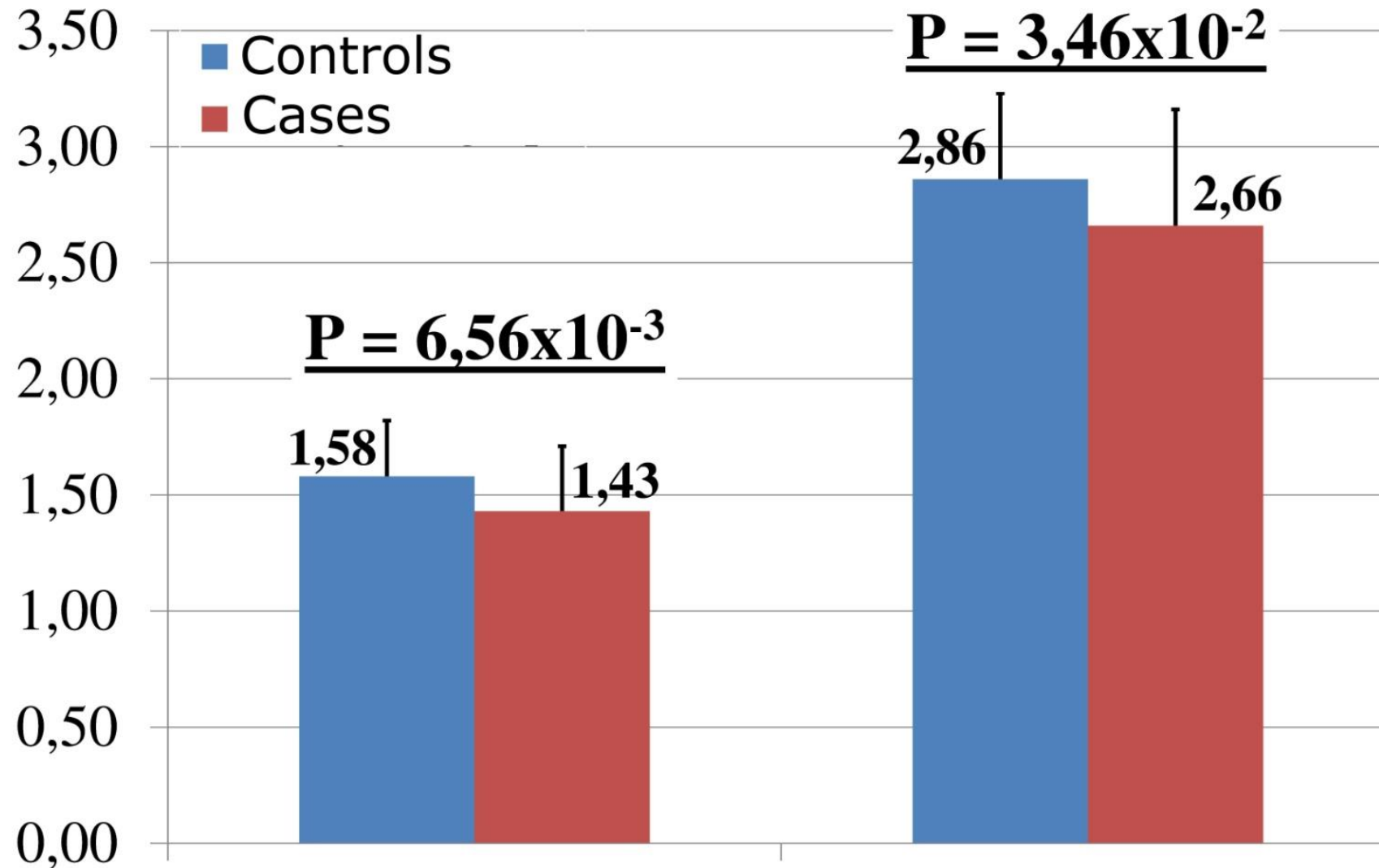
b



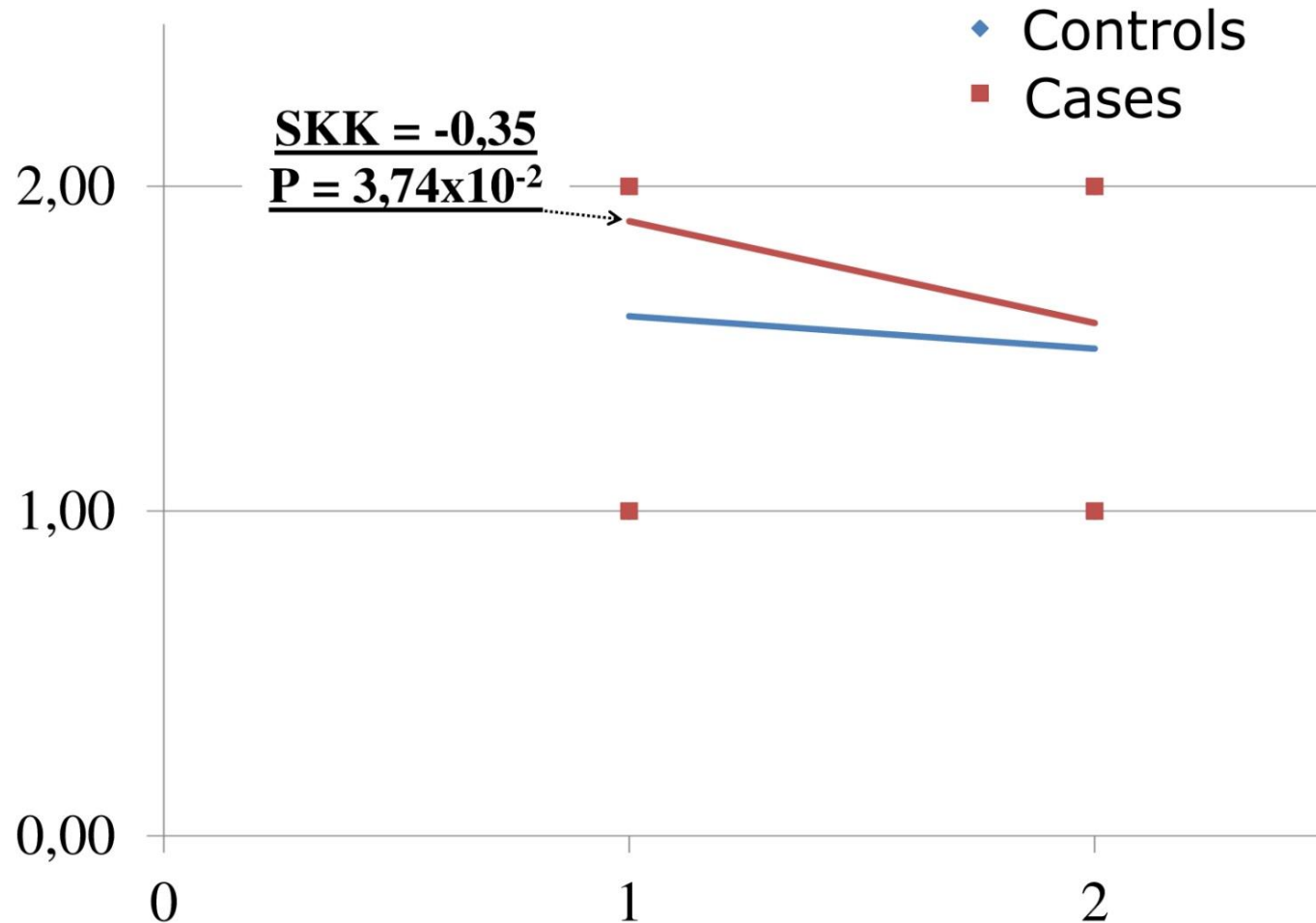
NO level in blood (ng/g tissue), blue-controls;
red -T1DM



