Instructions for use

sphingotest® bio-ADM®

Immunoluminometric assay for the quantification of bioactive Adrenomedullin 1-52 in human EDTA plasma.

For Research Use Only. Not for Diagnostic Procedures.

English

REF 080-01000/01

RUO

2...8°C

96

IFU-RUO-ADM (en) Version 01 issued Sep. 2022

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Intended use

The sphingotest® bio-ADM® is a non-automated immunoluminometric assay (ILMA) for the quantitative measurement of bioactive Adrenomedullin 1-52 in human EDTA plasma.

The sphingotest® bio-ADM® is intended for use by professional users in laboratory settings.

The product is for research use only. It is not intended for diagnostic or therapeutic purpose.

Background information

bio-ADM is the bioactive form of adrenomedullin (ADM), a soluble 52 amino acid peptide hormone that is released by vascular smooth muscle and endothelial cells (1-4).

bio-ADM is involved in stabilization of the endothelium barrier (by preventing vascular leakage) and is an important regulator of vasodilation and blood pressure (1-4).

Test principle

The sphingotest® bio-ADM® is an immunoluminometric assay (ILMA) for the determination of bioactive Adrenomedullin (bio-ADM) 1-52 in human EDTA plasma.

Two antigen-specific monoclonal antibodies are used, which bind bio-ADM (antigen) at two different epitopes. One of the antibodies is luminescent-labelled (tracer antibody) and highly specific for the amidated C-terminus of bio-ADM. The other is immobilized on the inside of the microtiter plate wells (capture antibody) and is specific for a mid-regional epitope that is distant to the degradation-prone N-terminus of bio-ADM, resulting in increased analyte stability.

During incubation, both antibodies react with the bio-ADM molecules in the plasma sample forming a sandwich complex. In this way, the tracer antibody is indirectly bound to the surface of the microtiter plate. Afterwards, the residual excess tracer is completely removed by careful washing.

The amount of captured tracer antibody is determined by measuring the luminescence in a suitable luminometer, using the supplied sphingotest® Lightning reagents. The luminescence signal (Relative Light Units, RLU) is directly proportional to the bio-ADM concentration of the respective plasma sample. Parallel measurement of the included calibrators, with known concentrations of synthetic human bio-ADM, enables the preparation of a calibration curve, through which the unknown bio-ADM concentration in the sample can be deduced.

Reagents and materials provided

Material	**Quantity**	**Description and Reconstitution**
CAL 1 CAL 2 CAL 3 CAL 4 CAL 5	5 vials in total, lyophilised	Lyophilised calibrators. 1 vial is provided per each calibrator level and has to be reconstituted with 1000µL ZERO MATRIX. Refer to quality report for concentration details.
CON A CON B	2 vials in total, lyophilised	Lyophilised controls. 1 vial is provided per each control level and has to be reconstituted with 1000µL ZERO MATRIX. Refer to quality report for concentration details.
ADMZM ZERO MATRIX	1 bottle, 8 mL, liquid	Ready-to-use ZERO MATRIX for reconstitution of calibrators and controls
ADMMP MICROPLATE	1 microplate (MTP) with 96 cavities	Ready-to-use microplate coated with anti-bio-ADM antibody (mouse monoclonal)

Material	Quantity	Description and Reconstitution
ADMTR TRACER	1 bottle; lyophilised	Lyophilised luminescent labelled anti-bio-ADM antibody in reaction buffer. To be reconstituted in 18 mL BUFFER.
ADMBU BUFFER	1 bottle, 18 mL, liquid	Ready-to-use buffer solution for reconstitution of TRACER
SPHWA WASH	1 bottle, 22 mL, liquid	Concentrated sphingotest® WASH universal solution. To be diluted with 1,100 mL pure water.
Adhesive foil	1	Black colored adhesive foil for light protected assay incubation. Used to cover sampled microplate prior of incubation start.
IFU	1	Print version of the instructions for use.
Quality report	1	Lot specific quality report.

