

MALDI TOF MS imaging of 3D neuroblastoma cell cultures

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ABSTRACT:

Matrix-assisted laser desorption ionization mass spectrometry imaging (MALDI MSI) has become a routine technique for analyte visualization across biological samples. In a single experiment, it enables imaging both exogenous and endogenous compounds, such as drugs, proteins and lipids. Additional great benefit of this approach is no need for molecule labelling, in comparison with the methods such as fluorescent microscopy, immunohistochemistry etc.

In our study, 3D cell cultures SK-N-BE(2) and SH-SY5Y were analyzed. [1] The cell formations (spheroids) were embedded in gelatine, frozen, cryo-sectioned into thin slices and thawed on conductive glass slides. For uniform matrix coating, commercial iMatrixSpray sprayer [2] was employed, its parameters were optimized and the results were compared with sublimation method. Developed protocols were applied to the analysis of spheroids treated by potential cancerostatics metaiodobenzylguanidine and perifosine. Initial images showing distribution of the drugs and selected lipids with CHCA and DHB matrices were acquired.

REFERENCES:

[1] Liu X. et al.: Anal. Chem. 85(13), 6295-6302 (2013).

[2] Stoekli M et al.: CHIMIA 68(3), 146-149 (2014).