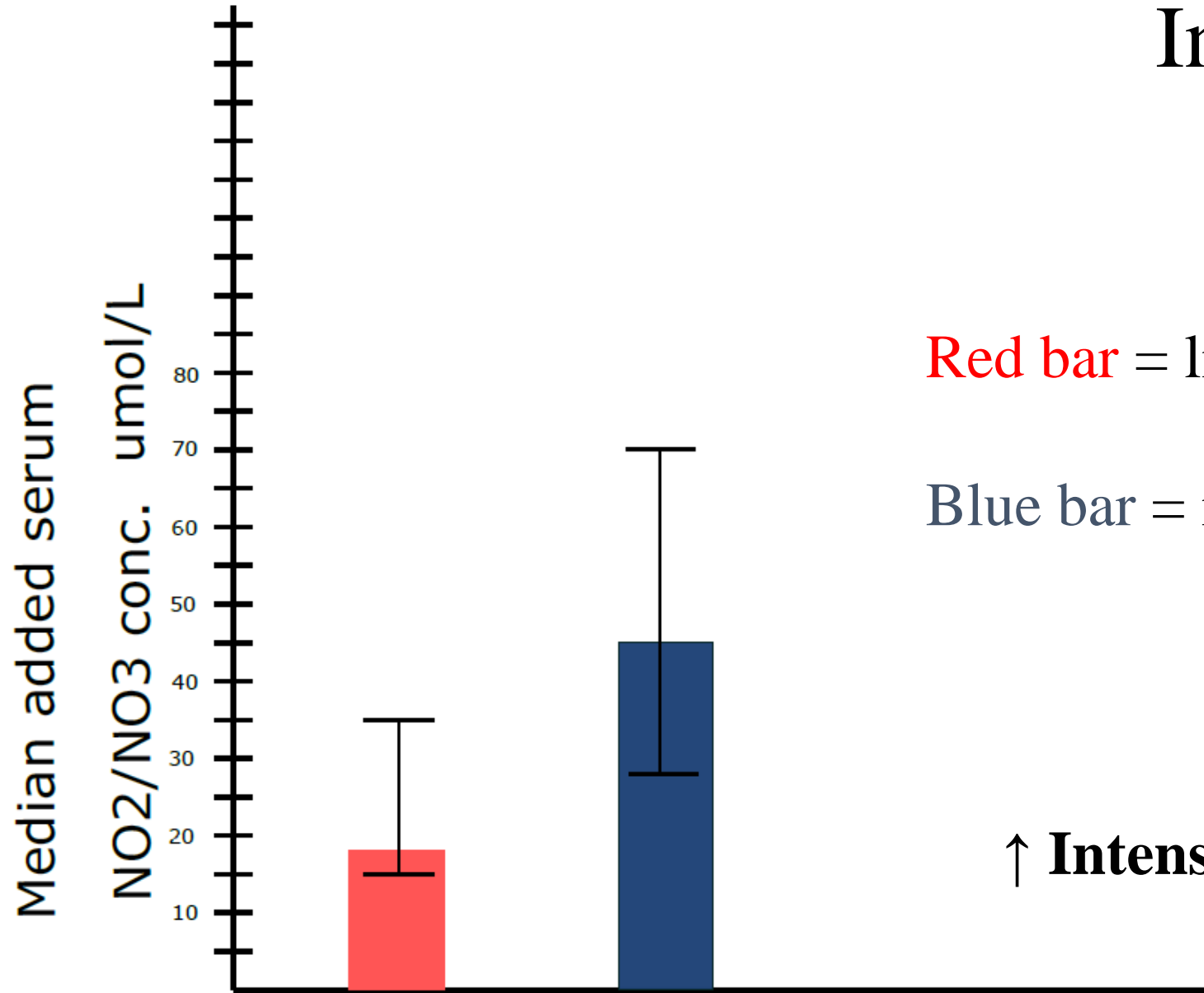
log [NO₂⁻/NO₃⁻] in serum and urine



Correlation between NO level in blood (ordinate) and $\text{NO}_2^-/\text{NO}_3^-$ (abscissa) level in serum



Intensity



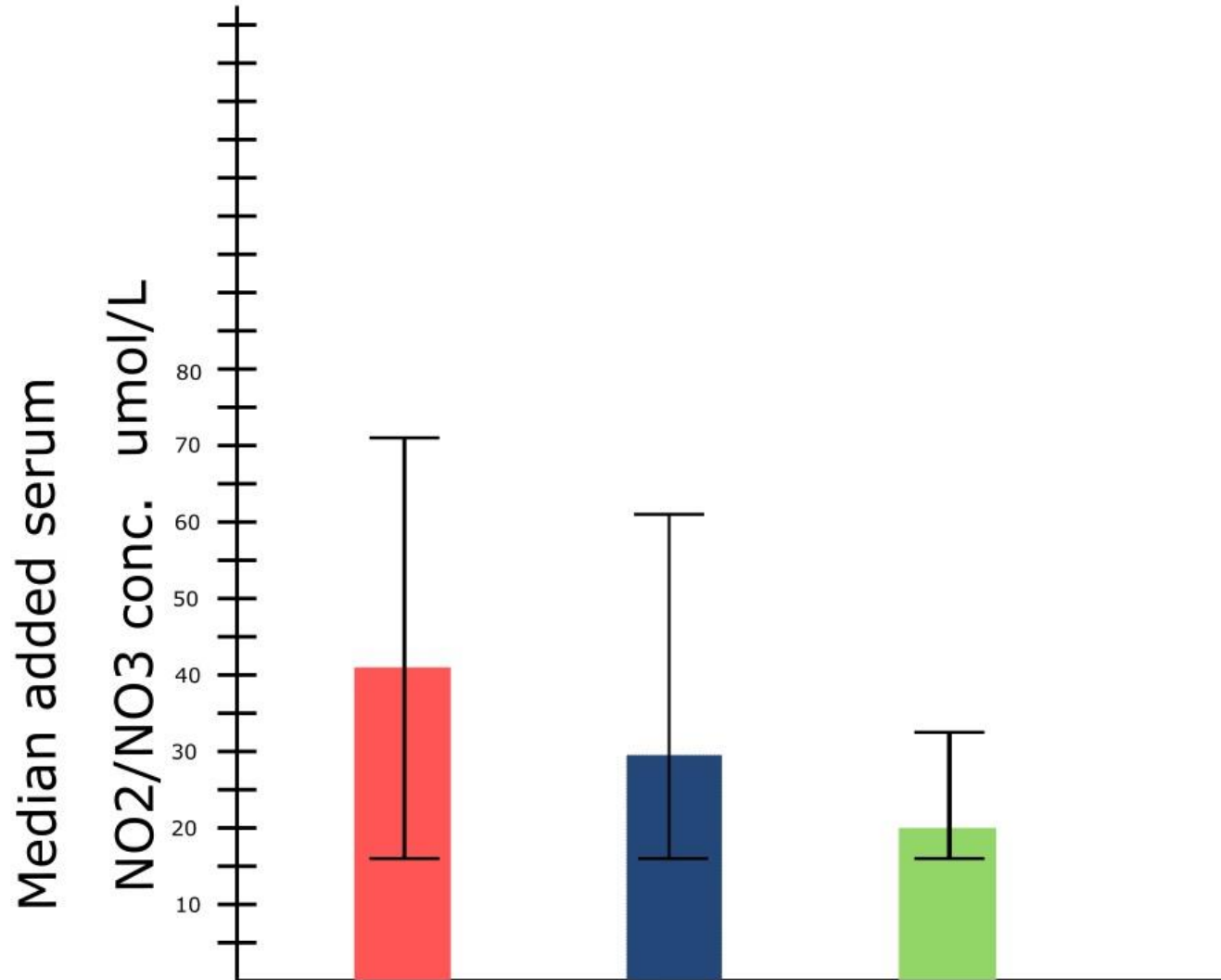
Red bar = light exercise $18,59 \pm 19,46$

Blue bar = intense exercise $45,00 \pm 42,29$

*(p value = 0,004)**

↑ Intensity = ↑ serum added NO2/NO3

Smoking



smokers (red bar)

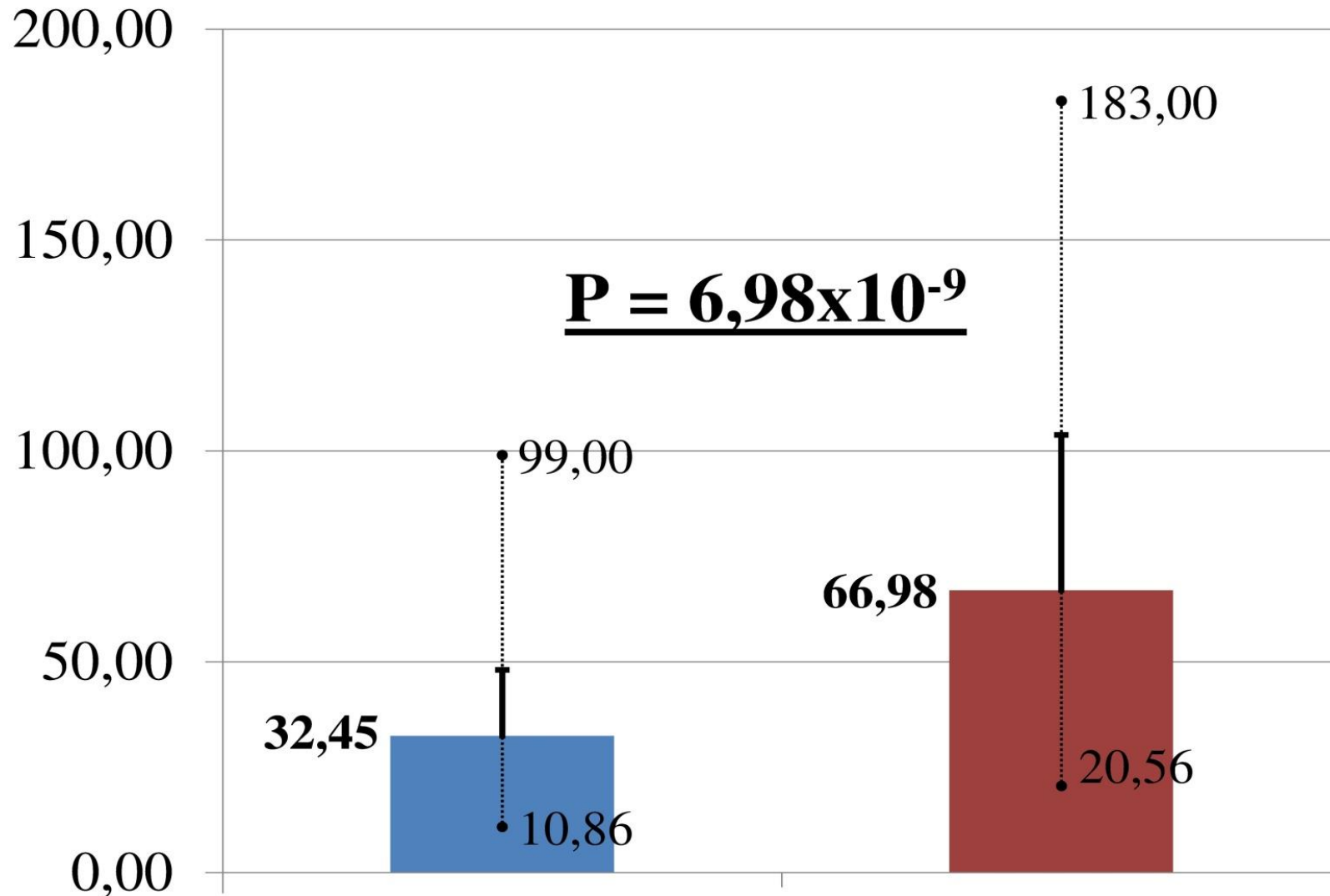
quitters (blue bar)

non-smokers (green bar)

