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ProductInformation

Transglutaminase
from guinea pig liver

Product Number **T 5398**
Storage Temperature –0 °C

Product Description

EC Number: 2.3.2.13
CAS Number: 80146-85-6
Molecular Weight: 76.6 kDa (amino acid sequence)[1]
Extinction Coefficient: $E^{1\%}$ = 15.8 +/- 0.6 (280 nm)[2]

Transglutaminase from guinea pig liver consists of a single polypeptide chain of 691 amino acid residues. The enzyme contains six potential glycosylation sites (Asn-X-Ser or Asn-X-Thr), but it is not glycoslated. The enzyme also contains 16-18 sulfhydryl groups, but no disulfide bonds are present.[1]

Transglutaminase can catalyze the following two reactions: a) the incorporation of small molecular weight amines into γ-glutamine sites of proteins and b) in the absence of small molecular weight amines, the cross linking of proteins between γ-carboxamide groups of peptide bound glutamine residues (acyl donors) and the ε-amino groups of proteins and peptide bound lysine residues (acceptors). This results in the formation of γ-glutamyl-ε-lysine side chain peptides, thus crosslinking the proteins. Liver transglutaminase is a nonzymogenic enzyme, as opposed to human factor XIII (transglutaminase) which exists as a zymogen and must be converted to the active form via proteolysis with thrombin.[3]

Transglutaminase is a calcium dependent enzyme, which has several calcium binding sites. Calcium is the only activator required for optimal activity. The K_m for the substrate , CBZ-L-glutaminylglycine, is 66 mM when hydroxylamine is utilized as the acceptor.[2] Transglutaminase is inhibited by iodoacetamide and N-ethylmaleimide. However, the inactivation of the enzyme by these inhibitors only occurs in the presence of calcium.[2]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This enzyme is soluble in water (1 mg/ml), yielding a clear solution.

Storage/Stability

Solutions of this enzyme are not considered to be stable upon storage and should be prepared fresh directly before use.

References

1. Ikura, K., et.al., Amino acid sequence of guinea pig liver transglutaminase from its cDNA sequence. Biochemistry, **27**, 2898-2905 (1988).
2. Folk, J. E., and Cole, P. W., Mechanism of action of guinea pig liver transglutaminase. I. Purification and properties of the enzyme: identification of a functional cysteine essential for activity. J. Biol. Chem., **241**, 5518-5525 (1966).
3. Lorand, L., and Conrad, S. M., Transglutaminases. Mol. Cell. Biochem., **58**, 9-35 (1984).

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