Edizione 01 - Aprile 2021 RR

ACE

UV Determination
of Angiotensin Converting Enzyme
in Serum and Plasma

9 x 4 mL REF **CY02-36**

Other available kits:

ACE (liquid reagents) REF **CY02-36**

Available for quality control:

ACE-CONTROL SERUM N + P REF **7508**
Control serums in normal and pathological range

ACE-CALIBRATOR REF **7512**
For an accurate control of instrument calibration

ACE-STANDARD REF **7511**
Standard of ACE for Measuring of the Enzyme in Serum

PRINCIPLE

The angiotensin converting enzyme (ACE) catalyzes hydrolysis of furylacryloylphenylalanylglycylglycine (FA-Phe-Ala-Gly-Gly) substrate to furylacryloyl phenyl-alanine and glycylglycine.
Hydrolysis is related to an absorbance decrease valued at 340 nm and is proportional to enzymatic activity.

REAGENTS

Kit composition:	REF CY02-36	Quantity
REAGENT 1 (lyo) FA-Phe-Ala-Gly-Gly	**7004R1**	**9 vials**
REAGENT 2 Buffer pH 8,4	**7004R2**	**2 x 20 mL**

STABILITY: stored at 2-8°C, reagents are stable up to expiration date.

PREPARATION OF WORKING REAGENT

Reconstitute the contents of a vial of Reagent 1 with exactly 4.2 mL of Reagent 2
Shake gently until complete dissolution.
STABILITY: 20 days at 2-8°C away from light.

SAMPLE

Serum or heparinized plasma.
STABILITY: 4 days at , 6 months at -20°C.

MANUAL ASSAY PROCEDURE

Wavelenght:	340 nm
Optical path::	1 cm
Reading:	against distilled water
Temperature:	37°C
Method:	fixed time
Reaction:	15 minutes
Linearity:	up to 250 U/L
Sample/Reagents:	1/10

NOTE: spectrophotometric reading is made in a substrate spectrum zone where even a small wavelength change corresponds to a high variation of extinction coefficients.
For a proper use, carefully check the wavelength calibration and the instrument sensibility.
For this aim, use the product ACE CALIBRATOR.

Pipette into cuvette:

Working reagent	1.0 mL
Sample	0.1 mL

Mix and incubate at 37°C. After 5 minutes read A1 absorbance and after exactly 15 minutes from the first reading, read A2 absorbance.

CALCULATION

ACE Activity (in U//L): = (A1-A2) x 863

Reaction volumes can be proportionally varied without any change in calculation.
Each laboratory should define its own reference values for this method.

REFERENCE VALUES

AVERAGE	±	DS
90.1 U/L	±	24.3 U/L

QUALITY CONTROL – CALIBRATION

All Clinical Chemistry laboratories should implement a quality control program. Control serums of human origin are available for this purpose on request:
ACE CONTROL SERUM N+P with normal and pathological value ranges
A Standard for an accurate control is also available:
ACE STANDARD 2x1 ml

PERFORMANCE CHARACTERISTICS

Linearity: up to 250 u/l
For higher values, dilute the sample 1:2 with saline solution, repeat the test and multiply the result by 2.

Within-precision:

	Level 1	Level 2
Average [[U/L]	75.3	153
DS	0.74	2.85
CV %	0.98	1.86

Between-precision:

	Level 1	Level 2
Average [U/L]	81.0	150
DS	1.45	4.59
CV %	1.79	3.06

Correlation:
FAR ACE kit shows a correlation coefficient equal to 0.987 in comparison to another kit available on the market.

NOTES

1. Refer to MSDS.
2. ACE is a metal-protein, hence avoid chelates in the sample preparation.
3. Reaction volumes can be proportionally varied.
4. To calculate activity use the following formula:
   U/L = (A1 - A2) x [(Vt x 1000) / (Δε x l x Vs X t)]
   where:
   A1: absorbance in the sample after 5 minute incubation;
   A2: absorbance in the sample after 15 minute incubation from the first reading;
   Vt : total volume (reagent +sample) in ml;
   Δε : variation of extinction coefficient at 340 nm;
   l : optical path in cm;
   Vs : sample volume in ml;
   t : incubation time in minutes.
   Under these test conditions the formula becomes:
   U/L = (A1 - A2) x [(1,1 x 1000) / (0,85 x 1 x 0,1 x 15)] =
   = (A1 - A2) x 863
   Δε was defined by research spectrophotometers. Using chemical analyzers, Δε might reach a different value with following modification of U/L values in normal and pathologic people.
   Use ACE CALIBRATOR to calculate Δε for the instrument used.
5. Each laboratory should define its own reference values.
6. Chemistry analyzer parameters are available.

DISPOSAL

The product must be used for professional analysis only. The product must be disposed of according to national/international laws.

WARNINGS AND PRECAUTIONS

The reagents may contain non-reactive components and various preservatives. Contact with the skin and ingestion should be avoided. Use the normal precautions expected with correct behaviour in laboratory.

REFERENCES

1. Harjanne A. Clin. Chem. 30 (1984) 901

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KEY SYMBOLS