



Product Data Sheet

□ Cat # RP-789

Recombinant Human Cardiac Troponin-I

Size: □ 10 ug

Troponin is a complex of three regulatory proteins that is integral to muscle contraction[1] in skeletal and cardiac muscle, but not smooth muscle. Troponin is attached to the protein tropomyosin and lies within the groove between actin filaments in muscle tissue. In a relaxed muscle, tropomyosin blocks the attachment site for the myosin crossbridge, thus preventing contraction. When the muscle cell is stimulated to contract by an action potential, calcium channels open in the sarcoplasmic reticulum and release calcium into the sarcoplasm. Some of this calcium attaches to troponin, causing a conformational change that moves tropomyosin out of the way so that the cross bridges can attach to actin and produce muscle contraction. Troponin is found in both skeletal muscle and cardiac muscle, but the specific versions of troponin differ between types of muscle. The main difference is that the TnC subunit of troponin in skeletal muscle has four calcium ion binding sites, whereas in cardiac muscle there are only three.

Troponin has three subunits, TnC, TnI, and TnT. When calcium is bound to specific sites on TnC, tropomyosin rolls out of the way of the actin filament active sites, so that myosin (a molecular motor organized in muscle thick filaments) can attach to the thin filament and produce force and/or movement. In the absence of calcium, tropomyosin interferes with this action of myosin, and therefore muscles remain relaxed.

Troponin I is a part of the troponin complex. It binds to actin in thin myofilaments to hold the actin-tropomyosin complex in place. Because of it myosin cannot bind actin in relaxed muscle. When calcium binds to the Troponin C it causes conformational changes which lead to dislocation of troponin I and finally tropomyosin leaves the binding site for myosin on actin leading to contraction of muscle. The letter I is given due to its inhibitory character.

The tissue specific subtypes are:

Slow-twitch skeletal muscle isoform troponin I, TNNI1 (1q31.3)

Fast-twitch skeletal muscle isoform troponin I, TNNI2 (11p15.5)

Cardiac troponin I, TNNI3 (19q13.4)

Description:

Recombinant Human TNI produced in E.Coli is a single, non-glycosylated, polypeptide chain containing 165 amino acids and having a molecular mass of 24,016 Dalton (purity >98%). The rHuTNI is purified by proprietary chromatographic techniques. It is supplied in 50 mM Tris buffer pH 8.0 (see lot sp. conc on the vial). If supplied in powder then reconstitute it in 100 ul water for 1 mg/ml stock and store in liquid at 4oC for ~1 week or aliquots in suitable size and store at -20oC for long term storage.

Lyophilized rHuTNI although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution rHuTNI 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). Please prevent freeze-thaw cycles.

This item is for LABORATORY ESEARCH USE ONLY.

Refs: Labugger R (2000) Circulation 102, 1221-1226

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