EUROIMMUN Medizinische Labordiagnostika AG

IDS ACE

Features and benefits

- **Enzymatic assay for the quantitative determination of angiotensin-converting enzyme (ACE) in serum to support the monitoring of diagnosed sarcoidosis**
- **Fully automated spectrophotometric assay delivering accurate results**
- **Less than 15 minutes to first result**
- **Complete reagent package including the calibrator and two controls with different concentrations**

Angiotensin-converting enzyme (ACE, also known as kininase II) is a membrane-bound enzyme found on the surface of various cell types, including vascular endothelial cells, renal proximal tubule cells, and neuroepithelial cells[1]. It catalyses the conversion of the decapeptide angiotensin I to the hormone angiotensin II and metabolises a number of other peptides, including the vasodilator peptides bradykinin and kallidin[2]. Functionally, the actions of ACE contribute to increased vasoconstriction and decreased vasodilation.

While early ACE assays used its physiological substrate angiotensin I, newer test systems use various synthetic substrates cleaved by ACE, e.g. FAPGG (furylacryloyl-phenylalanyl-glycyl-glycine). The kinetics of a reaction like the conversion of FAPGG to an amino acid derivative and a dipeptide can be measured by recording the decrease in absorbance at 340 nm[3, 4], a method which enabled the development of a direct spectrophotometric assay for serum ACE levels. The fully automated IDS ACE kinetic method is standardised with a colorimetric kit using the described reference method[5, 6].

Interest in serum ACE levels began with the observation that levels are increased in approximately 60 % of patients with sarcoidosis, an inflammatory multisystem disease of unknown origin characterised by the formation of granuloma[7, 8]. It can take a chronic course. While some reports describe differences in ACE levels according to age and sex, such as higher concentrations in children aged 4 – 18 years than in adults, most authors noted no differences between males and females. ACE values can vary widely between individuals, mainly due to genetic deletion-/insertion-polymorphisms of the ACE gene. Although many conditions other than sarcoidosis have been shown to be associated with altered ACE levels, monitoring of treatment response in sarcoidosis is considered to be the main benefit of ACE assays[9], especially for close observation of the activity of the disease and as a means of assessing progession of its chronic form.

Specifications

Format	Automated, enzymatic assay based on spectrophotometric technology
Calibrator	Lyophilised protein serum matrix containing ACE with < 1.0 % sodium azide as preservative, calibrator A (2 × 2.0 ml)
Controls	Lyophilised protein serum matrix containing ACE with < 1.0 % sodium azide as preservative, control 1 and 2 (2 × 2.0 ml of each)
Limit of quantification	14.6 U/l
Dynamic range	15.0 to 300 U/l

Reference range

No. of adults	Age (years)	Mean (U/l)	SD (U/l)	Mean ± 2SD (U/l)	Median (U/l)	IQR (U/l)	Reference interval (U/l)
80	20–70	42.2	14.5	13.2–71.2	40.7	21.5	19.8–70.2

Minimum sample volume	25 µl (plus dead volume)
Sample type	Serum (including serum collected in serum separator tubes)
Reagent stability	After opening, the IDS ACE reagent cartridge may be stored on the IDS system (“on-board”) or at 2–8 °C up to expiry
Calibration stability	The calibration of the IDS ACE assay is stable for a maximum of 7 days
Time to first result	12 minutes

Precision

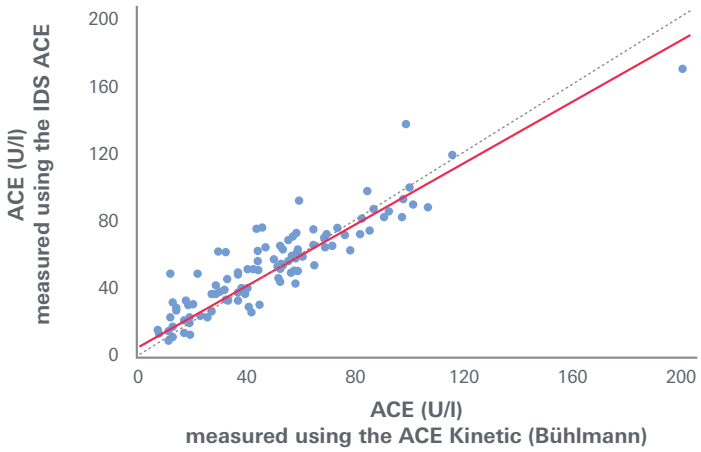
Sample ID	n	Mean (U/l)	Within run (% CV)	Total (% CV)
1	80	28.4	9.0	19.9
2	80	86.9	3.5	8.7
3	80	163.1	2.4	6.9
4	80	282.5	0.8	5.0

Method comparison

120 samples (16.0 to 168 U/l) from clinical routine patient samples were assessed in parallel using both the IDS ACE (y) and the ACE Kinetic (Bühlmann) (x) assay adapted for processing on an automated analyser from an alternative provider.

$y = 0.92x + 5.24$ U/l

95 % CI of the slope: 0.85 to 0.99
95 % CI of the intercept: 1.29 to 8.58
R: 0.91



Ordering information

Product name	Description	Code
IDS ACE	Kit for 100 determinations, including one calibrator and two controls	IS-5900

References

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