



Genorise® Recombinant Human Cardiac Troponin I

Catalog #: GR119008

Background

Troponin is a complex of three regulatory proteins (troponin C, troponin I, and troponin T) that is integral to muscle contraction in skeletal muscle and cardiac muscle, but not smooth muscle. Troponin I, cardiac muscle is a protein that in humans is encoded by the *TNNI3* gene.^[1] It is a tissue-specific subtype of troponin I, which in turn is a part of the troponin complex. *TNNI3* has been shown to interact with PKD2L1,^[2] Troponin C type 1^[3] and Polycystic kidney disease 2.^[4] An increased level of the cardiac protein isoform of troponin circulating in the blood has been shown to be a biomarker of heart disorders, the most important of which is myocardial infarction. Raised troponin levels indicate cardiac muscle cell death as the enzyme is released into the blood upon injury to the heart. Certain subtypes of troponin (cardiac I and T) are very sensitive and specific indicators of damage to the heart muscle (myocardium). They are measured in the blood to differentiate between unstable angina and myocardial infarction (heart attack) in people with chest pain or acute coronary syndrome. A person who had had a myocardial infarction would have an area of damaged heart muscle and so would have elevated cardiac troponin levels in the blood.^[5] This can also occur in people with coronary vasospasm, a type of myocardial infarction involving severe constriction of the cardiac blood vessels. After a myocardial infarction troponins may remain high for up to 2 weeks.^[6]

It is important to note that cardiac troponins are a marker of all heart muscle damage, not just myocardial infarction, which is the most severe form of heart disorder. However, diagnostic criteria for raised troponin indicating myocardial infarction is currently set by the WHO at a threshold of 2 ug or higher. Troponins are also increased in patients with heart failure, where they also predict mortality and ventricular rhythm abnormalities. They can rise in inflammatory conditions such as myocarditis and pericarditis with heart muscle involvement (which is then termed myopericarditis). Troponins can also indicate several forms of cardiomyopathy, such as dilated cardiomyopathy, hypertrophic cardiomyopathy or (left) ventricular hypertrophy, peripartum cardiomyopathy, Takotsubo cardiomyopathy, or infiltrative disorders such as cardiac amyloidosis. In a community-based cohort study indicating the importance of silent cardiac damage, troponin I has been shown to predict mortality and first coronary heart disease event in men free from cardiovascular disease at baseline.^[7]

References

1. Kimura A, et al. (1997). *Nat Genet* 16 (4): 379–82.
2. Li Q, et al. (2003). *Biochemistry* (United States) 42 (24): 7618–25.
3. Ward, DG, et al. (2004). *Biochemistry* (United States) 43 (13): 4020–7.
4. Li, Qiang; et al. (2003). *Biochemistry* (United States) 42 (2): 450–7.
5. Antman EM, et al. (1996). *N. Engl. J. Med.* 335 (18): 1342–9.
6. Amsterdam, E. A.; et al. (2014). *Circulation* 130: e344–e426.
7. Zethelius B, et al. (2006). *Circulation* 113 (8): 1071–8.



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Description

Size: 10 µg

Source: *E coli* derived

Components: Arg68 –Ser210

Accession # P19429

Predicted Molecular Mass: 32 kDa (16 kDa cTnI monomer plus 16 kDa his tags and plasmid vector sequences)

Specifications

SDS-PAGE: 32 kDa, reducing conditions

Purity: >95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation: Lyophilized from a 0.2 µm filtered PBS with BSA as carrier protein at 5µg/µg.

Preparation and Storage

Reconstitution: Reconstitute at 100-200 µg/mL in sterile PBS.

Shipping: The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage: Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months from date of receipt, -20 to -70°C as supplied.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

**FOR LABORATORY RESEARCH USE ONLY
NOT FOR USE IN MICE AND ANIMALS**