Reagents and materials required but not provided

- Microliter pipettes (100 µL, 150 µL, 1 mL) with replaceable plastic tip
- Multichannel pipette (150 µL) with replaceable plastic tip
- Vortex mixer
- Laboratory water grade 2 (acc. ISO 3696:1987)
- Bottle with lid or screw cap (1,100 mL)

Special material required but not provided

- sphingotest® Lightning (cat. No. LIG30): contains reagents sufficient for up to 3,000 single luminescence measurements; contains controls for daily system suitability test of the MTP luminometer (light inspection check)
- F8 Strip Plate (microplate with 12 strips and each 8 wells, uncoated, white, F-bottom); for running a Light Inspection Check (LIC) using the low and high sphingotest® Lightning controls CONL and CONH.
- Horizontal shaker with 600 rpm and 3 mm shaking stroke (e.g., Titramax 101, Heidolph)
- Automatic MTP washing device (e.g., Wellwash, Thermo Scientific)
- MTP luminometer with two injectors, each of 100 µL injection volume (e.g., Centro LB 960 or Centro LB 963, Berthold Technologies GmbH & Co. KG, Wildbad, Germany)
- Software and validation tool compatible with the MTP luminometer (e.g., Instrument Control and Evaluation, Berthold Technologies GmbH & Co. KG, Wildbad, Germany)

Information on device(s) and equipment to combine with sphingotest® bio-ADM®

The sphingotest® bio-ADM® is for use in combination with a flash-type luminometer equipped with sphingotest® Lightning reagents for the measurement and detection of luminescence signals at ambient temperature. For further details concerning the operation of the MTP luminometer, please refer to the manufacturer's instructions for use.

sphingotest® Lightning reagent LIGI1 should be connected to the first injector (injection into well

before the measurement position) and sphingotest® Lightning reagent LIGI2 should be connected to the second injector (injection into well in the measurement position) of the MTP luminometer.

It is recommended to use the low and high sphingotest® Lightning controls in combination with a F8 strip from a strip plate (12 x 8, uncoated, white, F-bottom) for a daily system suitability test of the MTP luminometer. For further details please refer to the sphingotest® Lightning instructions for use.

The software used with the MTP luminometer must be programmed with the following specifications to ensure proper measurement of the luminescence signals:

#	**Step**	**Specification**
1	Delay	120 seconds
2	Injection of LIGI1 into well before measurement position	100 µL
3	Injection of LIGI2 into well in measurement position	100 µL
4	Measurement duration	1 second

Delay is set for the whole strip plate when inserted into the luminometer.

Ensure that injection and measurement is done together per well (steps 2 to 4) and that there is no significant delay between the injections of LIGI1 and LIGI2 and no set delay between the LIGI2 injection and measurement of the flash luminescence signals. The injection speed should be set to low (200 µL/sec) to prevent the reagent liquid from spilling over.

Key performance characteristics of device(s) and equipment to combine with sphingotest® bio-ADM®

The flash-type MTP luminometer used in conjunction with the sphingotest® bio-ADM® must have the minimum specifications as given in the table below:

Parameter	**Specification**
MTP type	96-well, flat-bottom, white
MTP dimension (LxWxH)	128.2 x 86.0 x 14.77 mm
Detection unit	Photomultiplier with a spectral range of 340 – 639 nm
Detection principle	Flash luminescence
Detection sensitivity	< 10 amol ATP
Crosstalk	$< 10^{-6}$
Dynamic range	> 6 decades
Number of injectors	2
Injection volume	100 µL

The acquisition software and validation tool must be compatible with the MTP luminometer.

Restrictions

The sphingotest® bio-ADM® assay has been validated with Centro LB 960 and Centro LB 963 (Berthold Technologies GmbH and Co KG, Wildbad Germany). ICE software (Berthold Technologies GmbH and Co KG, Wildbad Germany) and MikroWin 2010 software (Labsis Laborsysteme GmbH, Neunkirchen-Seelscheid, Germany) were used for instrument control and evaluation.