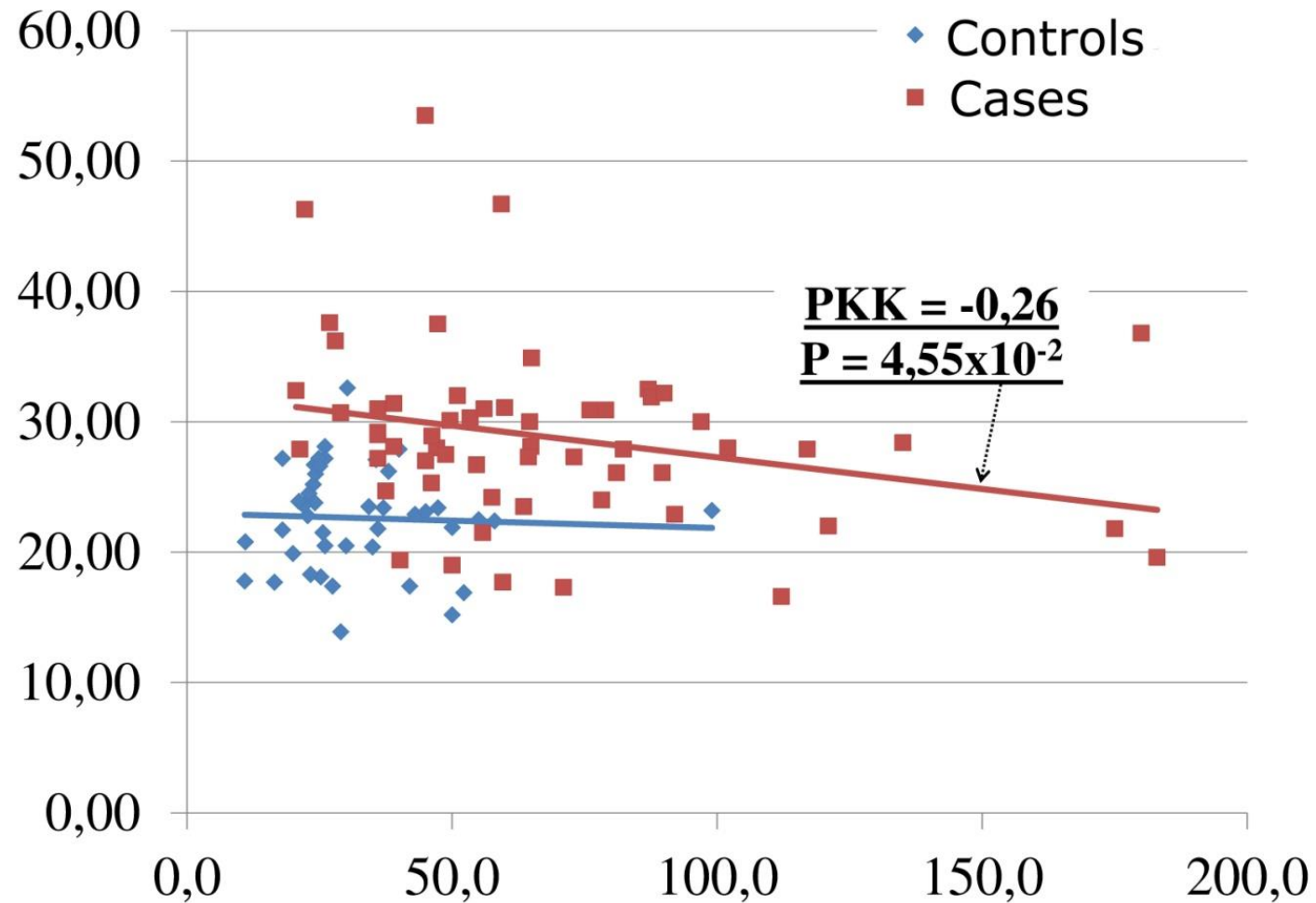
*p value = 0,047**

↑ **smoking** = ↑ **serum added NO2/NO3**

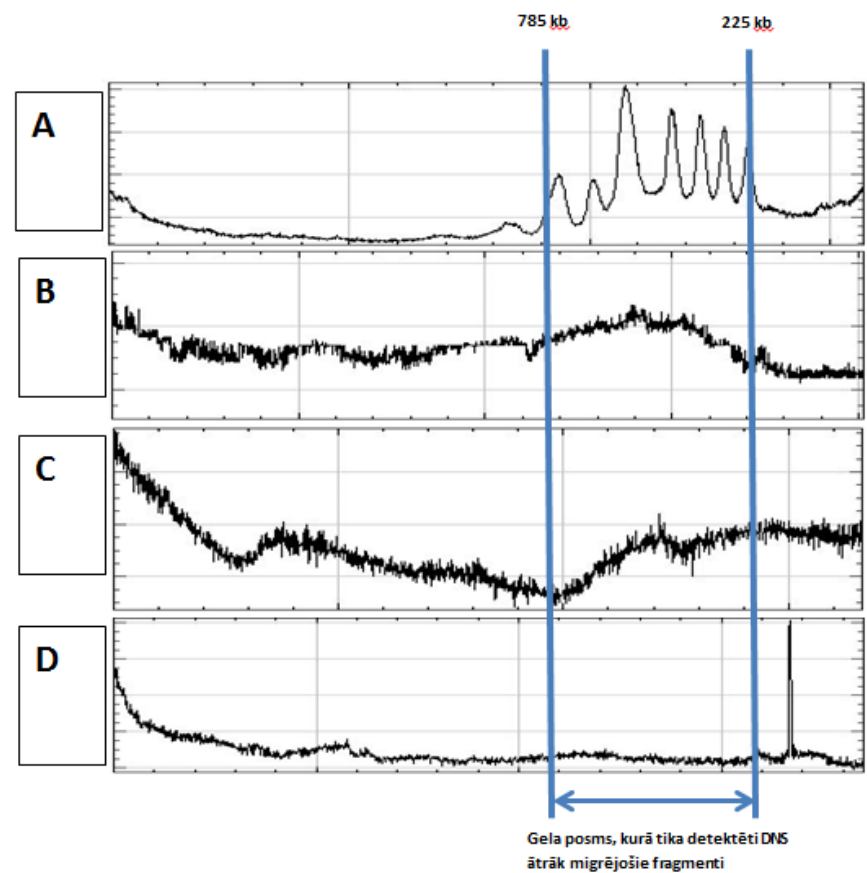
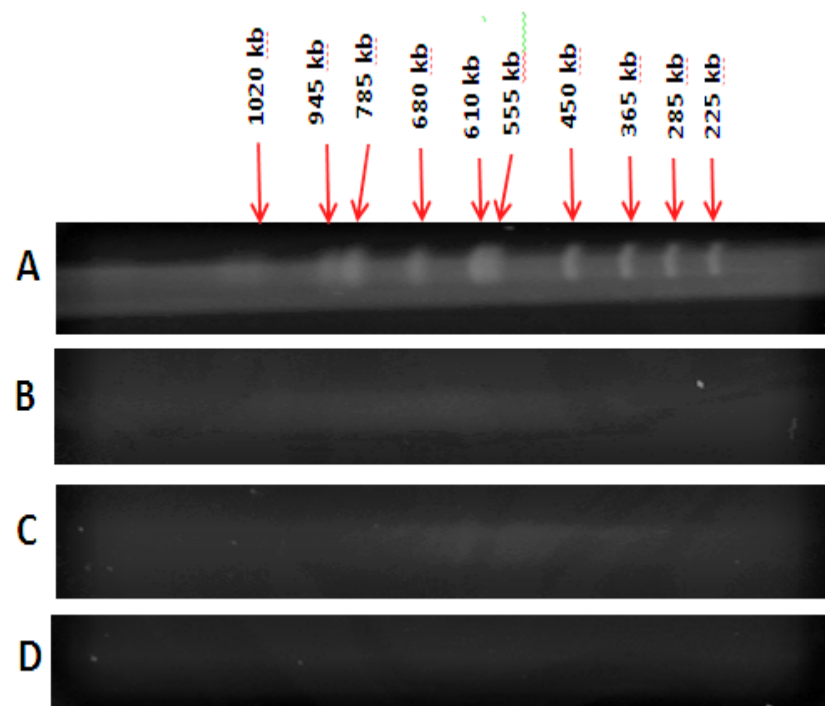
Levels of DNA damage (comet assay). Red- controls, blue T1DM



