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Actin NATURAL PROTEIN

Catalog Number: PRP-517PRO
Quantity: 10 micrograms, 50 micrograms, 1 milligram
Format: Sterile-filtered white lyophilized (freeze-dried) powder
Host: Rabbit

Background:

Actin is a muscle protein localized in the I band of the myofibrils; acting along with myosin, it is responsible for contraction and relaxation of muscle. Each actin protomer binds one molecule of ATP and has one high affinity site for either calcium or magnesium ions, as well as several low affinity sites. Actin exists as a monomer in low salt concentrations, but filaments form rapidly as salt concentration rises, with the consequent hydrolysis of ATP. It occurs in globular (G-actin) and fibrous (F-actin) forms. Actin is found in all eukaryotic cells (except for nematode sperm). Actin is one of the most highly-conserved proteins, differing by no more than 20% in species as diverse as algae and humans. Its other functions include: cell motility, cell division and cytokinesis, vesicle and organelle movement, cell signaling, and the establishment and maintenance of cell junctions and cell shape.

Specificity and Preparation:

Ultra pure actin consists of the alpha-skeletal muscle isoform and is purified from rabbit striated muscle. The purification method used¹ results in a highly purified protein having a molecular mass of 43 kDa. The protein was lyophilized from a 1 mg/ml solution containing 10 mM Tris/HCl buffer pH 8.0, 0.2 mM CaCl₂, 0.2 mM ATP, 1 mM DTT and 0.5% (w/v) SDS. Purity is greater than 98.0% as determined by RP-HPLC and SDS-PAGE.

Usage and Storage:

Reported to be effective for immunoassays, immunization, and as protein standard in 1D and 2D SDS gel electrophoresis.

It is recommended to reconstitute the lyophilized material in sterile 18 MΩ-cm H₂O at not less than 100 μg/ml, which can then be further diluted to other aqueous solutions. Lyophilized material although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution, material should be stored at 4°C between 2-7 days and for future use below -18°C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid repeated freezing and thawing. Gently spin down material before use; 5-10 seconds in a microfuge should be adequate.

References:

1. Spudich JA, Watt S (1971) The regulation of rabbit skeletal muscle contraction. I. Biochemical studies of the interaction of the tropomyosin-troponin complex with actin and the proteolytic fragments of myosin. *J Biol Chem* 246(15):4866-4871.

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