If another type of MTP luminometer and/or software is used, the user should validate the performance of acquiring the luminescence signals and calculating the results.

Storage and handling of reagents

All reagents must be stored at 2...8°C in the kit packaging until usage. The expiry date specified on the kit packaging and reagents must be observed under all circumstances.

The ready-to-use washing solution can be used for up to four weeks when stored at room temperature. Microbial-contaminated washing solution should be discarded. Contamination can be identified through turbidity or a pH < 6.

The in-use stability of the reconstituted calibrators, controls, ready-to-use tracer and MTP placed in the resealed pouch with desiccant is eight hours when held at room temperature and seven days when stored light-protected at 2…8 °C.

Warnings and precautions

- For research use only. Not for diagnostic procedures.
- The product must only be used by professional users in a laboratory setting.
- Read the instructions for use carefully before performing the test. Test performance can be affected if reagents are prepared improperly or stored under conditions other than those indicated.
- MTP strips cannot be re-used. Use only components belonging to the same kit. Do not combine reagents from kits with different lot numbers or other manufacturers. Do not interchange strips between different MTPs even if they have the same lot number.
- SphingoTec GmbH is no longer able to guarantee the reliability of the results if kit components from different batches have been exchanged or mixed.
- For large test series, reagents with the same batch designation can be pooled.
- Do not freeze any parts of the test kit.
- Do not use kit components after the expiry date has passed.
- Store the test kit at 2...8°C.
- Do not use damaged kits.
- Wear protective clothing such as laboratory coats, eye/face protection and disposable gloves whenever kit components and human specimens are handled.
- Components of this kit contain substances of animal origin.
- Samples should be considered potentially infectious and treated accordingly. At present, no method can guarantee the complete absence of infectious components. All materials should be disposed of as potentially infectious and according to local regulations.
- The strip plate should remain in the sealed pouch until use.
- Bring the test kit and reagent to room temperature before use.
- Use a new pipette tip for each well. Use only unused, disposable material.
- Do not use more than the required amount of liquids.
- For every used MTP and for every new test series a new calibration curve, including both controls, should be prepared.
- Samples whose determined concentration value lies above the highest calibrator (CAL 5) are to be assessed as “> CAL 5”.
- sphingotest® bio-ADM® was evaluated with Centro LB 960 and Centro LB 963 (Berthold Technologies GmbH & Co. KG, Wildbad, Germany). Before using any other equipment, a priori assessment by the user is required.

- During the incubation period, proper sealing of the strip plate using the adhesive foil supplied will protect it from light and prevent sample drying and ensure reproducibility of the results.
- Carefully close all containers after completion of the test.
- Prepared or used reagents and chemicals must be treated as hazardous waste according to the national biohazard safety guidelines or regulations.

Sample collection and handling

- Collect whole blood in a suitable collection tube containing EDTA as an anticoagulant following the instructions provided by the manufacturer of the sample collection device.
- Gently mix the sample tube by inverting the tube immediately after venipuncture.
- Separate the plasma by spinning the collection tube following the manufacturer's instructions. Suitable collection tubes have been verified with the centrifugation conditions listed in the table below:

Collection tube	**Centrifugation condition (swing-out rotor)**
EDTA S-Monovette®	2000*g* for 15 minutes at ambient temperature
EDTA Vacutainer	2000*g* for 15 minutes at ambient temperature
EDTA Vacuette®	2000*g* for 15 minutes at ambient temperature

- Carefully transfer the EDTA plasma into a fresh vial.
- Do not use lipemic, haemolytic or contaminated EDTA plasma.
- Sample stability for bio-ADM in non-processed EDTA whole blood or respective processed EDTA plasma is given for up to 12 hours when stored at ambient (< 30 °C) conditions or up to 48 hours when stored at refrigerated (2...8°C) conditions.
- For longer-term storage, EDTA plasma must be stored at ≤ -18°C or lower until use. Up to four freeze-thawing cycles do not influence the test result.