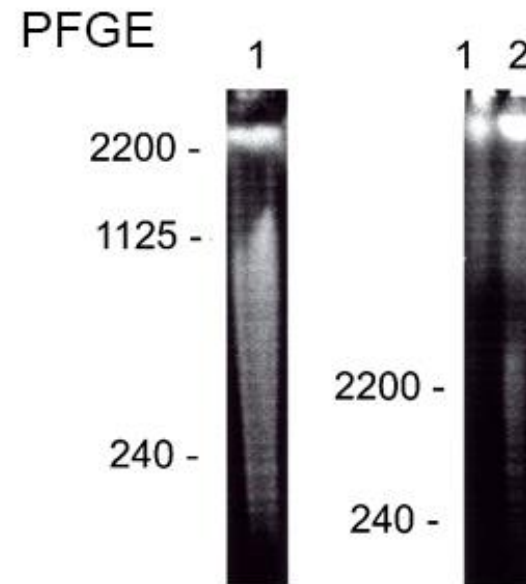
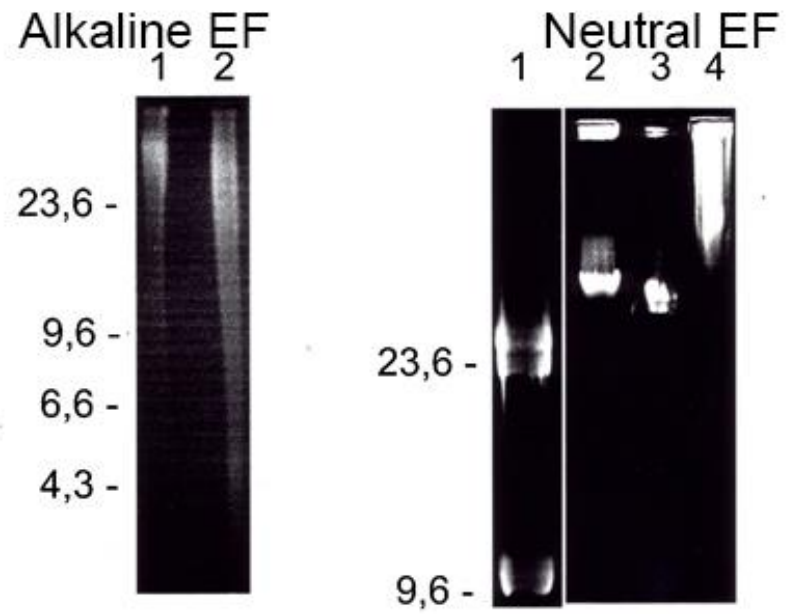
Correlation between DNA damage (abscissa) and serum NO level)ordinate



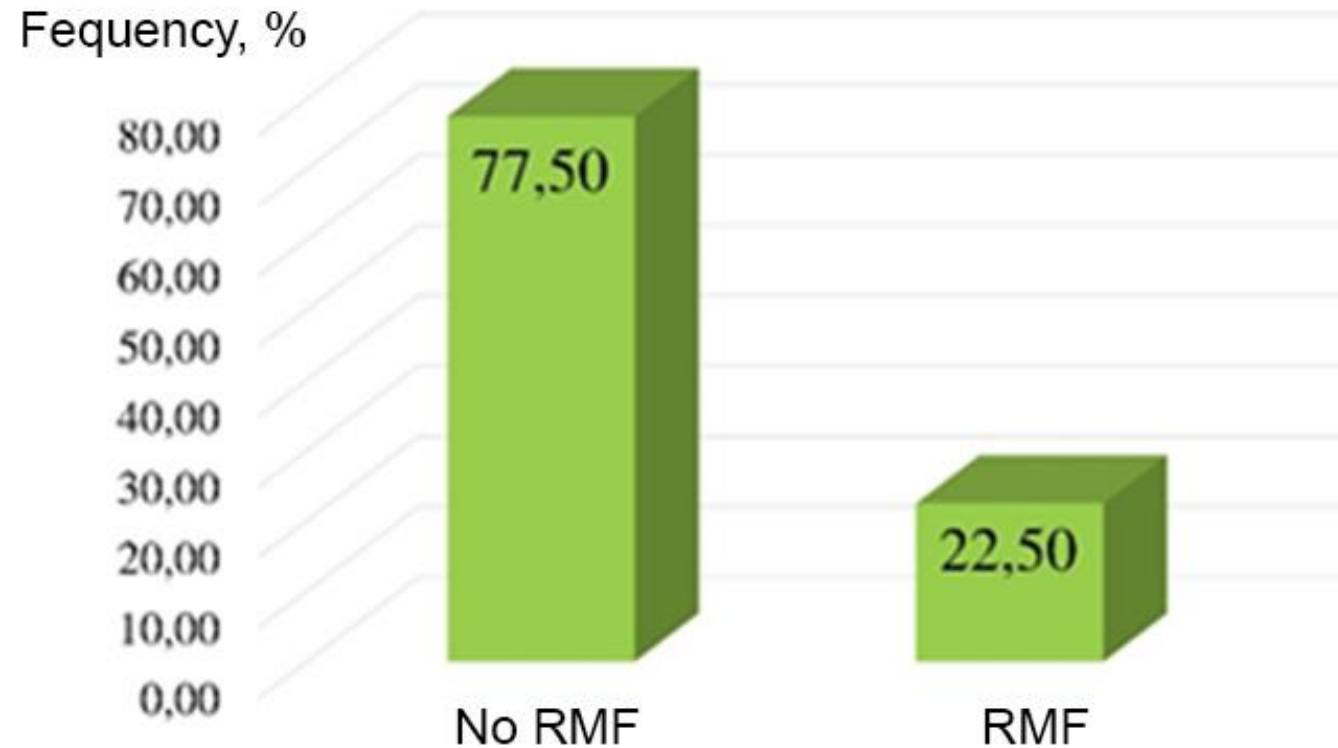
PFGE: humans



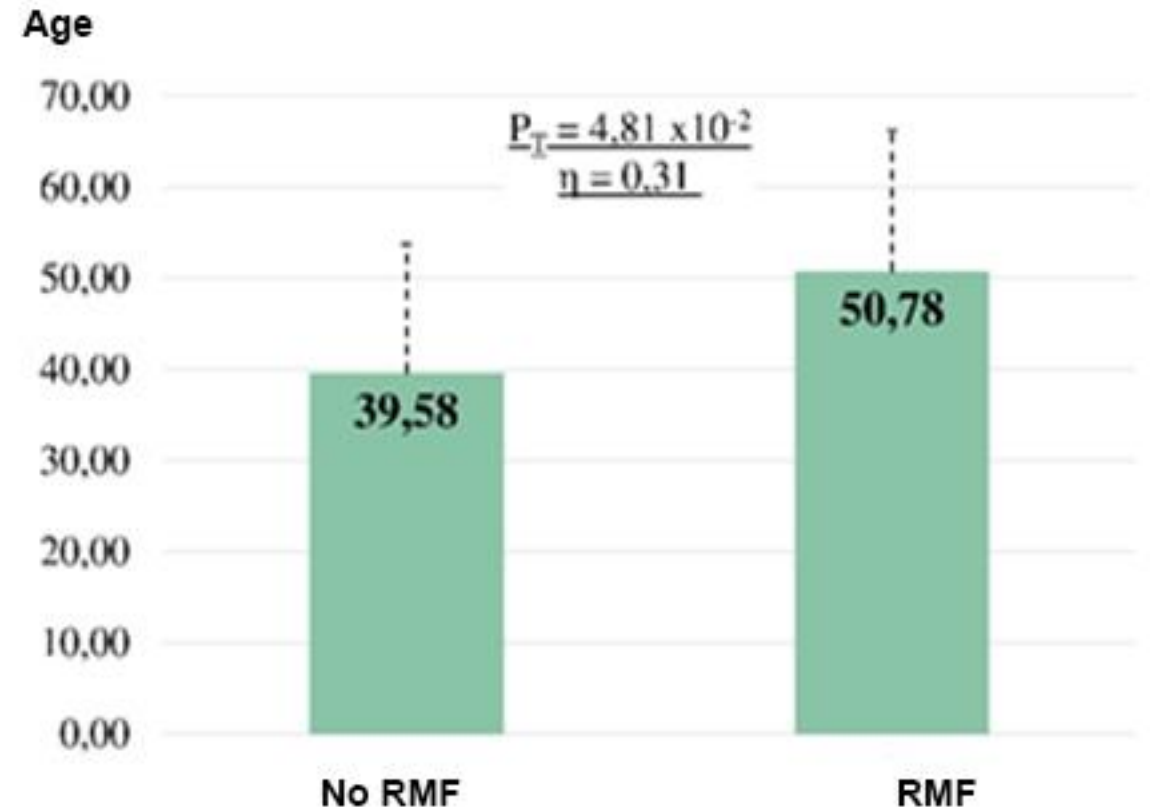
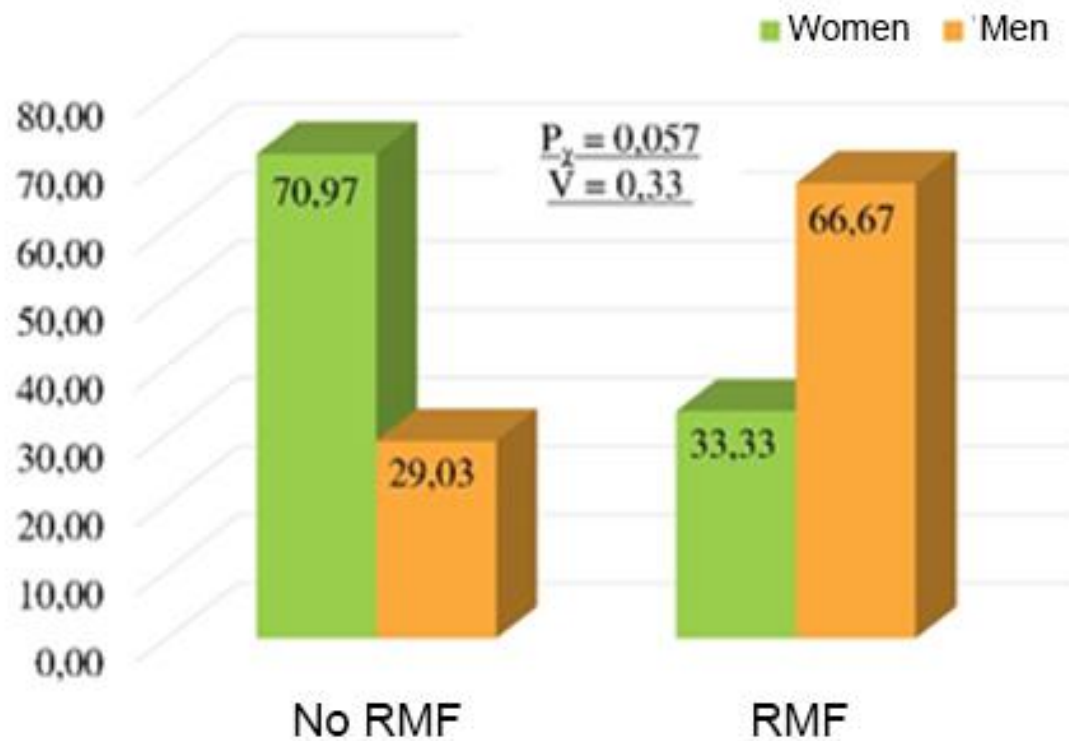
PFGE: Xenopus



