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(54) Title: IMMUNOAFFINITY ISOLATION OF MODIFIED PEPTIDES FROM COMPLEX MIXTURES

(57) Abstract: The invention provides methods for isolating a modified peptide from a complex mixture of peptides, the method comprising the steps of: (a) obtaining a proteinaceous preparation from an organism, wherein the preparation comprises modified peptides from two or more different proteins; (b) contacting the preparation with at least one immobilized modification-specific antibody; and (c) isolating at least one modified peptide specifically bound by the immobilized modification-specific antibody in step (b). The method may further comprise the step of (d) characterizing the modified peptide isolated in step (c) by mass spectrometry (MS), tandem mass spectrometry (MS-MS), and/or MS³ analysis, or the step of (e) utilizing a search program to substantially match the spectra obtained for the modified peptide during the characterization of step (d) with the spectra for a known peptide sequence, thereby identifying the parent protein(s) of the modified peptide. Also provided are an immunoaffinity isolation device comprising a modification-specific antibody, and antibodies against novel UFD1 and PTN6 phosphorylation sites.



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