Sample preparation

A plasma of freshly collected samples can be processed immediately after its centrifugation and separation from the blood cells.

Where samples from refrigerated or frozen conditions are used, allow them to equilibrate to ambient temperature for at least one hour.

The native sample material is used without dilution.

Bring all kit components to ambient temperature.

Prepare the reagents as described in the chapter "Reagent preparation".

All liquid components – including the samples – should be mixed before use (avoid foam formation).

If applicable, prepare an assignment plan for the MTP wells.

Preparation of the assay

Remove the test kit from its storage condition and allow it to reach ambient temperature.

Reagent preparation

1. Reconstitute calibrators CAL 1 to CAL 5 by adding 1000 µL of ZERO MATRIX into each calibrator vial. Gently mix for 10 minutes and ensure that all lyophilised material is completely resolved.
2. Reconstitute controls CON A and CON B by adding 1000 µL of ZERO MATRIX into each

control vial. Gently mix for 10 minutes and ensure that all lyophilised material is completely resolved.

3. Reconstitute the tracer by adding approx. half the volume (approx. 9 mL) of the buffer to the tracer bottle. Retain the other half of the buffer in the buffer bottle. Gently mix for 10 minutes and ensure that all lyophilised material is completely resolved. Transfer the solution to the buffer bottle to obtain the ready-to-use tracer solution (18 mL).
4. Prepare the washing solution by diluting the provided wash concentrate with 1,100 mL of laboratory water (grade 2).

Quality control

The calibrators and controls must be included in each run and should be run in duplicate.

Quality criteria for calibration standards

The controls (CONA and CONB) supplied with this kit should be used for every preparation and their measurement results must lie within the acceptance ranges specified in the quality report. In case of unacceptable control values, it is recommended to determine the underlying cause and implement appropriate corrective measures.

Internal quality control

The results of the controls must be found within the ranges indicated on the quality report.

If any of the criteria above are not met, the assay is invalid and should be repeated.

Additional controls may be required according to guidelines or local, state, and / or federal regulations.

For further assistance, please contact SphingoTec using the provided contact details.

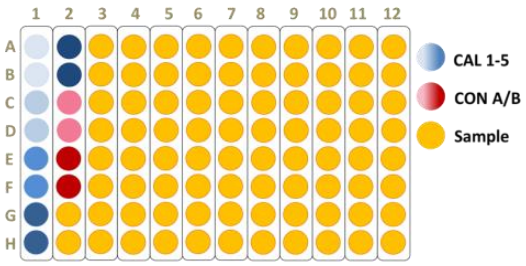
Traceability

The sphingotest® bio-ADM® is calibrated by weighted synthetic human bio-ADM (1-52).

Assay procedure

a. Microtiter plate layout

Pipette calibrators, controls and samples according to the following scheme below. Please note that duplicate measurement is performed for the calibrators, controls and each sample.



1.	Pipette	Calibrators (CAL1-CAL5) Controls (CONA, CONB) Samples (SP1-SP41)	100 µL each
2.	Pipette	Tracer	150 µL in all wells

NOTE: To minimize possible shift effects, the working time for steps 1 and 2 should not exceed 20 minutes in total.

3.	Incubation	Cover the strip plate with the adhesive foil provided. Incubate 1 hour ± 10 min, preferably at 21-23°C* with shaking at 600 rpm.	
4.	Aspirate	Aspirate incubation mixture from all wells.	
5.	Wash	Wash each well 5x with 350 µL washing solution; the use of an automatic MTP washing device is recommended.	
6.	Drip off	After the last washing step aspirate all solutions from each well and allow the empty MTP to drip off for 5-10 minutes upside down on cellulose paper.	
7.	Measurement	Measure the luminescence signals in a suitable MTP luminometer equipped with the sphingotest® Lightning reagents and programmed with the	

measurement procedure as outlined in the section “Information on device(s) and equipment to combine with sphingotest® bio-ADM®”.