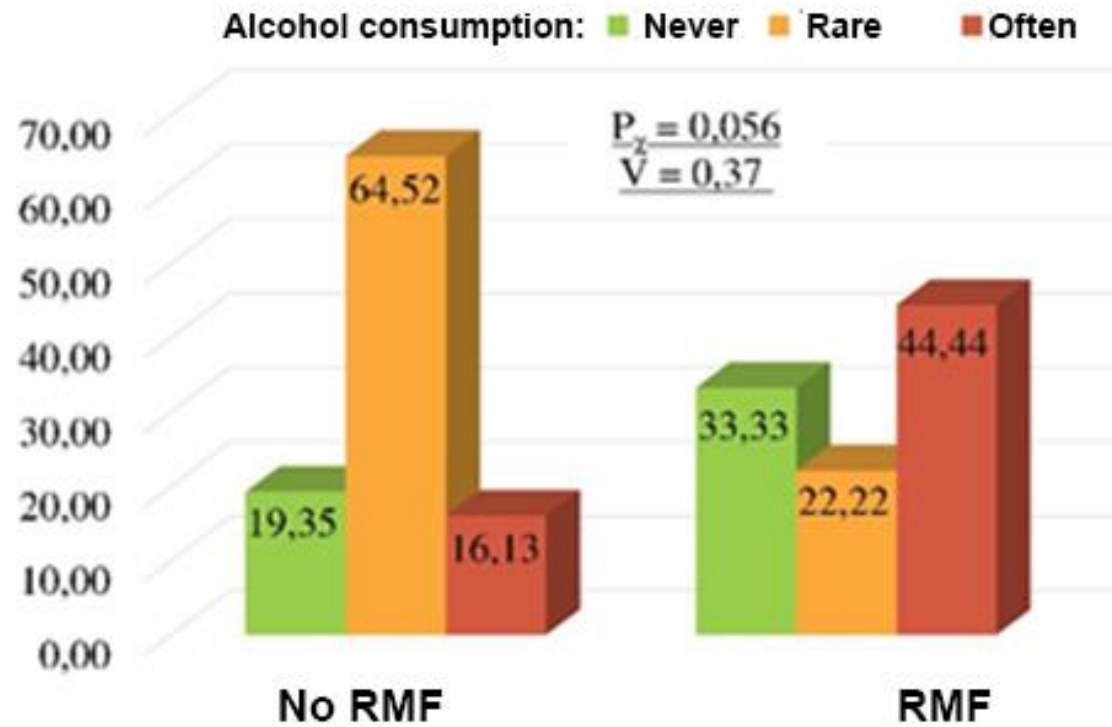
Rapidly migrating fraction is found in some individuals



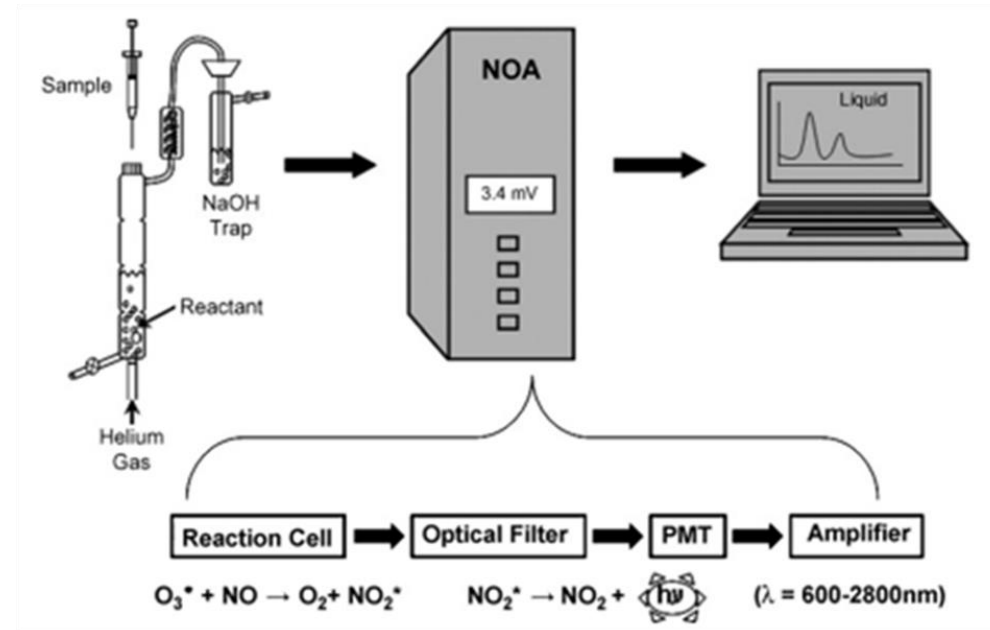
Rapidly migrating fraction is more frequent in men and aged persons



RMF frequency correlates with alcohol consumption



- NO_2^- concentration was measured using *Sievers' nitric oxide analyzer (Model 280i)*.
- Sensitive ~ 1 picomole;
- Detection range from nanomole to millimole;
- Sample volume 0.001-5 ml.



(MacArthur P.H., Shiva S., Gladwin M. T. 2007.)

