

## DIABETES IS ASSOCIATED WITH HIGHER TRIMETHYLAMINE-N-OXIDE PLASMA LEVELS

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**Introduction.** High fat and cholesterol diet is known to be associated with increased cardiovascular risk, however, only recently it has been revealed that the intake of meat, egg and fatty milk products results in intestinal microbolism of L-carnitine, choline and other quaternary amines and generation of trimethylamine-N-oxide (TMAO), which may promote atherosclerotic lesion development. **Aim.** To investigate the relation between TMAO and L-carnitine plasma levels and type 2 diabetes (T2DM). Additionally, we investigated the effect of metformin therapy on TMAO concentration. **Material and methods.** We enrolled 191 patients undergoing percutaneous coronary intervention (PCI). Additionally, 19 primary diagnosed T2DM patients and 16 healthy volunteers were enrolled and received metformin 1500 mg daily for one month. TMAO concentration was detected by ultrahigh-performance liquid chromatography-mass spectrometry. All subjects filled a diet questionnaire about the last 3 days before sampling. **Results.** The median (interquartile range (IQR)) TMAO concentration in the PCI group was 1.8 (1.2-2.6)  $\mu\text{mol/L}$ . Bivariate association of TMAO levels with age, total cholesterol and L-carnitine was identified. Multivariate linear regression analysis revealed L-carnitine as the strongest predictor of log-transformed TMAO ( $p=0.001$ ) and age, diabetes status and body mass index were independently associated with increased log-transformed TMAO levels ( $p=0.01$ ). Metformin therapy significantly decreased TMAO concentration from 2.97 (1.35-8.26)  $\mu\text{mol/L}$  to 2.54 (1.63-3.55)  $\mu\text{mol/L}$  ( $p=0.018$ ). **Conclusions.** Our data provide evidence that diabetes is associated with higher TMAO levels and that administration of metformin decreases TMAO concentration. These data support the hypothesis of TMAO as a cardiovascular risk marker. **Acknowledgement:** Latvian State Research Program BIOMEDICINE