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Product Information

Spectrin from human erythrocytes

Product Number **S 3644**

Storage Temperature -20°C

CAS[#] 12634-43-4

Product Description

Spectrin is the major component of the protein network, which covers the cytoplasmic surface of vertebrate, erythrocyte membranes. It is a high molecular weight heterodimer, composed of two subunits (molecular weights of approximately 230 kDa and 250 kDa). Spectrins are extended, flexible molecules, approximately 200-260 nm in length and 3-6 nm across with actin-binding domains at each end. Spectrins are composed of α and β subunits, which are both related to α -actinin. The α and β subunits associate laterally to form antiparallel heterodimers and the heterodimers are assembled head-head to form heterotetramers.

The erythrocyte membrane skeleton is organized as a polygonal network formed by five to seven extended spectrin molecules linked to short actin filaments, approximately 40 nm in length. The spectrin-actin network of erythrocytes is coupled to the membrane bilayer primarily through the association of spectrin with ankyrin, which in turn is bound to the cytoplasmic domain of the anion exchanger. A major function of the spectrin skeleton in erythrocytes is to provide mechanical support for the membrane bilayer and allow survival of the cells in circulation. The essential nature of the spectrin-skeleton in red blood cells was first demonstrated in mutant mice with deficiencies in α and β spectrin and ankyrin. Numerous mutations have subsequently been cataloged in humans with hereditary hemolytic anemias. Defects in lateral associations of the spectrin-actin network result in abnormally shaped cells in elliptocytosis and poikilocytosis and include loss of spectrin dimer-tetramer interactions and deficiency of protein 4.1. Defects in membrane associations result in loss of the unsupported phospholipid bilayer and spherocytosis. Molecular defects include spectrin deficiency from a variety of causes.

The product is supplied as a solution in 50% glycerol containing 100 mM sodium chloride, 10 mM phosphate buffer, pH 8.0, 1 mM dithiothreitol, 1 mM EDTA, and 0.1 mM phenylmethylsulfonyl fluoride.

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices. Source material tested and found negative for antibody to HIV-1/HIV-2, antibody to HCV, and for HBSAG.

Storage/Stability

The product ships on wet ice and storage at -20°C is recommended. Vortexing and excessive agitation of the solution are not recommended.

References

1. Vann, B., and Baines, A. J., *Physiol. Rev.*, **81**, 1353-1392 (2001).
2. Discher, D.E., and Carl, P., *Cell. Mol. Biol. Lett.*, **6**, 593-606 (2001).
3. Sangerman, J., *et al.*, *Cell. Mol. Biol. Lett.*, **6**, 607-636 (2001).

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