

Pi 3TM Reagent Kits



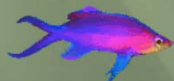
Introduction:

With the completion of the human genomic sequences, biological researchers are turning to the systematic analysis of biological systems. A gene sequence does not completely describe a protein's structure and proteins usually undergo “posttranslational modifications”, such as addition of phosphate groups or removal of amino acids from the ends, and these changes can alter their activities. A complete description of a biological system requires analysis at both the nucleic acid and protein levels. The analysis must therefore encompass a wide range of methods to assess their properties in a way that will allow those changes, which have potential to affect function, safety and efficacy, to be identified. Major efforts of current proteomic analysis technologies are directed toward the rapid and sensitive identification of the proteins that control biological systems. However, rapid and accurate identification and characterization of large numbers of proteins remain significant challenges in proteomics research. MLW Technologies has developed a suite of amino acid-specific peptide isolation kits for rapid and accurate identification of proteins and their post-translational modifications.

*Pi*³ Reagent

*P*rotein and *P*eptide:

- *I*solation
- *I*dentification
- *I*nformation



The Benefits:

➤ *Specific isolation*

- Isolation based on specific functionality
- Covalent attachment to activated solid-support
- Efficient wash removes non-specific adsorption
- Releasing reagent easily cleaves covalent bond

➤ *Improve and simplify mass spec data base search accuracy*

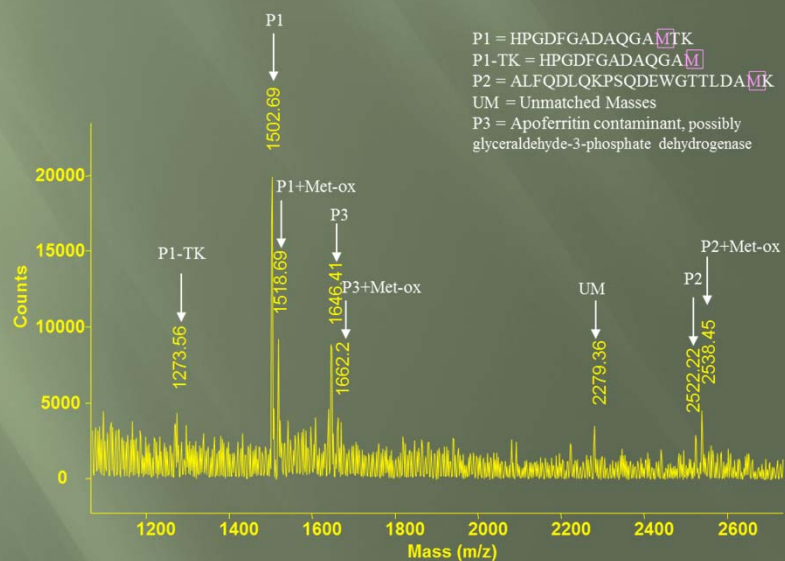
- Complex sample mixtures are simplified
- Low-level components are more easily identified
- Multi-component mixtures are more easily determined
- Presence or absence of specific functionality can be ascertained

➤ *Ready to use kit*

- No methods development or optimization
- Uses common laboratory reagents
- Requires only vortex mixer and mini-centrifuge

➤ *Higher Productivity*

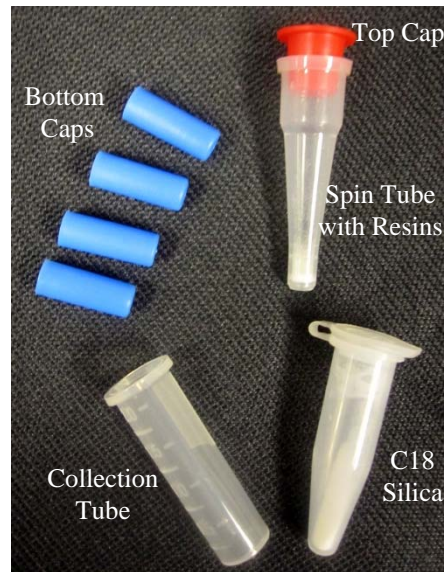
- Significant time and money savings
- Multiple samples may be run concurrently



MALDI of Release from Pi^3 -Met

Digest of 50-100 Pmoles of a crude mixture of Apomyoglobin/Apoferritin

The Kit:



The Method:

The method employed for the use of the *Pi*³ Reagent consists of 5 basic steps using standard laboratory reagents and equipment:

