CUSTOMBIOTECH

Creatine Kinase MB

Test principle: Immunological UV test

$$\text{Creatine phosphate} + \text{ADP} \xrightarrow{\text{creatine kinase}} \text{creatine} + \text{ATP}$$

$$\text{ATP} + \text{glucose} \xrightarrow{\text{hexokinase}} \text{glucose-6-phosphate} + \text{ADP}$$

$$\text{Glucose-6-phosphate} + \text{NADP}^{+} \xrightarrow{\text{G6PDH}} \text{6-phosphogluconate} + \text{NADPH} + \text{H}^{+}$$

After immunoinhibition with antibodies to the CK-M subunit, CK-B activity is determined with a standardized method for the determination of CK using the "reverse reaction" and activation by NAC as recommended by the German Society for Clinical Chemistry (DGKC) and the International Federation of Clinical Chemistry (IFCC) in 1977 and 2002, respectively.
The CK-M subunits are inhibited by specific antibodies. Since CK-BB occurs rarely in serum, it is assumed that the CK-B activity is derived from CK-MB present in the specimen. The activity of the CK-B subunits is determined and multiplied by 2 to provide an estimate of the CK-MB activity.

The CK is activated by N-acetylcysteine (NAC). In a primary reaction, the activated CK catalyzes the dephosphorylation of creatine phosphate to form creatine and ATP. In a coupled reaction catalyzed by hexokinase (HK), glucose is phosphorylated by ATP to form D-glucose-6-phosphate (G6P). Finally, glucose-6-phosphate dehydrogenase (G6PDH) catalyzes the oxidation of G6P by $NADP^{+}$ to form 6-phosphogluconate and NADPH.

The rate of the NADPH formation is directly proportional to the catalytic CK-MB activity. It is determined by measuring the increase in absorbance at 340 nm.

Proposed reagent composition approximately 3+1 formulation

Reagent 1

Composition	Concentration	Catalog Number
Buffer (Imidazole, pH 6.0)	58 mmol/l	10 034 428 103
N-Acetylcysteine	40 mmol/l	10 068 365 103
EDTA	3 mmol/l	
AMP, di-Na	10 mmol/l	10 000 094 103
Diadenosine pentaphosphate, tri-Li	24 µmol/l	10 161 624 103
Mg^{2+} (acetate preferred)	20 mmol/l	
D-Glucose	40 mmol/l	
NADP, mono-K	9.5 mmol/l	10 233 536 103
Stabilizer, preservative		

Reagent 2

Composition	Concentration	Catalog Number
EDTA	3 mmol/l	
ADP, mono-K	12 mmol/l	10 233 528 103
N-Methyldiethenolamine	69 mmol/l	
Creatine phosphate, di-Na	180 mmol/l	10 003 506 103
Hexokinase (HK)	>36 kU/l	11 370 600 103
G-6-PDH	>36 kU/l	11 293 206 103
CK-MM antibody mix	25 mg/l	04 688 457 103
Detergent, preservative, such as Triton X-100 Sodium azide	0.01 %	10 743 119 103

Products are for further processing only.

Products are for further processing only.

custombiotech.roche.com

Your Roche Custom Biotech Customer Service

Europe, Middle East, Africa, Latin America
Phone +49 621 759 8580
Fax +49 621 759 8610
mannheim.custombiotech@roche.com

Japan Phone +81 3 5443 5285
Fax +81 3 5443 7934
japan.custombiotech@roche.com

Asia Pacific Phone +65 6371 6638
Fax +65 6371 6601
apac.custombiotech@roche.com

United States
Phone +1 800 428 5433, ext. 14649 (toll-free)
Fax +1 317 521 4065
custombiotech.ussales@roche.com

Canada Phone +1 450 686 7050
Fax +1 450 686 7012
custombiotech.can@roche.com

Published by
Roche Diagnostics GmbH
Sandhofer Straße 116
68305 Mannheim
Germany

05837758990 ② 0311