

- Hormones
- Cardiac Markers
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Creatine Kinase BB Isoenzyme (CK-BB)

Creatine Kinase (CK) is a dimeric enzyme composed of either M- or B-type subunits. The subunits, each encoded by a unique gene, associate to form three isoenzymic forms: BB, MB, and MM. These isoenzymes are expressed at different levels in various tissues in humans: CK-BB is predominantly found in brain tissue, CK-MB in heart muscle, and CK-MM in skeletal and heart muscle.

CK-BB is not normally present in measurable amounts in the serum of normal adults, although it may increase after severe damage to tissues containing CK-BB. Elevated serum levels of CK-BB are associated with cancer of the breast, ovary, prostate, colon and other gastrointestinal carcinomas, and for small-cell anaplastic carcinoma of the lung. Serum levels of CK-BB are also measured in conjunction with the other isoenzymes, CK-MB and CK-MM, to aid in the diagnosis of myocardial infarction.

CK-BB Antigen

Catalog Number	Purity (SDS-PAGE)	Activity (Beckman Dri-STAT)	CK Isoenzyme Content (Beckman Paragon)
C1124	98%	200 U/ml at 30°C	A single band corresponding to CK-BB is observed when stained for CK activity
Source:		Human Brain	
Form:		5 mM Sodium Succinate, 10 mM Sodium Chloride, 5 mM β -Mercaptoethanol, 1 mM EDTA, 50% Glycerol, pH 7.0 \pm 0.1	
Protein/Content:		Determined by $A_{280}^{1\%} = 8.8$	
Unit Definition:		One unit converts 1 μ mole of creatine phosphate to creatine per minute at pH 6.8 at the temperature specified above.	
Storage:		-10°C to -25°C	
Biohazard:		At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

CK-BB Antibodies

	Catalog Number	Purification Method
Monoclonal to CK-BB	MC117	Protein A chromatography

Intended Use: For Research Use Only. Not for use in diagnostic procedures. Precaution: Although source materials have been tested for certain diseases, no test can absolutely assure the absence of all infectious agents. Therefore, these products should be handled as potentially biohazardous.

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Creatine Kinase MB Isoenzyme (CK-MB)

Creatine Kinase (CK) is a dimeric enzyme composed of either M- or B-type subunits. The subunits, each encoded by a unique gene, associate to form three isoenzymic forms: BB, MB, and MM. These isoenzymes are expressed at different levels in various tissues in humans: CK-BB is predominantly found in brain tissue, CK-MB in heart muscle, and CK-MM in skeletal and heart muscle.

CK-MB is known to exist in two forms: CK-MB₂, the gene product, and CK-MB₁, which is modified upon release into the bloodstream. Carboxypeptidase cleavage of the C-terminal Lysine residue of the M subunit transforms CK-MB₂ into CK-MB₁. In healthy individuals, CK-MB₂ is in equilibrium with the modified CK-MB₁ subform at a ratio of approximately 1:1. In the early hours of myocardial infarction, the abrupt release of CK-MB₂ from myocardium produces an upward shift in the serum CK-MB₂/CK-MB₁ ratio, usually before total CK-MB (CK-MB₂ + CK-MB₁) exceeds normal levels.

While assays for serum levels of total CK-MB have long been used to aid in the diagnosis of myocardial infarction, determinations of the serum CK-MB₂/CK-MB₁ ratio are also proving useful.

CK-MB Antigen

Catalog Number	CK-MB (Abbott IMx)	Activity (Beckman Dri-STAT)	CK Isoenzyme Content (Beckman Paragon)
C1224	0.5 mg/ml	600 U/mg at 37°C	> 99% CK-MB
C1223	0.5 mg/ml	300 U/ml at 30°C	> 99% CK-MB
Catalog Number	CK-MB (Abbott IMx)	Activity (Beckman Dri-STAT)	CK Isoenzyme Content (Helena Cardio Rep)
C1724	Reported as assayed	600 U/mg at 37°C	> 90% CK-MB ₁

Source:	Human Heart
Form:	5 mM Sodium Succinate, 10 mM Sodium Chloride, 5 mM β-Mercaptoethanol, 1 mM EDTA, 50% Glycerol, pH 7.0 ± 0.1
CK-MB:	Determined by Abbott IMx and/or Lowry (BSA standard)
Unit Definition:	One unit converts 1 μmole of creatine phosphate to creatine per minute at pH 6.8 at the temperature specified above.
Storage:	2-8°C short term -10°C to -25°C long term
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

CK-MB Antibodies

	Catalog Number	Purification Method
Monoclonal to CK-MB	MC127	Protein A chromatography

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Creatine Kinase MM Isoenzyme (CK-MM)

Creatine Kinase (CK) is a dimeric enzyme composed of either M- or B-type subunits. The subunits, each encoded by a unique gene, associate to form three isoenzymic forms: BB, MB, and MM. These isoenzymes are expressed at different levels in various tissues in humans: CK-BB is predominantly found in brain tissue, CK-MB in heart muscle, and CK-MM in skeletal and heart muscle.

