# Atmospheric Pressure Electron Capture Dissociation (AP-ECD): Localization of Labile Post-Translational Modifications on Sulfopeptides

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We are continuing to evaluate AP-ECD for proteomics and have recently localized sulfo modifications on peptides. AP-ECD has previously shown to be applicable at the fmol level, is effective on chromatographic time scales for mixtures and can localize modifications on phospho and glyco peptides. In contrast to traditional CID, electron capture dissociation (ECD) and its related technique, electron transfer dissociation, offer direct identification and localization of labile PTMs but generally requires specialized mass spectrometers. AP-ECD offers many of the same benefits and can be adapted to any API instrument.

Using caerulein, QQD(sulfo)YTGWMDF, we compared our AP-ECD results to those previously published for FT-ICR ECD. In the previous report of FT-ICR ECD analysis of Caerulein, the molecular ion and all applicable c and z ions displayed characteristic losses of 80 amu, loss of $SO_3$. In contrast, AP-ECD spectra show that the sulfo group is retained on many c and z ions ($c_5$-$c_9$ & $z_7$-$z_9$) and on the molecular ion, allowing for localization. Another sulfo peptide was successfully analyzed and the modification localized in hirudin, DFEEIPEE(sulfo)YLQ. The sulfo modification was retained on fragment ions ($c_9$ and $c_{10}$) allowing for localization and demonstrating AP-ECD usefulness where FT-ICR ECD had failed.

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