* Higher incubation temperatures may lead to less differentiation between the calibrators and may affect the read-out bio-ADM concentration of the samples.

b. Calculation of results

The mean luminescence signals obtained for the calibrators are used for calibration. The mean signal for each calibrator (y-axis) and its respective target concentration (x-axis, refer to the quality report for target values) is used to apply a cubic spline (no smoothing) non-linear fit to generate the calibration curve. The bio-ADM concentrations (pg/mL) for controls, as well as all samples, are deduced from this calibration curve using the mean luminescence signal from the respective duplicate measurement.

Calculation example

Example values (RLU = Relative Light Units) measured on a Centro LB960 (Berthold Technologies GmbH & Co. KG, Wildbad, Germany) and analysed using the ICE software (Berthold Technologies GmbH & Co. KG, Wildbad, Germany) are shown in the table below. The depicted calibrator and control concentrations and signals (CAL1 to CAL5, CON A and CON B) are example values. Please note that the signal values are depicted for orientation purposes only and may differ strongly depending on the luminometer used.

For lot-specific concentrations, please refer to the enclosed quality report.

Calibrator /Control level	**Target bio-ADM concentration (pg/mL)**	**Obtained mean signal (RLU)**
CAL 1	14.2	1,696
CAL 2	35.3	3,255
CAL 3	89.0	7,736
CAL 4	222	23,841
CAL 5	555	87,310
CON A	27.1	2,617
CON B	126	11,515

The obtained calibration curve applying a cubic spline non-linear fit (no smoothing) is shown in the figure below:

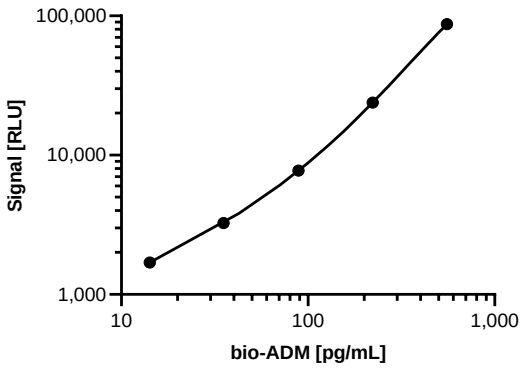


Figure 1: Exemplary calibration curve

Analytical performance characteristics

Calibration and measuring range

The calibrators contain synthetic human bio-ADM and are supplied with batch specific bio-ADM concentrations. The concentration ranges of the calibrators are targeted from 28 pg/mL to 1,094 pg/mL (see quality report for assigned lot-specific concentrations). The concentrations of the calibrators have been validated using a stock calibration series prepared with synthetic human bio-ADM.

Accuracy of measurement

Precision of measurement

a. Repeatability and Within Laboratory Precision

Precision for repeatability and within-laboratory precision was established with plasma samples with analyte concentration covering the low, mid and high concentration range. The samples

were analysed for 20 days in two runs with duplicate measurements with two lots respectively and according to the CLSI EP05 Ed3. The sphingotest® bio-ADM® indicates repeatability of below ±10% for bio-ADM concentrations from 12 to 352 pg/mL.

Sample ID	Lot	Mean bio-ADM (pg/mL)	Repeatability CV (%)	Within-laboratory CV (%)
LOD-5	1	11.9	6.7	10.6
	2	12.8	5.7	12.7
LOQ-1	1	29.4	4.2	6.4
	2	29.6	4.0	8.5
LOQ-2	1	35.3	3.7	7.0
	2	35.1	4.5	9.3
LOQ-3	1	52.7	3.9	7.0
	2	51.9	3.3	8.6
LOQ-4	1	127.8	2.6	7.6
	2	121.9	2.7	6.0
LOQ-5	1	262.4	2.9	6.5
	2	316.4	2.3	4.5
LOQ-6	1	291.1	2.2	6.0
	2	351.8	2.3	3.9

b. Reproducibility

Reproducibility data were created using human specimens in the concentration ranges 10 to 300 pg/mL. The samples were analysed as five times replicate measurements over five days at three different measurement sites following CLSI EP05 Ed3. The sphingotest® bio-ADM® indicates a reproducibility of below ±10% for samples within the calibration range.

