

Newborn Screening, Inborn Errors of Metabolism

AB105. UPLC: an analytical technique to diagnose amino acid disorders accurately in biological samples

Sanjeev Pandey, Jyotsna Verma, Ratna D. Puri

Institute of Medical Genetics & Genomics, Sir Ganga Ram Hospital, New Delhi, India

Background: The analysis of amino acids in biological fluid by UPLC is useful for the clinical and biochemical characterization of acute and chronic pathological states of metabolic alterations. The aim of the study was to identify the amino acids using UPLC in suspected patients with metabolic disorders.

Methods: A total of 39 samples (plasma/urine) were obtained from patients with suspected metabolic disorders. The amino acids were derivatized with 6-aminoquinolyl-N-

hydroxysuccinimidyl carbamate (AQC) and detected by UV detector of Waters ACQUITY UPLC (quaternary) H class system using AccQ Tag C18 column. Twenty-two amino acids can be resolved in 15 minutes gradient program.

Results: Eleven patients including 4 (10.2%) cases with maple syrup urine disease, 4 (10.2%) cases with phenylketonuria, 2 (5.1%) cases with tyrosinemia and 1 (2.5%) case with hyperammonemia were diagnosed.

Conclusions: Simple derivatization method, short run time, stable baseline, correct peak identification, remarkable linearity with recovery 97–100% and high sensitivity ensure accurate, precise and consistent quantitative results in biological samples.

Keywords: UPLC; Amino Acids; 6-aminoquinolyl-N-hydroxysuccinimidyl carbamate (AQC)

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