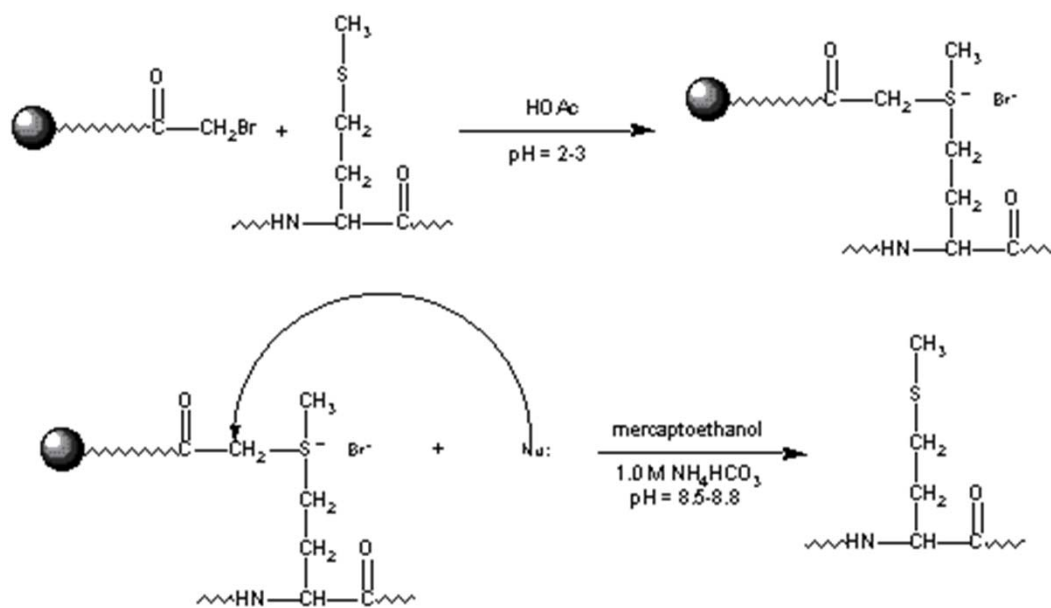
1. Capture the amino acid specific peptides on the solid-support.
2. Wash the support to remove any non-bound peptides.
3. Release the bound peptides.
4. Collect the released peptides and wash the solid-support.
5. Desalt and concentrate the peptide solution prior to analysis.



***Pi*³ Methionine (*Pi*³-Met) Kit**

The *Pi*³ Methionine Reagent Kit provides an easy self-contained method, which uses a novel water-insoluble reagent that forms a covalent bond with methionine-containing peptides. The reagent allows for the selective isolation of methionine peptides from peptide mixtures. These separated methionine-containing peptides subsequently may be regenerated and analyzed by mass spectrometry or liquid chromatography. Use of the mass spectrometric data and the method of digestion, when coupled with the added constraint that the peptides contain methionine, can lead to improved accuracy in the identification of proteins. Chromatographic analysis of the methionine-containing peptides can simplify complex separations.

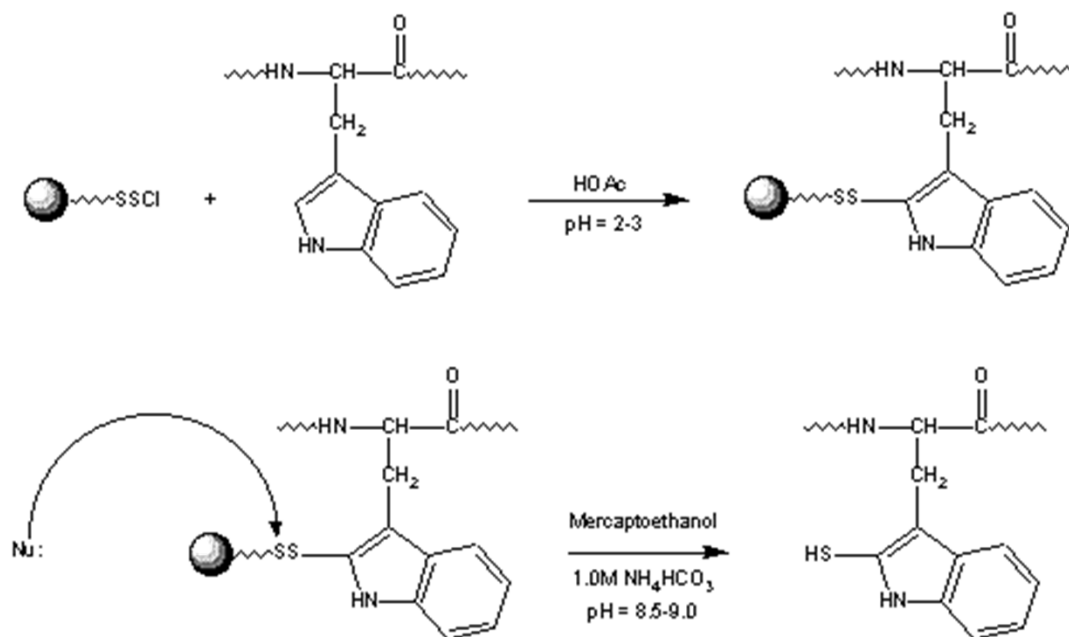
Chemistry:



***Pi*³ Tryptophan (*Pi*³-Trp) Kit**

The *Pi*³ Tryptophan Reagent Kit provides an easy self-contained method, which uses a novel water-insoluble reagent that forms a covalent bond with tryptophan-containing peptides. The reagent allows for the selective isolation of tryptophan peptides from peptide mixtures. These separated tryptophan-containing peptides subsequently may be regenerated and analyzed by mass spectrometry or liquid chromatography. Use of the mass spectrometric data and the method of digestion, when coupled with the added constraint that the peptides contain tryptophan, can lead to improved accuracy in the identification of proteins. Chromatographic analysis of the tryptophan-containing peptides can simplify complex separations.

