Troponin-C

Jake Bergquist, u6010393

November 23, 2019

Introduction

Troponin C is a protein found in skeletal and cardiac muscle that helps control the initiation of contraction of the muscle fiber. Troponin C makes up a regulatory complex of troponin proteins (troponin 1, C and L) which all act to modulate the binding of tropomyosin to actin filaments in the muscle. The function of the troponin complex, and by extension the function of troponin c, is critical to the proper timing, strength, and frequency of muscle contraction in both skeletal and cardiac muscle. Troponin is also used as a biochemical marker of heart health during potential instances of acute cardiac damage such as a myocardial infarction, as it is released into the blood when cardiomyocytes are damaged. Troponin C is a type of calcium binding protein with two distinct conformations that are stabilized by different concentrations of calcium. This allows troponin C to regulate muscle contraction (in conjunction with the rest of the troponin/tropomyosin complex) in a calcium dependent manner. Changes to troponin C are implicated in several disease processes, particularly of cardiac troponin C which plays a role in some forms of cardiomyopathy. Several pharmacological treatments of this disease state target troponin C.

Structure and Function

Troponin C is a 18 KDa calcium binding protein of the EF-hand family of calcium binding proteins.