

7th World Congress on

Mass Spectrometry

June 20-22, 2018 | Rome, Italy

LC-MS analysis of intact amino acids on a novel mixed-mode HPLC column

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There are four established methods for analyzing amino acids: pre-labeled, post-labeled, ion-pairing reversed phase, and normal-phase, but each of these methods has disadvantages. The pre-labeled method has problems with derivatization efficiency and cost, while the post-labeled method is usually not compatible with LC-MS due to non-volatile mobile phases. The ion-pairing reversed-phase method has difficulty separating polar amino acids; on the other hand, the normal-phase mode has problems separating all the compounds, especially the Leu and Ile isomers. We have developed a novel amino acid separation column for LC-MS(/MS) which can separate all 20 amino acids in protein using a mixed-mode stationary phase structure. We have also estimated separation and detection characteristics using LC-MS instruments. We found two methods to successfully analyze the complete array of 20 amino acids: 1) high throughput separation with Leu/Ile separation in five mins; and 2) simple gradient separation. We also found that detection can occur not only in single MS mode, but also in triple MS mode. In addition, no prederivatization is required, and a standard LC-MS(/MS) system is sufficient for the analysis. This novel HPLC method will be a powerful tool for amino acid LC-MS(/MS) analysis in many different biochemistry applications.

Biography

Itaru Yazawa is the Co-founder of Imtakt Corporation in 1999 at Kyoto Japan to focus on separation technology, providing his own designed and manufactured HPLC columns to the global market. He used to work for Shimadzu Corporation (Instrument Development) and YMC Co. Ltd (Column Development), and then he wanted to supply his own unique column products such as RP+AX+CX multi-mode ODS column "Scherzo C18 Family", 2um non-porous ODS column "Presto FF-C18", etc. which are based on his own technical idea. He now intends introduce a next generation novel amino acid analysis column for LC-MS "Intrada Amino Acid" for this conference.

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