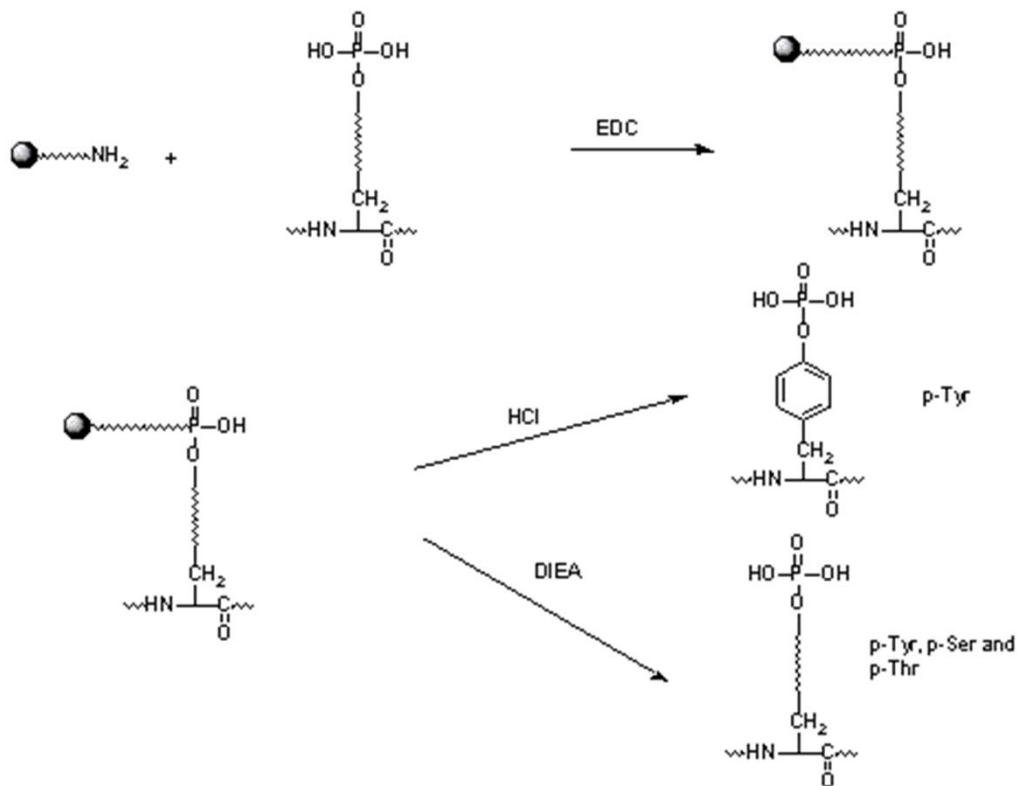
Chemistry:



Pi^3 PhosphoTyrosine (or pSer, pThr and pTyr as a group) (Pi^3 -pTyr QE) Kit

The Pi^3 PhosphoTyrosine-QE Reagent Kit is the first in a family of phosphate specific reagent kits that provides an easy self-contained method, using a novel water-insoluble reagent that forms a covalent bond with phosphotyrosine peptides. The reagent allows for the selective isolation of PhosphoTyrosine peptides from peptide mixtures, or for the collective isolation of pSer, pThr and pTyr, down to the 2 percent occurrence level. These separated phosphate containing peptides subsequently may be regenerated and analyzed by mass spectrometry or liquid chromatography. Use of the mass spectrometric data and the method of digestion, when coupled with the added constraint that the peptides contain PhosphoTyrosine, can lead to improved accuracy in the identification of proteins. Chromatographic analysis of the PhosphoTyrosine peptides can simplify complex separations.

Chemistry:



Order information:

- Pi^3 Methionine Reagent Kit **Part No. M-7201**

Each Kit includes:

1. Two isolation packs
2. One accessory pack

- Pi^3 Tryptophan Reagent Kit **Part No. M-7202**

Each Kit includes:

1. Two isolation packs
2. One accessory pack

- Pi^3 pTyr QE Reagent Kit **Part No. M-7204 x4**

Each Kit includes:

1. Four isolation packs
2. One accessory pack

- Pi^3 pTyr QE Reagent Kit **Part No. M-7208 x 8**

Each Kit includes:

1. Eight isolation packs
2. One accessory pack

Selected Publications:

- Dearmond, P.D., Xu, Y., Strickland, E.C., Daniels, K.G., Fitzgerald, M.C., "Thermodynamic analysis of protein- Ligand interactions in complex biological mixtures using a shotgun proteomics approach" *Journal of Proteome Research*, Volume 10, Issue 11, 4 November 2011, Pages 4948-4958.
- Scot R. Weinberger, Rosa I. Viner, Patrick Ho, "Tagless extraction-retentate chromatography: A new global protein digestion strategy for monitoring differential protein expression" *Electrophoresis*, Volume 23, Issue 18, Pages 3093–3252.

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