多肽合成之带羧基 PEG

I. Introduction

The PEG Acid is a class of PEG compound containing a carboxylic acid group on one end and with either a hydroxyl, azido, amino, maleimide or a triple bond on the other end. These reagents have defined molecular weights and spacer lengths and are used for modifying proteins or surfaces containing amine groups such quantum dots, self-assembled monolayers and magnetic particles. Functionalization of solid surfaces with PEG spacers significantly reduces nonspecific protein binding.

II. Product Information

Storage: Upon receipt store desiccated at -20°C.

• Most PEG Acid reagents are low-melting solids that are difficult to weigh and dispense. To facilitate handling, make a stock solution by dissolving the reagent in dimethylsulfoxide (DMSO) or dimethylformamide (DMF).

• Store unused stock solution at -20°C. Equilibrate reagent vial to room temperature before opening to
avoid moisture condensation. To minimize air exposure, keep the stock solution under an inert gas such
as argon or nitrogen. Cap the stock solution with a septum and use a syringe to remove the solution.

• If the PEG Acid is used for surface binding and further protein loading, the reagent-to-surface ratio in the
reaction affect the number of carboxylic acid residues available for further modification. Optimize these
ratios to obtain the modification level needed for the specific application.

• Use non-amine-containing buffers at pH 7-9 such as PBS (20mM sodium phosphate, 150mM NaCl; pH
7.4); 100mM carbonate/biocarbonate; or 50mM borate. Do not use buffers that contain primary
amines, such as Tris or glycine, which compete with acylation.

III. Additional Materials Required

• Water-miscible organic solvent (molecular sieve-treated) such as DMSO or DMF

• Small-volume, non-coring syringes for dispensing the reagent stock solution while minimizing exposure
to air.

• Buffer A: Phosphate-buffered saline, PBS (20mM sodium phosphate, 0.15MNaCl; pH 7.2) or other non
amine, lone-pair sulfur-free buffers.

• Buffer B: MES-buffered saline (0.1M MES, 0.5M NaCl; pH 6.0 or 0.1M MES, 0.9% NaCl; pH 4.7) or other
non-amine, non-carboxy, lone-pair sulfur-free buffers.

• EDC
• NHS
• Hydroxylamine•HClPEG Acid Protocol

IV. Procedure

1. Equilibrate the PEG Acid reagents to room temperature before opening bottles.

2. Prepare stock solutions by dissolving 100mg of each reagent in the desired amount of DMF or DMSO.
Cap, store and handle stock solutions as directed in the Important Product Information Section.

3. Prepare the appropriate amount of surface or protein in Buffer A.

4. The carboxylic acid groups on the PEG linker can be activated by adding appropriate amounts of EDC and
NHS to the modified surface in a small amount of Buffer B and reacting for 15 minutes at room temperature. For best results, perform this reaction at pH 5-6. **(Note:** The activation reaction with EDC and NHS is most efficient at pH 4.5-7.2; however, the reaction of
NHS-activated molecules with primary amines is most efficient at pH 7-8.)

5. Add the desired amine-containing substrate, prepared in Buffer A, to the activated surface and react for
2 hours at room temperature. For best results, raise the pH of the reaction solution to 7.2-7.5 with
Buffer A immediately before adding the amine-containing substrate.

6. To quench the conjugation reaction, add hydroxylamine or another amine-containing buffer.
Hydroxylamine hydrolyzes non-reacted NHS. Other quenching compounds include Tris, lysine, glycine or
ethanolamine; however, these primary amine-containing compounds modify carboxylic acids.

V. References

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