Sample ID	Mean bio-ADM (pg/mL)	Reproducibility CV (%)
1*	9.72*	27.2
2	67.86	9.7
3	276.46	7.2

* sample concentration outside the calibration range

Analytical specificity

Endogenous Interfering substances

The plasma constituents, listed in the table below were tested for interference with the sphingotest® bio-ADM® assay, according to CLSI EP7-A2 (Interference Testing in Clinical Chemistry). The listed concentrations were found to be without effect on the test precision.

Tested substance	Max. conc. without interference
D-Glucose	10 mg/mL
Bilirubin (conjugated)	0.4 mg/mL
Bilirubin (unconjugated)	12.5 µg/mL
HAMA (Human anti-mouse antibody)	613.1 ng/mL
Rheumatoid Factor	104.1 IU/mL
Hemoglobin	10 mg/mL
Total Protein	93.3 mg/mL
Triglycerides	11 mg/mL

Cross-reacting substances

The following substances which are related to bio-ADM have been tested for cross-reactivity with the sphingotest® bio-ADM®.

Tested substance	Max. conc. without cross reactivity
Calcitonin	100 ng/mL
Amylin	100 ng/mL
Intermedin	100 ng/mL
Calcitonin gene-related peptide (CGRP)	100 ng/mL

Note: Despite preventive measures in assay design, it cannot entirely be ruled out that, in case of high concentrations of human anti-mouse antibodies (HAMA), unspecific interactions with the tracer antibody may occur. This may lead to false positive results (HAMA effect).

Exogenous interfering substances

The potential interference of drugs in the sphingotest® bio-ADM® was tested following CLSI EP7 Ed3. The concentrations of drugs listed below were found to have no effect on the test result at a ±10% interference level.

Tested substance	Tested concentration	Obtained concentration at max. ±10% interference
Captopril	0.264 mg/dL	0.264 mg/dL
Paracetamol	15.6 mg/dL	15.6 mg/dL
Salicylic acid	2.86 mg/dL	2.86 mg/dL
Acetyl Salicylic acid	3 mg/dL	3 mg/dL
Fentanyl	0.03 mg/dL	0.03 mg/dL
Valsartan	1.17 mg/dL	1.17 mg/dL
Gentamicin sulfate	3 mg/dL	3 mg/dL
Cephalosporin 3rd Gen (Cefotaxime)	52.8 mg/dL	0.528 mg/mL
Vancomycin	69 µmol/L	69 µmol/L
Heparin (NMH)	330 U/dL	330 U/dL
Heparin (UFH)	330 U/dL	330 U/dL
Trisodium Citrate	820.6 mg/dL	593.8 mg/mL
Dexamethasone	1.2 mg/dL	1.2 mg/dL
Ibuprofen	21.9 mg/dL	21.9 mg/dL
L-Ascorbic acid	5.25 mg/dL	5.25 mg/dL
Furosemide	1.59 mg/dL	1.59 mg/dL
Sacubitril	0.915 mg/dL	0.915 mg/dL
Sacubitrilat	0.915 mg/dL	0.915 mg/dL
Epinephrine	0.06 mg/dL	0.06 mg/dL
Nicardipine hydrochloride	46.5 µg/dL	46.5 µg/dL
Dobutamine	0.121 mg/dL	0.121 mg/dL
Ethanol	600 mg/dL	600 mg/dL
Loratadine	0.0087 mg/dL	0.0087 mg/dL
Tiotropium	0.0048 ng/dL	0.0048 ng/dL
Dextro-methorphan	0.00156 mg/dL	0.00156 mg/dL
Phenylephrine	0.003 mg/dL	0.003 mg/dL
Iohexol	100 mg/dL	100 mg/dL
Warfarin	7.5 mg/dL	7.5 mg/dL
Hydrocortisone	30 mg/dL	30 mg/dL
Dopamine	0.062 mg/dL	0.062 mg/dL
Norepinephrine (Noradrenaline)	0.051 µg/dL	0.051 µg/dL
Celecoxib	0.879 mg/dL	0.293 mg/dL