Although CK-MM is predominantly found in skeletal muscle, it is also the primary CK isoenzyme present in heart muscle. In fact, serum levels of CK-MM elevate as early as six hours after the onset of myocardial infarction (MI). Serum assays for CK-MM are sensitive for the detection of MI, but lack cardiac tissue specificity and, therefore, are used in conjunction with serum assays for the other CK isoenzymes, CK-MB and CK-BB to confirm MI diagnosis.

CK-MM Antigen

Catalog Number	Purity (SDS-PAGE)	Activity (Beckman Dri-STAT)	CK Isoenzyme Content (Beckman Paragon)
C1324	98%	300 U/ml at 30°C	A single band corresponding to CK-MM is observed when stained for CK activity
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Source:	Human Skeletal Muscle		
Form:	5 mM Sodium Succinate, 10 mM Sodium Chloride, 5 mM β -Mercaptoethanol, 1 mM EDTA, 50% Glycerol, pH 7.0 \pm 0.1		
Protein/Content:	Determined by $A_{280}^{1\%} = 8.8$		
Unit Definition:	One unit converts 1 μ mole of creatine phosphate to creatine per minute at pH 6.8 at the temperature specified above.		
Storage:	-10°C to -25°C		
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.		

CK-MM Antibodies

	Catalog Number	Purification Method
Goat anti CK-MM	GC139	Immunoaffinity chromatography
Monoclonal to CK-MM	MC137	Protein A chromatography

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Myoglobin

Myoglobin is an intracellular heme protein that aids in the transport of oxygen. Oxygen binds to the porphyrin ring of myoglobin, as it does to haemoglobin, forming oxymyoglobin. Myoglobin is abundantly present in both cardiac and skeletal muscle.

Immunoassays detecting serum levels of myoglobin have long been used to confirm the diagnosis of myocardial infarction (MI). At approximately 17,500 MW, myoglobin is small enough to pass easily into circulation after cardiac injury, making it one of the earliest biochemical markers of MI. Serum myoglobin levels peak at approximately 6-9 hours post-MI, but return to normal within 24-36 hours as myoglobin is easily and rapidly cleared from circulation.

Myoglobin Antigen

Catalog Number	Purity (SDS-PAGE)	Protein
M0725	99%	1.0 mg/ml
M0724	95%	1.0 mg/ml

Source: Human Heart
 Form: 20 mM Tris, 1 mM EDTA, 50% Glycerol, pH 8.5 ± 0.1
 Protein/Content: Determined by Bio-Rad Protein Assay (BSA standard) and/or by Chiron ACS 180
 Storage: 2-8°C short term
 -10°C to -25°C long term
 Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

Please inquire about Myoglobin purified from Human Skeletal Muscle, Catalog Number: M0224

Myoglobin Antibodies

	Catalog Number	Purification Method
Goat anti Myoglobin	GM079	Immunoaffinity chromatography
Goat anti Myoglobin	GM075	Ion-exchange chromatography
Rabbit anti Myoglobin	RM079	Immunoaffinity chromatography
Rabbit anti Myoglobin	RM075	Ion-exchange chromatography
Monoclonal to Myoglobin	MM077	Protein A chromatography

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Myosin Light Chain 1

In the human heart, the contractile protein myosin is a heteropolymer composed of two heavy chains (approximately 200,000 MW) and two pairs of light chains. The light chain pairs have been termed light chain 1 (25,000 MW) and light chain 2 (19,000 MW). Myosin Light Chain 1 (MLC-1) is also called the *essential* chain and although its precise function is unknown, it is thought to stabilize the heavy chains of myosin.

After myocardial infarction (MI), MLC-1 is continually released from diseased myocardium, and serum levels peak approximately 1-4 days post-MI. As such, elevated serum levels of MLC-1 not only confirm MI diagnosis but also indicate infarct size.