Analyzed biochemical parameters

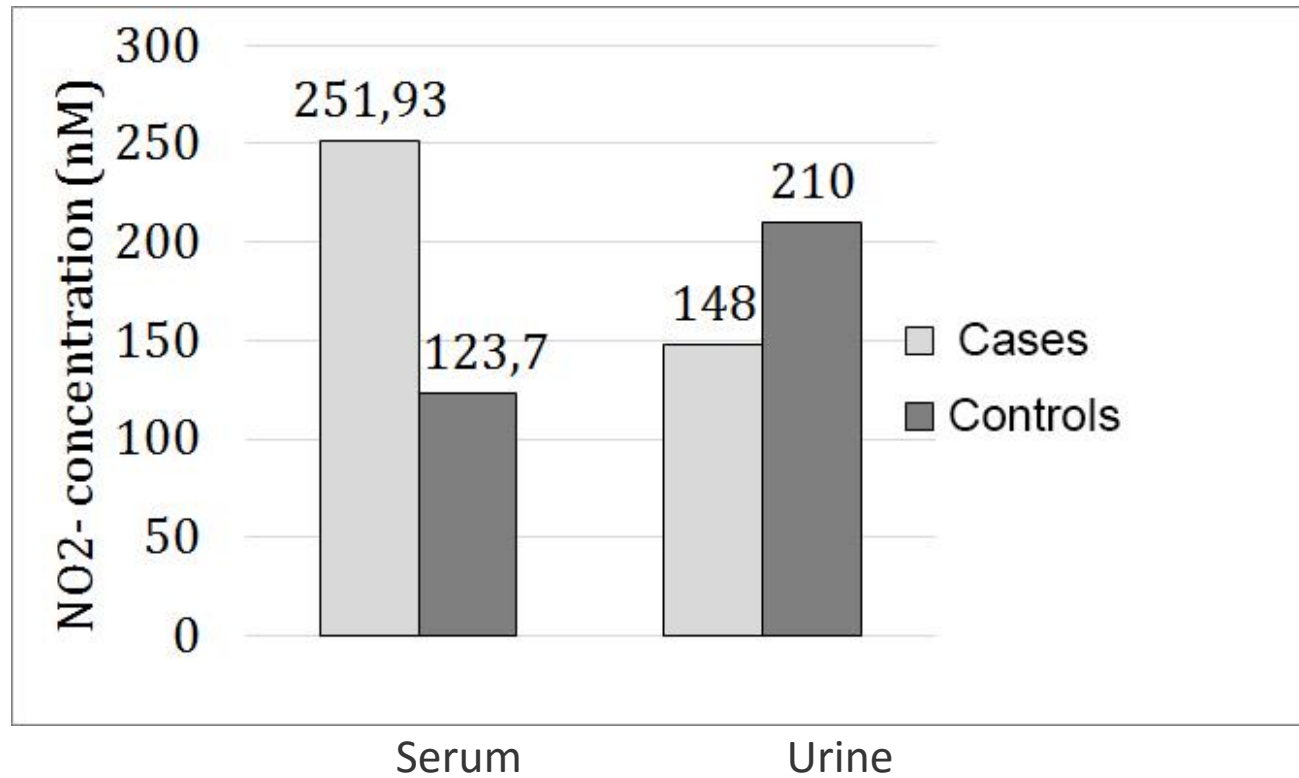
NO₂⁻ concentration

- **Urine**
- **Serum**



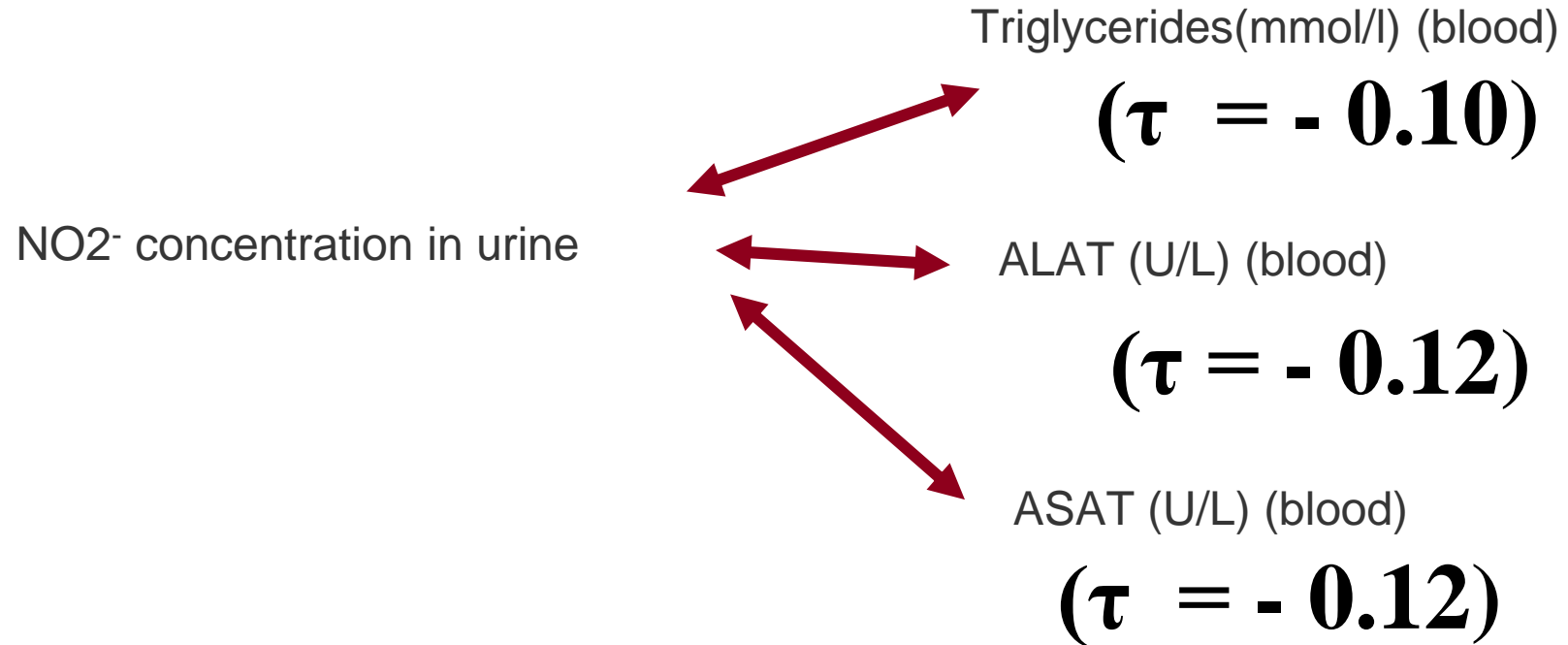
- **eGDR** (Estimated glucose disposal rate) (blood)
- **HbA1c %** - glycated hemoglobin (blood)
- **Total cholesterol level** (blood)
- **HDL** – high density lipoproteins (blood)
- **LDL** – low density lipoproteins (blood)
- **TG** – triglycerides (blood)
- **ALAT** – alanineaminotransferase (blood)
- **ASAT** – aspartateaminotransferase (blood)
- **CRO** – C reactive protein (blood)
- **Creatinine** (blood)
- **GFR** - glomerular filtration rate
- **Albuminuria**

Wilcoxon signed-rank test



Each group
contains data of
69 persons

Kendall rank correlation coefficient (cases)



Type 1 DM longer than five years

NO₂⁻ concentration in urine

ALAT (U/L) (blood)

$$(\tau = -0.13)$$

ASAT (U/L) (blood)

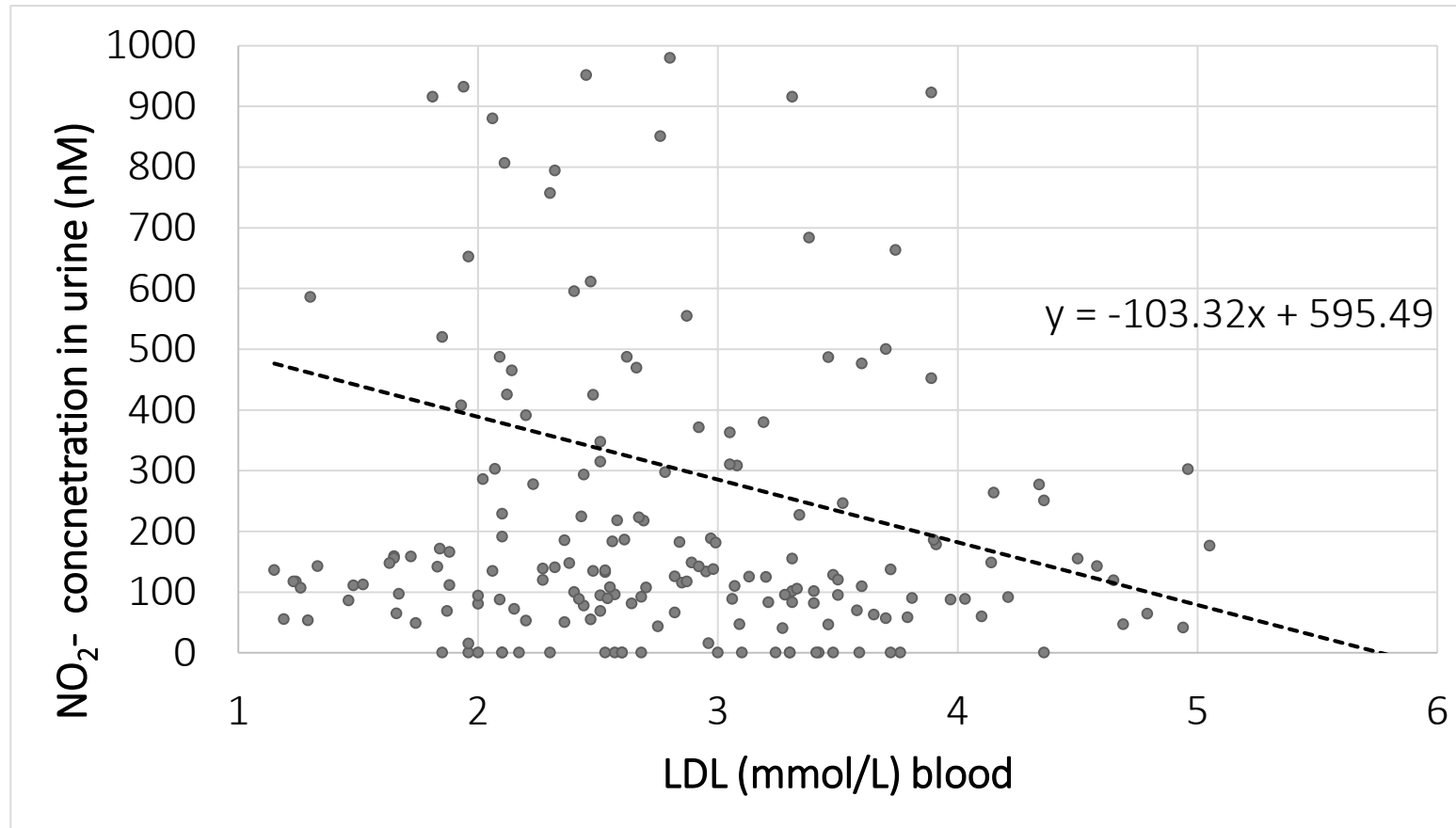
$$(\tau = -0.14)$$

NO₂⁻ concentration in serum

ALAT (U/L) (blood)

$$(\tau = 0.13)$$

T1DM patients with kidney pathology



Statistically significant, **medium strong**, negative correlation ($\tau = -0.78$)

T1DM without kidney pathology

NO₂⁻ concentration in serum



Creatinine (mmol/l) (blood)

$$(\tau = 0.09)$$

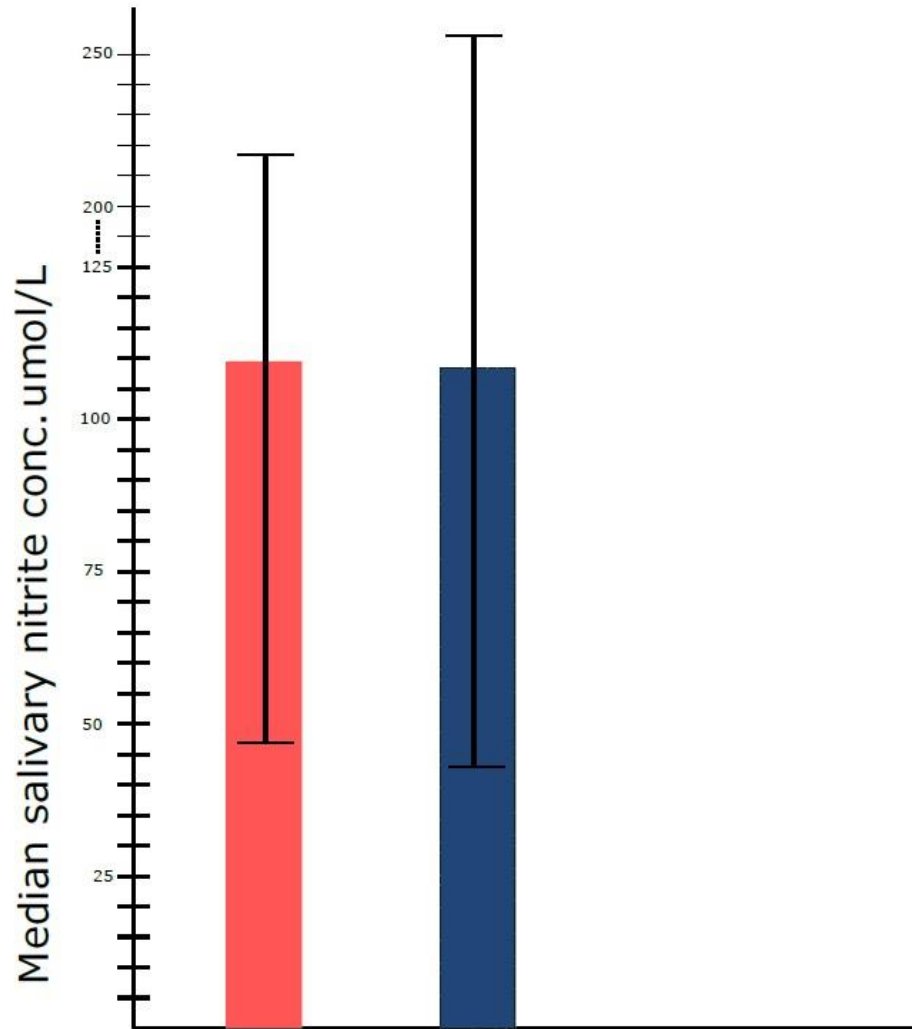
NO₂⁻ concentration in serum



ALAT (U/L) (blood)

