

APPLICATION OF TWO DIMENSIONAL HIGH PERFORMANCE LIQUID CHROMATOGRAPHY–MASS SPECTROMETRY ON TESTING VITAMIN D

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The use of a particle beam interface (PBI) in LC–MS has faded because of its poor resolution and low sensitivity for many compounds. It also does not perform well in reversed-phase systems with a high percentage of water. This manuscript describes two-dimensional LC to overcome the problems of PBI, both in the identification of unknown samples and in the quantitative determination of metabolites of vitamin D in human plasma. For the identification of unknown components, the reversed-phase solvent in the first dimension was transferred to an isocratic normal solvent system in second dimension by column switching. Moreover, only the peaks of interest (components) in the first dimension were transferred into the second LC column for mass analysis. For the quantitative determination of the metabolite of vitamin D, the peak width of analyte in the second dimension was greatly narrowed, and interference was excluded such that high sensitivity and resolution resulted. The limit of quantification for the test metabolite of vitamin D in human plasma can reach 0.050 ng/ml with injection volume of 50 µl. A new instrumentation, Absiex LC-MS-MS is going to be employed in the new study of Vitamin D test.

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