CK-NAC
(IFCC NAC Activated method)

MONOTEST

DIATEK

CLINICAL SIGNIFICANCE :

Serum creatine kinase (CK) levels have proven valuable in the assessment of cardiac and skeletal muscle diseases, including myocardial infarction.There may also be an increase in CK values associated with diseases of the central nervous system. Diseases of the thyroid show an inverse relationship to CK values. A combined analysis of creatine kinase and lactate dehydrogenase isoenzymes provides a definitive diagnosis of acute myocardial infarction.

TEST PRINCIPLE :

Kinetic determination of the creatine kinase based upon IFCC recommendations:

$$\text{Creatine phosphate + ADP} \xrightarrow{CK} \text{Creatine + ATP}$$

$$\text{ATP + D-Glucose} \xrightarrow{HK} \text{G-6-P + ADP}$$

$$\text{G-6-P + NADP}^{+} \xrightarrow{\text{G-6-PDH}} \text{D-Gluconate-6-phosphate NADPH + H}^{+}$$

CK = Creatine kinase
HK = Hexokinase
G-6-P = D-Glucose-6-phosphate
G-6-PDH = Glucose-6-phosphate dehydrogenase

The increasing absorbance of NADPH is measured photometrically following time and temperature controlled kinetic reaction. The NAC activated reaction is highly specific on the human CK

REAGENTS COMPOSITION :

Concentrations in the working reagent (pH 6.7)
Imidazole 100 mmol/L, N-Acetyl-L-Cysteine 20 mmol/L,
Magnesium acetate 10 mmol/L, D-Glucose 20 mmol/L,
EDTA 2 mmol/L, NADP 2 mmol/L, Hexokinase > 2500 U/L,
Creatine phosphate 30 mmol/L, ADP 2 mmol/L, G-6-PDH > 1500 U/L,
Diadenosine pentaphosphate 10 µmol/L, AMP 5 mmol/L

KIT CONTENTS :

	CODE No. CK01
Pack size :	(10 Test)
Reagent 1	10 Vials (Prefilled)
Reagent 2	1 x 1.1 ml

All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2 - 8 ° C, and contaminations prevented during their use. Do not use reagents over the expiration date.

SAMPLES :

Serum or Heparinised plasma

MATERIALS REQUIRED BUT NOT PROVIDED :

CK NAC Control (Use of assayed QC sera is recommended to validate test result).

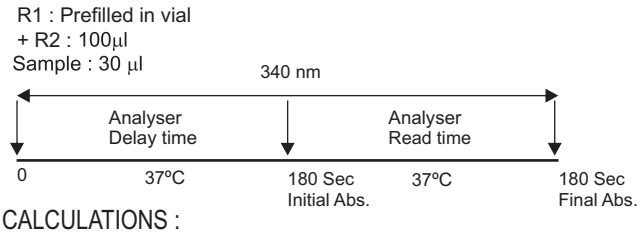
ASSAY CONDITIONS:

Wavelength :	340 nm
Cuvette:	1 cm light path
Constant temperature	37ºC
Reaction (Mode)	Kinetic
Kinetic Factor	3333
Delay	180 sec
Read time	180 sec
Linearity	833 U/L
Unit	U/L
Blanking	D. Water
Slope of reaction	Increasing
Instrument sipping Volume	450 - 500 µl

PROCEDURE :

1. Add 100 µl of R2 directly into the prefilled R1 vial to prepare Working Reagent. Mix carefully (do not shake).
2. Programe the Analyser and set Sipping volume 450 - 500 µl.
3. Add 30 µl of sample in the Working Reagent.
4. Mix and start reading the change of absorbance (ΔA) with delay time 180 sec and Read time 180 sec at 37ºC.

Assay Procedure summary (Serum/Plasma):



CALCULATIONS :

CK Activity in U/L = Δ Abs/mint of Test x 3333

REFERENCE RANGE :

Serum/plasma :	Adult
	Women : 24 - 170
	Men : 24 - 195

Higher values found in New Born and Children upto 6 months

The above reference range is guideline and all the laboratories must establish their own Age specific normal reference range. Final diagnosis should be made with correlation of clinical factors.

PRECAUTIONS :

1. Do not pipette by mouth therefore avoid contact of the reagent with skin.
2. Use fresh microtips while pipetting sample and R2
3. Avoid contamination of the reagent during the assay process.
4. **Before the assay begins, bring all the reagents to room temperature.**
5. Do not freeze or expose the reagents to high temperature and protect from direct sunlight as it will affect the performance of the kit.
6. Programmes for specific analysers are available on request.
7. For accuracy of results, the assay procedure, reagent preparation and storage has to be meticulously followed.
8. As with all the diagnostic procedures, the physician should evaluate data obtained by the use of this kit in light of other clinical information.

INTERFERENCES

The following analytes were tested up to the levels indicated and found not to interfere with Ascorbic acid upto 30 mg/dl, Bilirubin upto 40 mg/dl, Hemoglobin upto 200 mg/dl and Triglycerides upto 2000 mg/dl

LINEARITY AND DETECTION LIMIT :

The linearity limit of the standard serum procedure is up to the CK activity of 833 U/l. At higher activities the sample has to be diluted 1:10 with Normal saline and the final result to be multiplied by 10. The lowest detection limit for serum samples is equal to 5 U/L.

BIBLIOGRAPHY

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4. Lorentz K, Röhle G, Siekmann L. Introduction of newstandard methods 1994 for the determination of catalytic enzyme concentrations at 37 °C. DGKlinische Chemie Mitteilungen 1995;26:290-3.

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