

ELECTRON INDUCED DISSOCIATION (EID) OF SINGLY PROTONATED AROMATIC AMINO ACIDS AND THEIR SIMPLE PEPTIDES

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Electron capture dissociation (ECD) is a special class of electron-ion interaction that is the most commonly used method of ion activation that involves electron for the study of biomolecular fragmentation. Another class of electron-ion interaction that leads to the dissociation of the molecular ion is electron impact excitation of ions from organics (EIEIO) or also known as electron induced dissociation (EID). The fundamental difference between the ECD and EID is that the latter method of ion excitation does not result in charge recombination, i.e., it can be used to study singly charged molecular ions. In this presentation we report the first study of electron induced dissociation of singly protonated aromatic amino acid and their simple peptides on a commercially available Finnigan LTQ-FT mass spectrometer. Systematic studies involving fragmentation of singly protonated biomolecules as a function of electron energy were performed. It was observed that the fragmentation efficiency by EID occurs at high electron energy (~ 11-15 eV) compared to low electron energy (<0.2 eV) for ECD fragmentation. Similarities and differences with other method of ion activation, such as collision induced dissociation (CID) and photo induced dissociation (PID) will be discussed.