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Neurotransmitter biomarker analysis by LC-MS-MS

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Norepinephrine (NE), serotonin (5HT), and dopamine (DA) are active neurotransmitters, conducting signals from the brain along nerves to target organs. They are responsible for such physiological functions as behavior, mood, attention, heart rate, and blood flow. When measured, these compounds can act as important biomarkers for CNS investigations. In particular, transporter blockade (NE, 5HT, and DA reuptake inhibition) can lead to measurable changes in neurotransmitter (and metabolite) concentrations in available fluids (CSF and plasma). The analysis of this class of compounds is difficult. Traditionally, these compounds have utilized a more conventional form of HPLC using electrochemical detection. These methods suffered from poor sensitivity, interferences from the complex samples, and extremely long analysis times. Utilizing LC-MS-MS improves the selectivity and sensitivity of analysis. The methods presented here describe how these various challenges were overcome and reports on their performance through method validation. Also presented are approaches to method validation experiments to deal with the difficulties of unstable, low molecular weight, endogenous compounds and their metabolites.

Biography

Michael Sullivan completed his MS degree at the University of Florida. He has worked at Worldwide Clinical Trials-Drug Development Solutions (formerly CEDRA Corporation) for 17 years as a Method Development Scientist, Team Leader, and most recently, Senior Research Fellow. Over the last two years he has focused on the analysis of small molecule biomarkers for CNS studies.

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