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Technical Information

Crosslinker

Overview

BioActs provides a range of PEG based crosslinkers, which are water-soluble and unable to penetrate biological membranes. Crosslinkers are well-known protein modification reagents that having a variety of applications in life science research and assay development. Crosslinkers are selected on the basis of their chemical reactivity and properties that affect their behavior in different applications. Common applications for crosslinkers is the production of protein conjugates. Conjugates are often prepared by attachment of an enzyme, fluorophore or other molecule to a protein that has affinity for one of the components in the biological system being studied. Another important application is immobilization of biomolecules such as protein or antibody onto solid supports for affinity purification or sample analysis. The supports may be nitrocellulose, polystyrene plates or beads, polymers, nanoparticles or glass slides. Crosslinkers are also used for in vivo crosslinking in order to identify neighbor protein relationships and ligand-receptor interactions. Other important usage is label transfer that involves a label transfer from a known protein to an unknown interacting protein. The label transfer agent comprises interacting molecules and a labeling agent connected through a crosslinker. The linkage might be cleaved when interacting with another molecule, and the label is transferred to new molecule.

- ✓ Attached reactive groups: NHS ester, Vinylsulfone and Dichlorotriazine.
- ✓ Can be utilized in the functionalization of various nanoparticles.
- ✓ High purity, good water solubility and compatible with most of biomolecules.

Table 1. Reactive Crosslinker List

Reactive form	Reacting with
NHS-PEG(n)-COOH Vinylsulfone-PEG(n)-COOH NHS-PEGB(n)-COOH Vinylsulfone-PEGB(n)-COOH	Primary amine
Dichlorotriazine-PEG(n)-COOH Dichlorotriazine-PEGB(n)-COOH	Hydroxyl

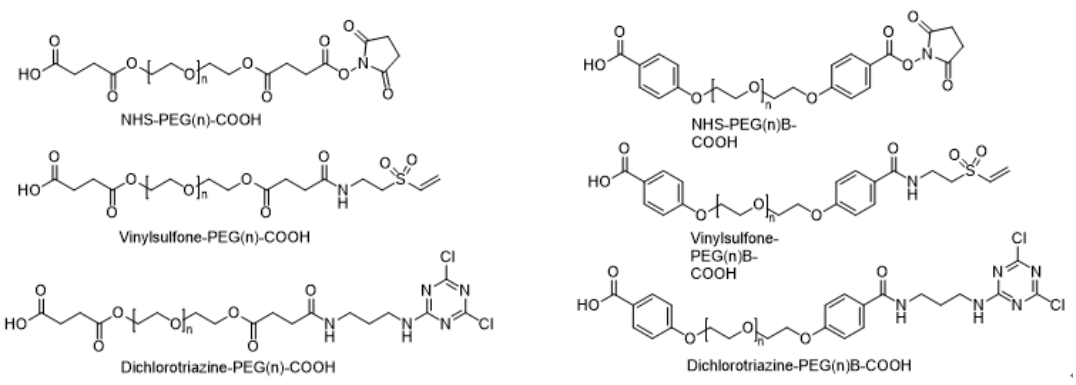

Figure 1. Structure of Crosslinkers

Important Information

- ✓ Hydrolysis of the NHS-ester is a major competing reaction of the NHS-ester acylation reaction. Rate of hydrolysis increases in higher pH and in dilute condition. To avoid the hydrolysis side reaction, use vinylsulfone crosslinkers.
- ✓ NHS-ester crosslinking reactions are most often performed in phosphate, carbonate/bicarbonate, HEPES and borate buffers. Other buffers can also be used provided they do not contain primary amines.
- ✓ Crosslinked proteins may decrease or lose their activity after conjugation. This reduction of activity might come from a conformational change or when the crosslinker modifies lysine groups in the binding site.
- ✓ Vinylsulfone reactive group is stable in aqueous solution and at higher temperature, thus they can be dissolved in water avoiding organic solvents such as DMSO or DMF. Vinylsulfone reacts with an amine via 1,4-addition pathway to form a stable amino linkage between linker and the substrate, therefore none of side product would be generated in conjugation step.
- ✓ Dichlorotriazines are among the few reactive groups that are reported to react directly with polysaccharides and other alcohols in aqueous solution, provided that the pH is >9 and other nucleophiles are not present.

Custom Labeling Service

Based on accumulated know-how and technologies, BioActs provide a wide range of custom services such as protein fluorescence labeling, organic synthesis, oligonucleotide synthesis upon customers' request. Our reliable technology has acknowledged by our clients from domestic and overseas universities, institutions, in vitro diagnostic and pharmaceutical companies and has enabled to steadily conduct their requirements. In addition, we can introduce fluorescent materials to many other compounds such as organic and inorganic compounds, drugs, hormones, polymer, peptides, proteins, antibodies, etc. We also can provide chemical and optical analytical data, along with cell and animal experiments.

Technical Support

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SDS (Safety Data Sheets) You can find SDS at www.bioacts.com, the official website of BioActs.
CoA (Certificate of Analysis) provides detailed quality information of each product. To see CoA, check the lot number written on each product's page at www.bioacts.com, when having trouble with check, contact to our technical support team

This product can be used only for research purpose, and it can't be used to treat or diagnose human body or animals.
The product cannot be resold to other regions except for South Korea.

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