	Catalog Number	Purity (SDS-PAGE)	Protein
	M0924	95%	0.2 mg/ml
Source:	Human Heart, Left Ventricle		
Form:	25 mM Piperazine, 6 M Urea, 15 mM β -Mercaptoethanol, pH 6.0 \pm 0.1		
Protein/Content:	Determined by Bio-Rad Protein Assay (BSA standard)		
Storage:	2-8°C short term -10°C to -25°C long term		
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.		

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Troponin C (TnC)

The troponin complex is a contraction-regulating protein found on the thin filaments of striated muscle and is composed of three non-identical subunits. Troponin C (TnC) is the calcium-sensitive subunit and contains four Ca²⁺ binding sites. Troponin I (TnI), the inhibitory subunit, binds actin in the relaxed state, thereby preventing muscle contraction by inhibiting the ATPase activity of actomyosin. Troponin T (TnT) is involved in the attachment of the troponin complex to the thin filament, binding to tropomyosin and actin. The binding of intracellular Ca²⁺ by TnC induces a conformational change in the troponin complex, which causes TnI to release actin, subsequently allowing actin to interact with myosin resulting in muscle contraction. Each subunit of the troponin complex exists in various isoforms depending on its tissue origin. TnC exists in cardiac, fast-twitch skeletal muscle, and slow-twitch skeletal muscle isoforms, but the slow-twitch skeletal and cardiac isoforms are thought to be identical.

Elevated serum levels of the cardiac isoforms of the troponin subunits are well-documented in myocardial infarction (MI). Evidence suggests that cardiac TnC is elevated in the serum of MI patients in the form of the binary troponin I-C complex or the complete, ternary troponin ICT complex. As such, immunoassays specific for the cardiac isoforms of TnI or TnT must also detect these complexes.

	Catalog Number	Purity (SDS-PAGE)	Protein
	T4924	95%	1.0 mg/ml
Source:	Rabbit Skeletal Muscle (obtained from healthy rabbits of USA origin)		
Form:	10 mM Sodium Phosphate, 150 mM Sodium Chloride, 0.1% Sodium Azide, pH 7.2 ± 0.1		
Protein/Content:	Determined by Bio-Rad Protein Assay (BSA standard)		
Storage:	2-8°C short term -10°C to -25°C long term		
Biohazard:	Not determined for this product.		
<i>Please inquire about TnC purified from Human Heart</i>			

Intended Use: For Research Use Only. Not for use in diagnostic procedures. Precaution: Although source materials have been tested for certain diseases, no test can absolutely assure the absence of all infectious agents. Therefore, these products should be handled as potentially biohazardous.

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Troponin I (TnI)

The troponin complex is a contraction-regulating protein found on the thin filaments of striated muscle and is composed of three non-identical subunits. Troponin C (TnC) is the calcium-sensitive subunit and contains four Ca²⁺ binding sites. Troponin I (TnI), the inhibitory subunit, binds actin in the relaxed state, thereby preventing muscle contraction by inhibiting the ATPase activity of actomyosin. Troponin T (TnT) is involved in the attachment of the troponin complex to the thin filament, binding to tropomyosin and actin. The binding of intracellular Ca²⁺ by TnC induces a conformational change in the troponin complex, which causes TnI to release actin, subsequently allowing actin to interact with myosin resulting in muscle contraction. Each subunit of the troponin complex exists in various isoforms depending on its tissue origin. TnI exists in distinct cardiac, fast-twitch skeletal muscle, and slow-twitch skeletal muscle isoforms. The cardiac isoform is approximately 40% dissimilar from the fast-twitch and slow-twitch skeletal isoforms and, in addition, contains 31 N-terminal amino acids not found in the skeletal isoforms.

Elevated serum levels of the cardiac isoform of TnI (cTnI) are well-documented in myocardial infarction (MI). Several clinical studies indicate that immunoassays for cTnI are more specific for MI than those for creatine kinase MB isoenzyme. In addition, immunoassays for cTnI are proving useful in the risk stratification of suspected MI patients and in detecting MI in clinical conditions in which conventional biochemical markers are often ambiguous, such as during various surgical procedures and in chronic renal failure patients.

TnI Antigen

Catalog Number	Purity (SDS-PAGE)	Protein
T1414	95%	Determined prior to lyophilization
T1424	95%	1.0 mg/ml
T1423	Not reported; this is a fragmented preparation	0.5 mg/ml

Source: Human Heart

Form:
 T1414: Lyophilized from 10 mM HCl
 T1424 & T1423: 75 mM Tris, 10 mM EGTA, 8 M Urea, 60 mM β-Mercaptoethanol, 1 mM Calcium Chloride, 1 mM Benzamidine, pH 8.0 ± 0.1

Protein/Content: Determined by Bio-Rad Protein Assay (BSA standard)

Storage: 2-8°C short term
 -10°C to -25°C long term

Biohazard: At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.

