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HIV, methamphetamine and combination antiretroviral therapy: Profiling of histones modification

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Histones are key proteins that play an important role in maintaining and regulating chromatin. Five classes of histones have been identified and all, with the exception of H1,form anoctamer that DNA wraps around to form nucleosomes.In an equilibrium state, acetyltransferases (HATs) and deacetyltransferases (HDACs), as well as methylases and demethylases, keep the balance of transcriptional activation. Activation of chromatin is based on acetylation and de-methylation of lysine residues in histones. Parallel de-acetylation and methylation deactivates and disables the possibilities of biochemical processing of DNA.

The goal of this study is to analyze and quantitate changes in histones methylation and acetylation in monocyte derived macrophages upon a combination of HIV-1 infection, exposure to methamphetamine (METH) and/or drugs constituting combination antiretroviral therapy (cART). Histones were extracted using a commercially available kit, and thenseparated using either 1D gel electrophoresis or liquid chromatography.Purified histones were digested with either trypsin/chymotrypsinand theresulting fragments were analyzed using tandem mass spectrometry for identification and quantitation.

Here, we report differences in post-translational modifications of histones and the so called "histone code"as an effect of manipulation of our experimental system. We will also attempt to measure ubiquitination and phosphorylation as two additional modifications affecting transcriptional regulation.

Biography

Pawel Olszowy completed his Ph.D at Nicolaus Copernicus University in Torun, Poland in 2011. Since this time he is a postdoctoral researcher at University of Nebraska Medical Center in Omaha, Nebraska. He has published morethan 10 papers in peer review recognized journals. His main scientific interests are proteomics, separation techniques and mass spectrometry.

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