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The application of two dimensional hplc in liquid chromatography-mass spectrometer with particle beam interface

DeMing Song
Clinical Research Associate,
USA

The use of particle beam interface (PBI) in LC-MS has faded because of its poor resolutions and low sensitivity for a lot of compounds. It also does not perform well in reversed phase systems with a high percentage of water.

This manuscript describes the method of 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. In the identification of unknown components, the reverse phase solvent in first dimensional liquid chromatography (LC) was transferred to an isocratic normal solvent system in second dimensional LC by a column switch. Moreover, only peaks of interest (components) in the first dimensional LC were transferred into the second LC column for mass analysis. In the second dimensional LC for the quantitative determination of the metabolite of vitamin-D, the peak width of analyte was greatly narrowed and interference was excluded such that high sensitivity and resolution resulted.. The detection limit can reach to 25 pg./ml for test metabolite of vitamin D in human plasma with injection volume 50 µI.

demingsong@aol.com