

ZipChip

Intact NIST Monoclonal Antibody Characterization — Proteoforms, Glycoforms — using CE-MS and CE-LIF

Krupke Dr. Andreas, Chen Chien-Hsun, Feng Huatao, Guo Rui, Li Pingjing, Laserna Anna Karen C., Ji Ya, Ng Bao Hui, Li Sam Fong Yau, Khan Shaheer H., Paulus Aran, Chen ShiawMin, Karger Achim E., Wenz Michael, Ferrer Daniel Lopez and Huhmer Andreas F.

Cogent Chemistry, Just Accepted Manuscript

DOI: doi.org/10.1080/23312009.2018.1480455 Publication Date (Web): May 25, 2018

Copyright © 2018 The author(s)

ABSTRACT: Determining and linking the structural heterogeneity of recombinant antibodies to function is critical in the biopharmaceutical industry. We introduce a new microfluidic capillary electrophoresis - mass spectrometry (μ CE-MS) approach to characterize intact monoclonal antibody (mAb) and simultaneously quantifying distinct variants. Our MS analysis of intact NIST monoclonal antibody (RM8671) shows 18 variants identified amongst proteolytic and glycolytic modifications with a range of relative abundances between 0.1 - 100%. In order to verify our quantitative MS results, we used an established system based on capillary electrophoresis - with laser induced fluorescence (CE-LIF) for profiling the N-glycans. All major glycans were identified and further substantiated by exoglycosidase digestion.

Interestingly, the μ CE-MS analysis of intact NIST monoclonal antibody consistently yielded higher amounts of G2FG2F-Hex glycoform (~3.4%), whereas the CE-LIF analysis indicates that only 1.4% of G2F-Gal is present. Therefore, the additional hexose adduct observed in μ CE-MS may have been the glycation product of the mAb. Further analysis of deglycosylated mAb with μ CE-MS made it possible to reveal the glycation with 10.5% of one hexose product and 4.9% of two hexose product in the intact deglycosylated antibody. An integrated solution using two orthogonal and complementary techniques for characterizing antibody glycosylation is provided here.

[Click here](#) to view the entire article.



www.908devices.com

ZIPCHIP IS FOR RESEARCH USE ONLY

Zip Chip is subject to export controls including those of the Export Administration Regulations of the U.S. Department of Commerce, which may restrict or require licenses for the export of product from the United States and their re-export to and from other countries. Patented technology www.908devices.com/patents © 2019 908 Devices