



Comprehensive Glycomic Profiling of Respiratory Tract Tissues of Tree Shrew by using TiO₂-PGC chip MS

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Abstract:

The present study employed our well-established TiO₂-PGC chip Q-TOF-MS method to profile the N-glycans presence on the respiratory tract of tree shrew. The TiO₂-PGC chip is a multi-layered polymeric microfluidic chip which contains a “sandwich-like” enrichment column composed of TiO₂ and PGC. Rapid and highly selective on-chip enrichment of acidic N-glycans was achieved due to the high selectivity of TiO₂ towards negatively charged N-glycans. As a result, on the basis of high-resolution MS and MS/MS data, a total of 219 N-glycans including 28 neutral N-glycans and 191 acidic N-glycans were identified. Moreover, sialidase S reaction was carried out to confirm the sialic acid (SA) linkage in the acidic N-glycans, in which β 2,3-linked and β 2,6-linked SAs were regarded as avian-type and human-type influenza receptors, respectively. In addition, two types of SAs were presence in the acidic N-glycans, including NeuAc and NeuGc. Of note, our study is the first time to report that N-glycans on the respiratory tract of tree shrew possess both NeuAc and NeuGc. Then, the identified N-glycans were quantitatively analyzed by TiO₂-PGC chip-QQQ-MS in MRM mode. It was found that the glycan composition in turbinate and lung of tree shrew were significantly different from other parts of respiratory tract. These results could assist to imply the use of tree shrew in influenza virus infection studies. This research was supported by Science and Technology Development Fund, Macau SAR (File no. 023/2016/AFJ and 082/2017/A2 to W.J.R.).

Biography:

Dr. Jing-Rong Wang obtained her PhD from Hong Kong Baptist University in 2007. She joined Macau University of Science and Technology in 2011, and was promoted as associate profes-



sor in 2015. Dr. Wang has published more than 50 research papers in scientific journals. Her recent research interest focused on the glycomic and lipidomic study by using advanced mass spectrometry. The results have been published on Nat Commun, Ann Rheum Dis, Anal Chem, Sci Rep and Mol BioSyst etc.

Publication of speakers:

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