


Solveiga Grinberga

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DETERMINATION OF TRIMETHYLAMINE-N-OXIDE (TMAO) IN HUMAN PLASMA AND URINE BY LIQUID CHROMATOGRAPHY - TANDEM MASS SPECTROMETRY (UPLC/MS/MS)

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INTRODUCTION

The objective of this study was to develop a bioanalytical assay for determination of TMAO in human blood plasma and urine simultaneously with endogenous analytes - L-carnitine and γ -butyrobetaine (GBB)

Sample preparation

Plasma
100 μ l plasma + 700 μ l 10% solution in MeCN/MeOH (3:1)
Centrifugate

Urine
100 μ l urine (diluted 1:10) + 700 μ l 10% solution in MeCN/MeOH (3:1)
Centrifugate

*same amount
3-(2,3-dimethyl-5-oxo-1,4-dihydroxybutyl)propylamine, 200 ng/ml, spiked into blank

UPLC/MS/MS conditions

Quattro Micro mass spectrometer (Waters) + Acquity UPLCTM system (Waters)

Column
Acquity BEH HPLC (2.1mm x 100mm, 1.7 μ m)

Mobile phase
A - 10mM ammonium acetate (pH4);
B - acetonitrile

Gradient
0 min - 15% B, 2.5 min - 55% B, 4 min - 55% B

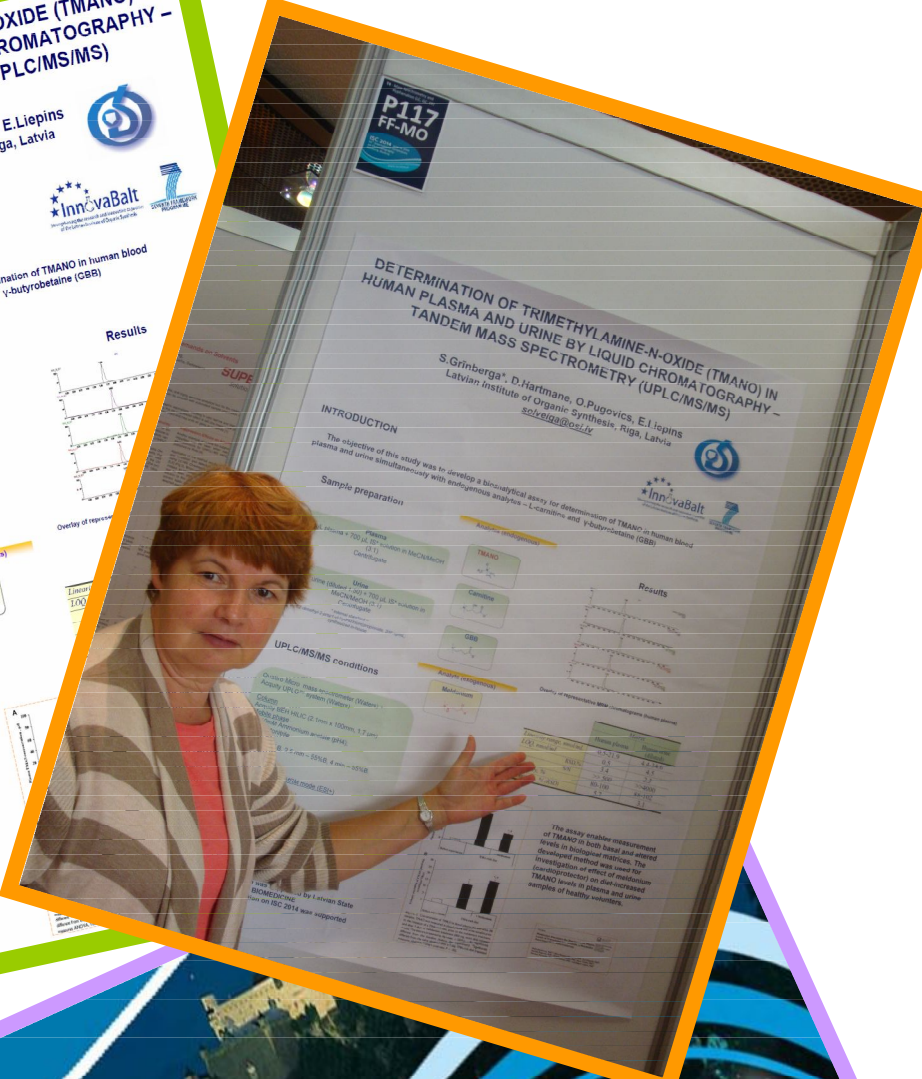

Flow
0.25 mL/min

Data acquisition - MRM mode (ESI)

75.8 \rightarrow 56.2 (TMAO)
175.8 \rightarrow 99.0 (L)C
162.0 \rightarrow 102.0 (Carnitine)
146.1 \rightarrow 87.1 (GBB)
147.3 \rightarrow 85.4 (Metoclonium)

Acknowledgments


This research was supported by Latvian State research program BIOMEDICINE
The participation on ISC 2014 was supported by InnovaBalt



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The assay enables measurement of TMAO in both basal and elevated levels in biological matrices. The developed method was used for investigation of effect of metformin (antidiabetic) on elevated TMAO levels in plasma and urine samples of healthy volunteers.

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