

**PW17 Advances in Physiological Amino Acid Analysis Using Ultra Performance Liquid Chromatography and Tandem Quadrupole Mass Spectrometry**

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UPLC/MS/MS provides positive identification of key amino acids in complex biological matrices.

Amino acid analysis has long been used as a confirmatory technique for identification of inborn metabolic disorders. The method most commonly used involves ion exchange chromatography separation followed by a post column reaction with ninhydrin and subsequent detection by UV absorbance. This technique is extremely time consuming and requires meticulous preparation of buffers and reagents making it unsuitable for general usage. Alternative methods include the use of mass spectrometry with flow injection analysis to monitor butyl esters of the amino acids. For newborn screening this method is quite adequate to detect many common inherited metabolic disorders however it fails to resolve isomeric and isobaric amino acids. This paper addresses two main issues experienced in routine amino acid analysis of biological fluids. Firstly the speed of analysis is reduced from three hours to less than thirty five minutes [1] and secondly the unequivocal identification of amino acids and their metabolites is better established as a result of ultra high resolution chromatography and MS/MS detection. The use of rapid amino acid analysis to help identify disease states such as Hypothyroidism and Maple Syrup Urine Disease and general "well being" will be illustrated.

[1] T Wheat, P Hong, K Graham and D M Diehl Waters poster 720002763EN