$$(\tau = -0.10)$$

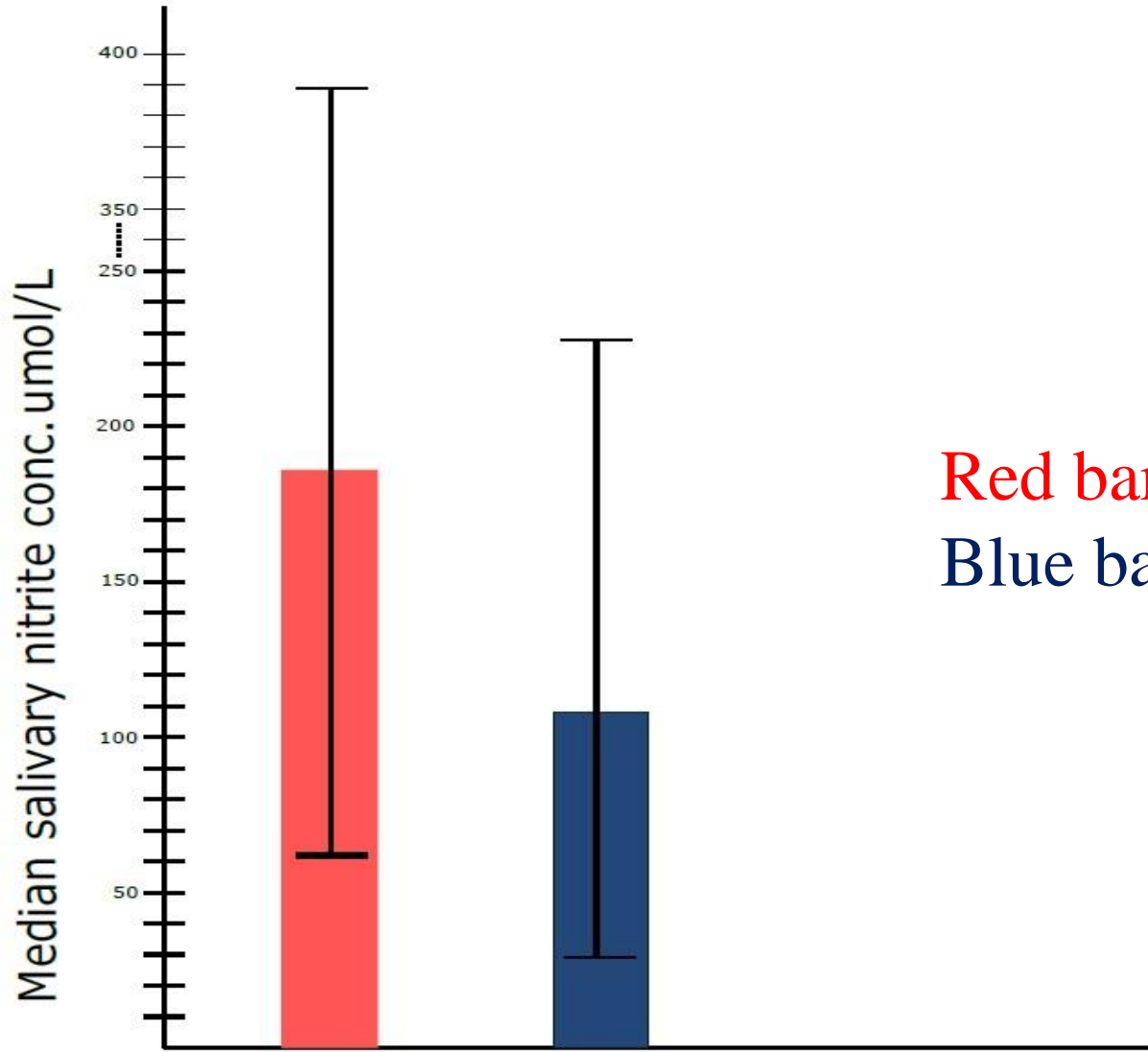
Median salivary nitrite concentration ($\mu\text{mol/L}$) (+IQR) of both groups



Red bar = T1DM-group: $108,81 \pm 213,32 \mu\text{mol/L}$

Blue bar = control group: $109,00 \pm 168,76 \mu\text{mol/L}$

Nitrite (NO_2) in saliva of T1DM patients = healthy controls

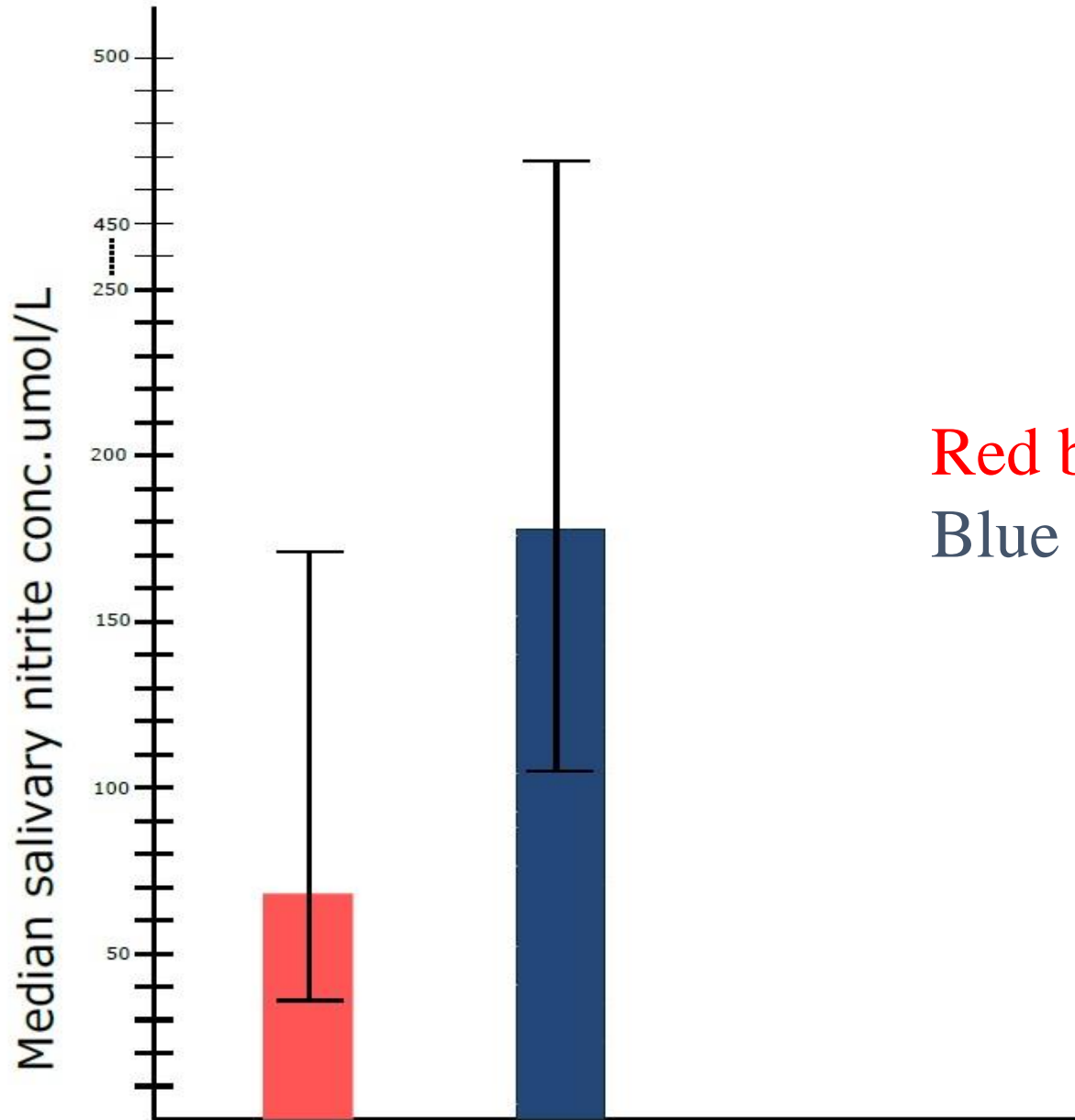


Red bar = Hypertension $186,71 \pm 326,77$
Blue bar = no Hypertension $108,36 \pm 199,38$

(*p value* = 0,161)

