Bovine Thrombin (>2000IU/mg)

Cat #: A-CSH002

Size: 1000U

Storage: 2-8 °C (36 months)

Product Description

Product Name	Bovine Thrombin (>2000IU/mg)
Cat #	A-CSH002
CAS Number	9002-04-4
Molecular Weight	37 kDa
Appearance	White lyophilized powder or solid block
Specific Activity	≥ 2000 IU/mg
Purity	No impurity bands observed in SDS-PAGE analysis
pH (25°C)	5.0~6.0

Thrombin, derived from bovine plasma, has a molecular weight of 37 kDa and is composed of two peptide chains (31 kDa and 6 kDa) linked by disulfide bonds. Thrombin is a protease formed by the activation of prothrombin (coagulation factor II). It catalyzes the hydrolysis of fibrinogen, cleaving off the A and B peptides, resulting in the formation of fibrin monomers. These monomers further polymerize, aided by platelets, red blood cells, white blood cells, and other factors, to form a blood clot. Due to its strong substrate specificity and high hydrolytic efficiency, thrombin is widely used in the development of recombinant fusion proteins in genetic engineering. One of its applications is as a tool protease for the specific cleavage of recombinant fusion proteins, particularly in the fields of biopharmaceuticals, genetic engineering, biochemistry, and molecular biology.

Usage

This thrombin is a widely used protease for cleaving tags and can efficiently cleave proteins with a mass ratio as low as 1:2000. Cleavage can occur between 20 °C and 37 °C for 0.3 to 16 hours. The optimal cleavage site for thrombin is X4-X3-P-R[K]-X1'-X2', where X4 and X3 are hydrophobic amino acids, and X1' and X2' are non-acidic amino acids. Some commonly used recognition sites include L-V-P-R-G-S, L-V-P-R-G-F, and M-Y-P-R-G-N. Cleavage between X4-X3-P-R-G-X2' is more effective than at X4-X3-P-K-L-X2'. Another recognition site is X2-R[K]-X1', where X2 or X1' is glycine, such as A-R-G and G-K-A, with cleavage occurring after the second residue. Inserting five glycine residues between the thrombin cleavage site and the N-terminal tag can improve cleavage. This "glycine linker peptide" allows for complete cleavage with less enzyme required and can also prevent potential mis-cleavage. An effective digestion buffer is 20 mM Tris-HCl buffer containing 150 mM sodium chloride at pH 8.0. Thrombin can be removed from the cleavage products using p-aminobenzamidine affinity purification, benzamidine affinity purification, or heparin affinity purification.

Disclaimer

The reagent is only used in the field of scientific research, not suitable for clinical diagnosis or other purposes.