Instructions for Thiol PEG Reagents

1. Introduction

Thiol PEG is a thiol-containing polyethylene glycol (PEG) reagent with methyl ether, hydroxyl, or carboxylic acid groups on the other end. These reagents have a defined molecular weight and gap length and are used to modify surfaces such as quantum dots, self-assembled monomolecular films and magnetic particles. Functionalization of solid surfaces with PEG spacers can significantly reduce non-specific protein binding.

2. Product Information

Storage: Store dry at -20 ° C.

(1) The thiol PEG reagents are low melting solids or liquids, which are difficult to weigh and distribute. To facilitate the treatment, please dissolve the reagent in DMSO or DMF.

(2) Store unused stock solutions at -20 ° C. Equilibrate the reagent bottle 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. Cover the stock solution with a septum, and then remove the solution with a syringe.

(3) If the carboxyl-thiol PEG reagent is used for surface binding and further protein loading, the reagent-to-surface ratio in the reaction will affect the number of carboxylic acid residues and thus further modification. Optimize these ratios to achieve the level of modification required for a particular application.

(4) Use an amine-free buffer with pH 7-9, such as PBS (20mM sodium phosphate, 150mM NaCl;PH 7.4); 100 mm carbonate / biocarbonate; or 50 mM borate. Do not use buffers containing primary amines, such as Tris or glycine, as they compete with acylation.

3. Procedures for Nanoparticle surface antibody conjugation with Thiol PEG

1. Before opening the bottle, equilibrate the Thiol PEG reagent to room temperature.
2. The stock solution was prepared by dissolving 100 mg of each reagent in the required amount of DMF or DMSO.
3. Prepare an appropriate amount of nanoparticle surface and the required amount of Thiol PEG reagent in phosphate buffered saline (PBS,20 mM sodium phosphate, 0.15 M NaCl, pH 7.2).
4. The reaction was incubated at room temperature for 2 hours, and then the surface was washed with PBS buffer to remove excess reagents.（If using a carboxy-mercapto PEG reagent, proceed to steps 5-8.）
5. For carboxyl mercapto peg reagent: the newly introduced carboxylic acid group

can be activated by adding appropriate amount of EDC and NHS to the modified surface in the MES buffer brine (0.1M MES, 0.5m NaCl, pH 6.0 or 0.1M MES,0.9% NaCl; pH 4.7). And react at room temperature for 15 minutes.

6. Wash the surface with MES buffer brine to remove all remaining EDC and NHS.
7. The required amine-containing substrate (prepared in PBS buffer) was added to the activated surface and reacted at room temperature for 2 hours.
8. Add hydroxylamine or another amine-containing buffer to quench the conjugation reaction.