T1DM with Hypertension = \uparrow nitrite

Frequency

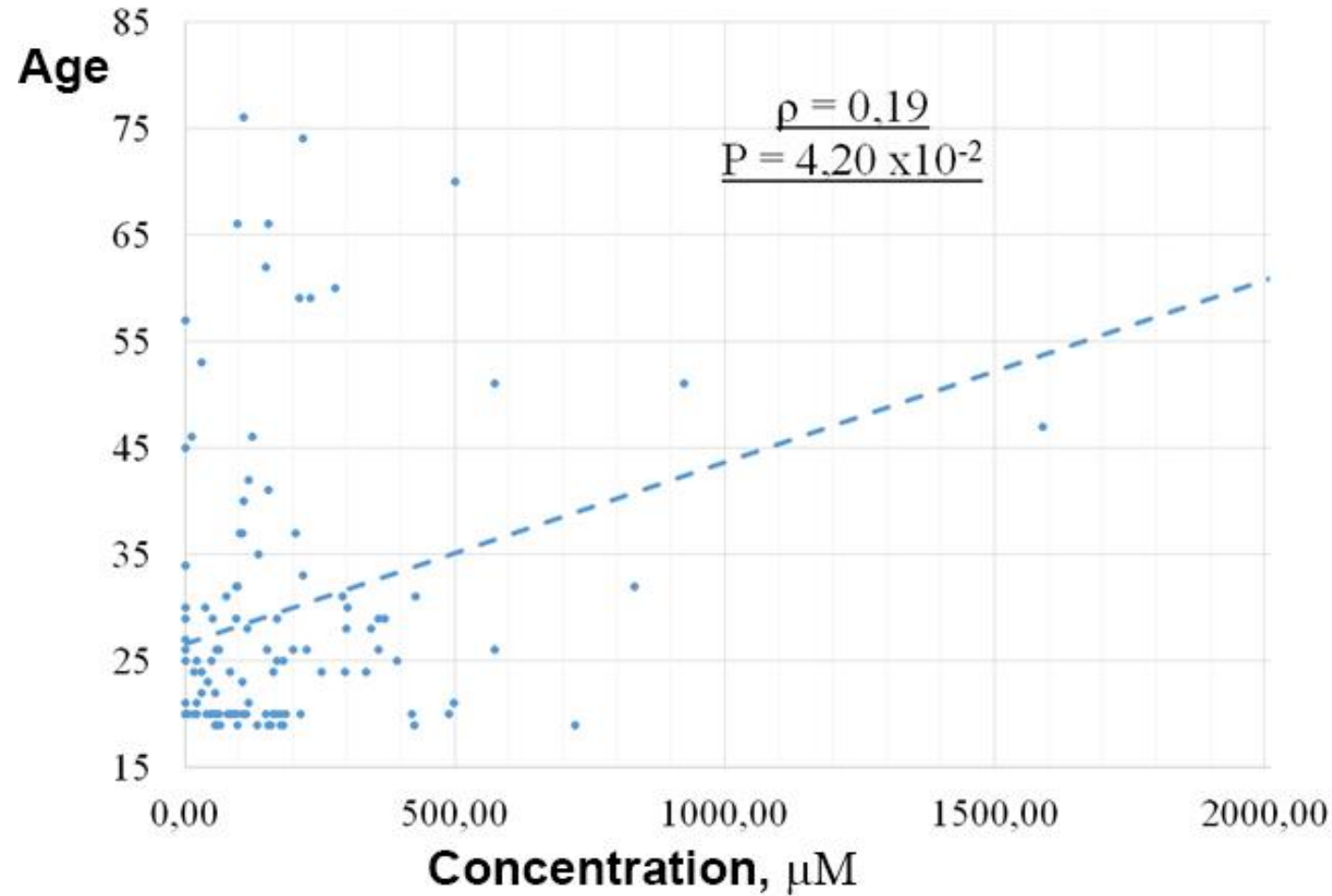


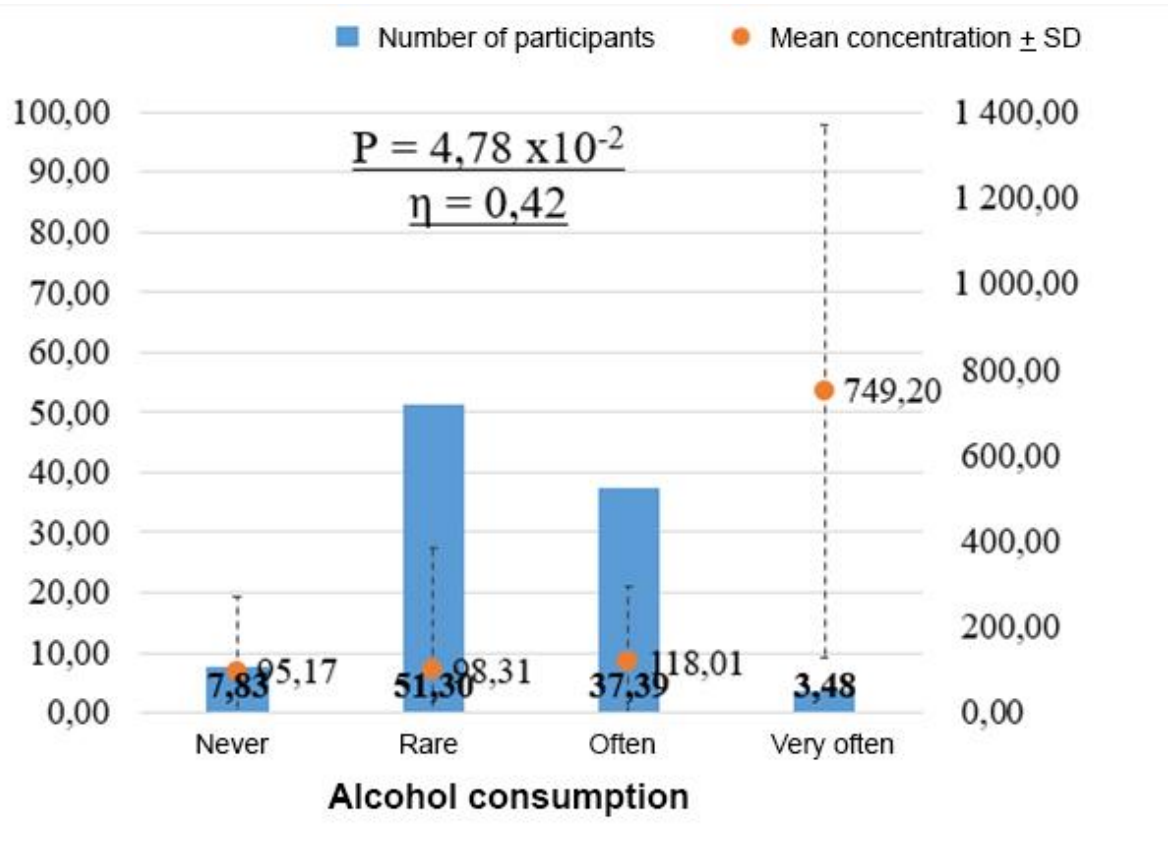
Red bar = monthly exercise $68, 23 \pm 34, 82$
Blue bar = weekly exercise $178.63 \pm 368, 24$

*(p value = 0,036)**

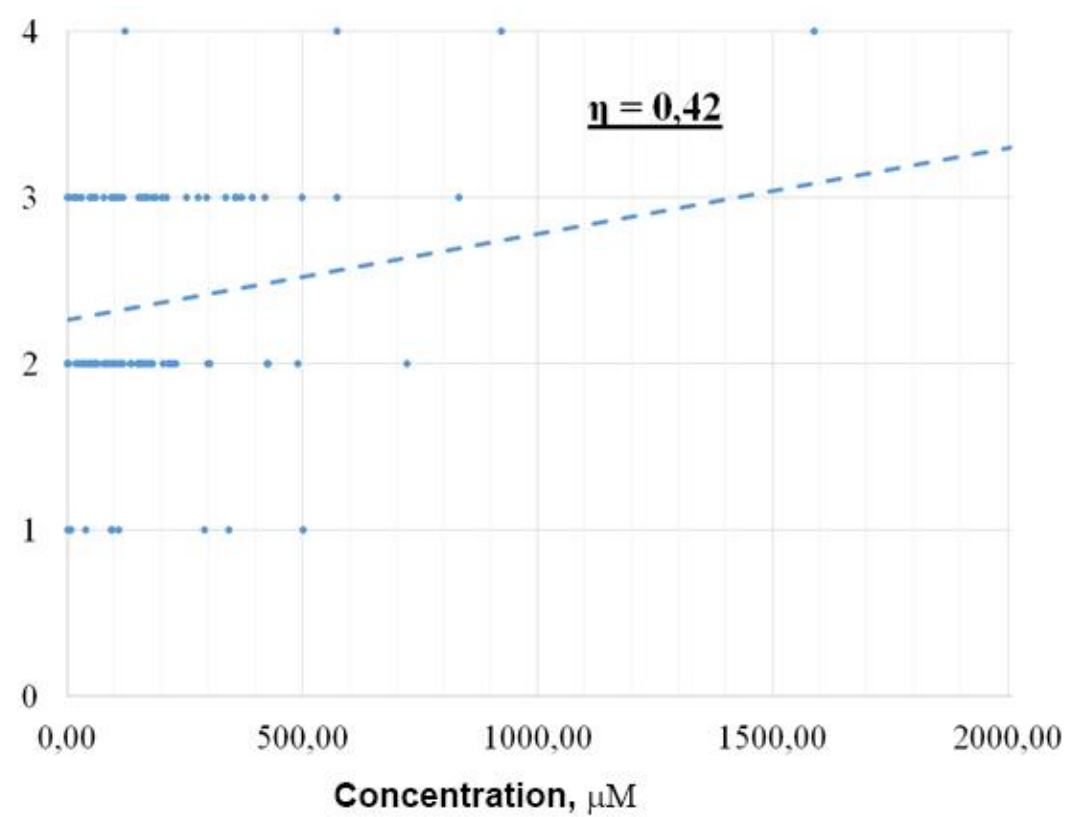
↑ exercise frequency = ↑ nitrite

Salivary nitrite correlates with age





Association between concentration (μM) and frequency of alcohol consumption



Correlation between frequency of alcohol consumption and nitrite concentration (μM) in saliva

Salivary nitrite correlates with alcohol consumption

European Regional Development Fund project 1.1.1.1/16/A/016

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