



# ACE kinetic

Procedure

KK-ACK

## Pre-Analytics

- Samples required: ~100 µl Serum  
(optionally, Heparin plasma can be used; EDTA plasma inhibits ACE activity)
- Sample collection: Serum collection tubes without anti-coagulants
- Sample storage: at 2-8°C up to 30 days  
at -20°C at least 6 months

## Special Equipment

Open clinical chemistry analyser:  
CE-certified Settings are available

For manual procedure:  
kinetic spectrophotometer with 340 and 415 nm filter and incubation chamber at 37°C

## Number of Tests

- Kits according to laboratory practise
- KK-ACK2: Random Access Mode
- KK-ACK: Batch Mode of small series
- KK-ACKX: Batch Mode of large series

	KK-ACK	KK-ACK4	KK-ACK2	KK-ACKX
Tests	100	400	2 x 50	1200
Substrate	1 x 26 ml	4 x 26 ml	2 x 13 ml	3 x 100 ml
Calibrator	1 x 2 ml	2 x 2 ml	2 x 2ml	3 x 2 ml
Controls normal/high	1 x 2 ml	2 x 2 ml	2 x 2 ml	3 x 2 ml


## Manual Procedure

Substrate has to be adjusted to room temperature.


### Prepare tubes for Calibrator, Controls and patient samples

### Add 25 µl Calibrator, Control Serum or patient samples

### Add 250 µl Substrate, vortex thoroughly

↓  incubate 5 min at 37°C

### Set Photometer to zero absorbance with distilled water (Blank)

↓  transfer sample into a microcuvette

### Measure the Absorbance at 37°C and 340 nm twice in a time interval of exactly 10 min

- T=0 Pipeting/vortexing
- T=5 1<sup>st</sup> Reading
- T=15 2<sup>nd</sup> Reading

## Automated Procedure

ACE kinetic can be performed on any open clinical chemistry analyzer. Parameter settings for the following analyzers are available upon request.

## Validated Applications

- Abbott Aeroset
- Abbott Architect
- ABX Pentra 400
- Beckman AU640/400
- Beckman AU480/680
- Beckman AU2700/5400
- Beckman AU5800
- Beckman Synchron Cx
- Beckman Synchron Lx /UniCel DxC
- Kone T- series
- Roche Hitachi 911
- Roche Cobas Integra
- Roche Cobas Mira
- Roche Cobas 6000 c501
- Roche Cobas 8000 c702
- Roche Modular P800
- Siemens Advia 2400
- Siemens Dimension RxL
- Siemens Dimension Vista 500/1500



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## Characteristics

## KK-ACK

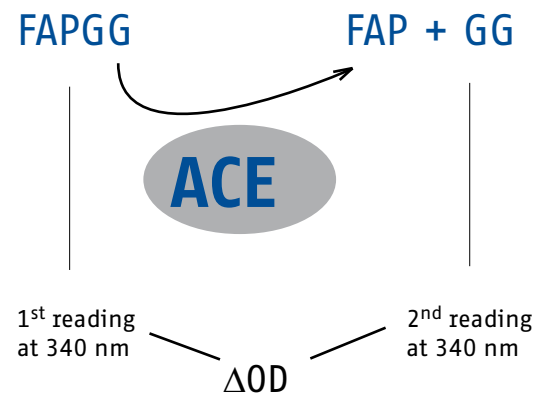
### Intended Use

For in vitro diagnostics. Direct and quantitative determination of angiotensin converting enzyme (ACE) activity in serum by an enzymatic assay.

### Principle of the Assay

In vivo, Angiotensin Converting Enzyme (ACE) catalyses the conversion of angiotensin I to angiotensin II. In vitro, the enzyme also mediates the cleavage of the synthetic substrate (FAPGG = N-[3-(2-furyl)acryloyl]-L-phenylalanyl-L-glycyl-L-glycine) into an amino acid derivative and a dipeptide. The kinetic of this cleavage reaction is measured by recording the decrease in absorbance at 340 nm.

The ACE kinetic method is standardized with ACE colorimetric according to the reference method of Lieberman (Am J Med 1975).



### Assay Performance Data

Data obtained with the automated procedure on a Roche Cobas Mira.

**Intra-assay precision** 2.7 %

Samples n=3; range: 38.6-85.3 ACE U/l.  
n= 20 each

**Inter-assay precision** 8.1 %

Samples n=3; range: 20.2-78.1 ACE U/l.  
n= 20 runs; in duplicate

**Dilution linearity** 108.9 %

Samples n=14; range: 100-172 U/l diluted 1:2 up to 1:32  
n=140; 96.5% CI: 105 - 112 %.

**Spiking recovery** 99.8 %

2 samples spiked ACE from human serum  
recovery: 96-102%.

**Analytical sensitivity** <5 ACE U/l

Mean blank (water) + 3SD. The analytical sensitivity is dependent on the precision of the clinical chemical analyser in use (Cobas Mira: 2.5 U/l; Kone T30: 3.6 U/l).

**Functional sensitivity** ~12 ACE U/l

Defined as the concentration at 20% CV; established by repeated measurement of 45 samples with ACE values between 1.5 and 35.5 U/L (n=356).

### Specificity

The ACE activity can be dose-dependently inhibited by its natural substrate Angiotensin I, by the chelator EDTA, and by H-Val-Trp-OH.

### Normal Values

	Adults	Children
n	80	84
Age (years)	20 - 70	0.5 - 18
Median (U/l)	40.7	66.9
2.5-97.5 <sup>th</sup> Percentile (U/l)	19.8 - 70.2	29.3 - 112.2
Reference range (U/l)	<b>20 - 70</b>	<b>29 - 112</b>

Generally, serum levels in children are substantially higher and more variable than in adults (Bénéteau et al. Clin Chem 1990). No differences related to age and gender have been observed. ACE activity levels in newborns are very low.

### Ordering code:

KK-ACK 100 tests  
KK-ACK2 2x50 tests  
KK-ACK4 400 tests  
KK-ACKX 1200 tests

ACE kinetic kits (KK-ACK, KK-ACK2, KK-ACKX) are IVD products.  
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