

# **Application of Matrix-assisted Laser Desorption/Ionization Mass Spectrometry Coupled with Thin Layer Chromatography to Examination of Erythrocyte Lipid Profile of Patients Supplemented with Fatty Acids**

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Soft ionization mass spectrometric methods (MS) have recently attracted growing interest in lipid analysis. This is due to their numerous benefits, especially low limits of detection, high mass resolution and high sample throughput. Although electrospray ionization (ESI) is often a technique of choice, matrix-assisted laser desorption/ionization (MALDI) represents an interesting alternative [1]. However, due to complexity of lipid extracts, separation of lipid mixture into individual components is often needed before MALDI analysis. This may be conveniently realized by preceding MALDI analysis by thin layer chromatography (TLC) which enables to minimize problems of ion suppression and discrimination of some lipid groups by more easily ionized and more abundant lipids present in the total lipid extract [2].

The aim of the study was to evaluate a viable TLC-MALDI MS procedure for analysis of erythrocyte lipid profile of patients after supplementation with fatty acids. The obtained results cover optimization of MALDI MS conditions of lipid analysis and were preceded by careful selection of an appropriate lipid extraction method and chromatographic (TLC) conditions.

[1] B. Fuchs, R. Süß, J. Schiller, *Prog. Lip. Res.* 49 (2010) 450-475

[2] B. Fuchs, R. Süß, A. Nimptsch, J. Schiller, *Chromatographia Supplement* 69 (2009) S95-S105