Measuring range and limits of detection

Limit of detection (LoD)

The limit of detection (LoD) for the sphingotest® bio-ADM® has been determined as 6.3 pg/mL. Samples were analysed for 20 days in a single site study using two lots following CLSI EP17-A2.

Limit of quantification (LoQ)

The limit of quantitation (LoQ) of the sphingotest® bio-ADM® has been determined to be 10.8 pg/mL and is defined as the lowest measurement result detectable with a precision of 20% intra-laboratory variance (coefficient of variation, CV). It was determined with samples according to CLSI EP17 A2. The samples were analysed for 20 days in a single site study using two lots.

Upper limit of quantification

The upper limit of quantitation is given by the highest calibrator (CAL5) and is targeted at

1,094 pg/mL (see quality report for assigned lot-specific concentrations).

High dose hook effect (HDH)

The sphingotest® bio-ADM® shows no observational signal loss due to high bio-ADM concentrations up to 100,000 pg/mL, which is about 85 times the upper measuring range of the assay.

Linearity (Measuring range)

The calibrators contain synthetic human bio-ADM and are supplied with batch specific bio-ADM concentrations.

A measuring range of 11.7 – 558 pg/mL was confirmed by a linearity study following CLSI EP6-A (Evaluation of the Linearity of Quantitative Measurement Procedures) using a sample diluted with a plasma pool from normal healthy subjects. The deviation from linearity was within ±10% for the 11 levels tested.

Notice to the user

For getting the appropriate Safety Data Sheets or technical assistance and more information please contact our distribution partner or SphingoTec GmbH (see contact information on the kit label).

Literature

1. Voors AA, Kremer D, Geven C, Ter Maaten JM, Struck J, Bergmann A, et al. Adrenomedullin in heart failure: pathophysiology and therapeutic application. Eur J Heart Fail. 2019;21(2):163-71.
2. Geven C, Kox M, Pickkers P. Adrenomedullin and Adrenomedullin-Targeted Therapy As Treatment Strategies Relevant for Sepsis. Front Immunol. 2018;9:292.
3. Geven C, Peters E, Schroedter M, Struck J, Bergmann A, McCook O, et al. Effects of the Humanized Anti-Adrenomedullin Antibody Adrecizumab (HAM8101) on Vascular Barrier Function and Survival in Rodent Models of Systemic Inflammation and Sepsis. Shock. 2018;50(6):648-54.
4. Weber J, Sachse J, Bergmann S, Sparwasser A, Struck J, Bergmann A. Sandwich Immunoassay for Bioactive Plasma Adrenomedullin. J Appl Lab Med. 2017;2(2):222-33.

Symbols

Symbol	Application	Symbol	Application	Symbol	Application
	Consult instructions for use		Article Number		Do not re-use
	For Research use only. Not for diagnostic procedures.		Contents sufficient for (number of) single determinations		Use by date
	Temperature limit		Batch code		Green dot according to German legislation
	Origin: horse serum		Reconstitution		Lyophilised
	Manufacturer		Distributor		

sphingotest® and bio-ADM® are registered trademarks. Other product names used in this document are for identification purposes and may be brands and/or trademarks of their respective companies.

Document Revision History

Revision No.	Date	Changes
01	September 2022	Initial release