Please inquire about TnI purified from Human Skeletal Muscle, Catalog Number: T3924

TnI Antibodies

	Catalog Number	Purification Method
Goat anti cTnI	GT149	Immunoaffinity chromatography
Monoclonal to cTnI	MT377	Protein A chromatography

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Troponin IC Complex

The troponin complex is a contraction-regulating protein found on the thin filaments of striated muscle and is composed of three non-identical subunits. Troponin C (TnC) is the calcium-sensitive subunit and contains four Ca²⁺ binding sites. Troponin I (TnI), the inhibitory subunit, binds actin in the relaxed state, thereby preventing muscle contraction by inhibiting the ATPase activity of actomyosin. Troponin T (TnT) is involved in the attachment of the troponin complex to the thin filament, binding to tropomyosin and actin. The binding of intracellular Ca²⁺ by TnC induces a conformational change in the troponin complex, which causes TnI to release actin, subsequently allowing actin to interact with myosin resulting in muscle contraction. Each subunit of the troponin complex exists in various isoforms depending on its tissue origin. TnC exists in cardiac, fast-twitch skeletal muscle, and slow-twitch skeletal muscle isoforms, but the slow-twitch skeletal and cardiac isoforms are thought to be identical.

Elevated serum levels of the cardiac isoforms of the troponin subunits are well-documented in myocardial infarction (MI). Evidence suggests that the cardiac troponin subunits are elevated in the serum of MI patients as the binary troponin I-C complex and as the complete, ternary troponin ICT complex. As such, immunoassays specific for the cardiac isoforms of troponin must detect these complexes.

Catalog Number	Purity	Subunit Composition
T5124	Reported as assayed by agarose gel electrophoresis	Human cardiac TnI and rabbit skeletal muscle TnC combined <i>in vitro</i>
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Source:	As stated above	
Form:	50 mM Tris, 6 M Urea, 3 mM Calcium Chloride, 1 mM Dithiothreitol, pH 7.8 ± 0.1	
Protein/Content:	Determined by Bio-Rad Protein Assay (BSA standard)	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	

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Troponin T (TnT)

The troponin complex is a contraction-regulating protein found on the thin filaments of striated muscle and is composed of three non-identical subunits. Troponin C (TnC) is the calcium-sensitive subunit and contains four Ca²⁺ binding sites. Troponin I (TnI), the inhibitory subunit, binds actin in the relaxed state, thereby preventing muscle contraction by inhibiting the ATPase activity of actomyosin. Troponin T (TnT) is involved in the attachment of the troponin complex to the thin filament, binding to tropomyosin and actin. The binding of intracellular Ca²⁺ by TnC induces a conformational change in the troponin complex, which causes TnI to release actin, subsequently allowing actin to interact with myosin resulting in muscle contraction. Each subunit of the troponin complex exists in various isoforms depending on its tissue origin. TnI exists in distinct cardiac, fast-twitch skeletal muscle, and slow-twitch skeletal muscle isoforms. The cardiac isoform is approximately 40% dissimilar from the fast-twitch and slow-twitch skeletal isoforms and, in addition, contains 31 N-terminal amino acids not found in the skeletal isoforms.

Elevated serum levels of the cardiac isoform of TnT (cTnT) are well-documented in myocardial infarction (MI). Several clinical studies indicate that immunoassays for cTnT are more specific for MI than those for creatine kinase MB isoenzyme. In addition, immunoassays for cTnT are proving useful in the risk stratification of suspected MI patients and in detecting peri-operative MI during various surgical procedures and in chronic renal failure patients.

	Catalog Number	Purity (SDS-PAGE)
	T1514	95%
Source:	Human Heart	
Form:	Lyophilized from 10 mM HCl	
Protein/Content:	Total protein determined prior to lyophilization	
Storage:	2-8°C short term -10°C to -25°C long term	
Biohazard:	At a minimum, the above products are tested and found negative for HIV-1, HIV-2, Hepatitis B, and HCV. Other tests can be performed as needed.	
<i>Please inquire about Cardiac TnT in a liquid form, Catalog Number: T1524</i>		
<i>Also, please inquire about TnT purified from Human Skeletal Muscle, Catalog Number: T1714</i>		

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