AESKU.DIAGNOSTICS
THE DIAGNOSTIC TOOL THAT WORKS



AESKULISA®

THE DIAGNOSTIC TOOL THAT WORKS

INSTRUCTION MANUAL

AESKULISA SS-A-60

Ref 3108

DIN EN ISO 13485

Instruction Manual

Table of Contents

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1 Intended Use

AESKULISA SS-A-60 is a solid phase enzyme immunoassay for the quantitative and qualitative detection of antibodies against the 60 kDa Ro/SS-A in human serum. The assay employs highly purified human native 60kDa Ro/SS-A protein. Antibodies against SS-A are species-specific (directed against human protein only) and preferentially react with the native 60kDa molecule.

The assay is a tool in the diagnosis of Sjögren`s syndrome (SS) and Systemic Lupus Erythematosus (SLE).

2 Clinical Application and Principle of the Assay

SS-A is a RNA protein particle (ribonucleoprotein, RNP) ubiquitously distributed in all tissues. It is composed of two proteins (60kDa and 52kDa) associated with at least four small uridin-rich cytoplasmic RNAs (hyRNA, human cytoplasmic RNA), its function is yet unknown.

Autoantibodies against SS-A (formerly named Ro after prototype patient Robert) as well as SS-B (formerly named La after prototype patient Lane) are typical markers for Sjögren`s syndrome (SS) and systemic lupus erythematosus (SLE), both are systemic autoimmune diseases of unknown etiology and female predominance. Sjögren`s syndrome is a disorder affecting exocrine glands such as lacrimal and salivary glands. Chronic inflammation dominated by plasmacells results in a proceeding loss of function of these glands, described as Sicca-syndrome. The diagnosis of SS is based on testing for loss of excretory function in eye and salivary glands and the detection of anti-SS-A and anti-SS-B antibodies.

Antibodies against both 60 kDa and 52 kDa SS-A proteins are found in 70-80% of patients with primary SS, 40-94 % of these patients display antibodies against the SS-B/La antigen, additionally. SS-A antibodies occur in 25-40% of patients with ANA-positive SLE (ANA: anti-nuclear antibodies), as well as isolated in 65% of the patients with subacute cutaneous LE. Both, anti-SS-A and anti-SS-B antibodies are associated with congenital heartblock.

Principle of the test

Serum samples diluted 1:101 are incubated in the microplates coated with the specific antigen. Patient´s antibodies, if present in the specimen, bind to the antigen. The unbound fraction is washed off in the following step. Afterwards anti-human immunoglobulins conjugated to horseradish peroxidase (conjugate) are incubated and react with the antigen-antibody complex of the samples in the microplates. Unbound conjugate is washed off in the following step. Addition of TMB-substrate generates an enzymatic colorimetric (blue) reaction, which is stopped by diluted acid (color changes to yellow). The intensity of color formation from the chromogen is a function of the amount of conjugate bound to the antigen-antibody complex and this is proportional to the initial concentration of the respective antibodies in the patient sample.

3 Kit Contents

TO BE RECONSTITUTED				
Item	Quantity	Cap color	Solution color	Description / Contents
Sample Buffer (5x)	1 x 20ml	White	Yellow	5 x concentrated Tris, sodium chloride (NaCl), bovine serum a bumin (BSA), sodium azide < 0.1% (preservative)
Wash Buffer (50x)	1 x 20ml	White	Green	50 x concentrated Tris, NaCl, Tw een 20, sodium azide < 0.1% (preservative)
READY TO USE				
Item	Quantity	Cap color	Solution color	Description / Contents
Negative Control	1 x 1.5ml	Green	Colorless	Human serum (diluted), bovine serum a bumin (BSA), sodium azide < 0.1% (preservative)
Positive Control	1 x 1.5ml	Red	Yellow	Human serum (diluted), bovine serum a bumin (BSA), sodium azide < 0.1% (preservative)
Cut-off Cal brator	1 x 1.5ml	Blue	Yellow	Human serum (diluted), bovine serum a bumin (BSA), sodium azide < 0.1% (preservative)
Cal brators	6 x 1.5ml	White	Yellow *	Concentration of each calibrator: 0, 3, 10, 30, 100, 300 U/ml. Human serum (diluted), bovine serum a bumin (BSA), sodium azide < 0.1% (preservative)
Conjugate, IgG	1 x 15ml	Blue	Blue	Containing: Anti-human immunoglobulins conjugated to horseradish peroxidase, bovine serum a bumin (BSA)
TMB Substrate	1 x 15ml	Black	Colorless	Stabilized tetramethylbenzidine and hydrogen peroxide (TMB/H_2O_2)
Stop Solution	1 x 15ml	White	Colorless	1M Hydrochloric Acid
Microtiter plate	12 x 8 w ell strips	N/A	N/A	With breakaw ay microwells. Refer to paragraph 1 for coating.

* Color increasing with concentration

MATERIALS REQUIRED, BUT NOT PROVIDED
Microtiter plate reader 450 nm reading filter and recommended 620 nm reference filter (600-690 nm). Glass w are (cylinder 100-1000ml), test tubes for dilutions. Vortex mixer, precision pipettes (10, 100, 200, 500, 1000 µl) or adjustable multipipette (100-1000µl). Microplate w ashing device (300 µl repeating or multichannel pipette or automated system), adsorbent paper. Our tests are designed to be used w ith purified w ater according to the definition of the United States Pharmacopeia (USP 26 - NF 21) and the European Pharmacopeia (Eur.Ph. 4th ed.).

4 Storage and Shelf Life

Store all reagents and the microplate at 2-8°C/35-46°F, in their original containers. Once prepared, reconstituted solutions are stable at 2-8°C/35-46°F for 1 month. Reagents and the microplate shall be used within the expiry date indicated on each component, only. Avoid intense exposure of TMB solution to light. Store microplates in designated foil, including the desiccant, and seal tightly.

5 Precautions of Use

5.1 Health hazard data

THIS PRODUCT IS FOR IN VITRO DIAGNOSTIC USE ONLY. Thus, only staff trained and specially advised in methods of in vitro diagnostics may perform the kit. Although this product is not considered particularly toxic or dangerous in conditions of the intended use, refer to the following for maximum safety:

Recommendations and precautions

This kit contains potentially hazardous components. Though kit reagents are not classified being irritant to eyes and skin we recommend to avoid contact with eyes and skin and wear disposable gloves.

WARNING ! Calibrators, Controls and Buffers contain sodium azide (NaN_3) as a preservative. NaN_3 may be toxic if ingested or adsorbed by skin or eyes. NaN_3 may react with lead and copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. Please refer to decontamination procedures as outlined by CDC or other local/national guidelines.

Do not smoke, eat or drink when manipulating the kit. Do not pipette by mouth.

All human source material used for some reagents of this kit (controls, standards e.g.) has been tested by approved methods and found negative for HbsAg, Hepatitis C and HIV 1. However, no test can guarantee the absence of viral agents in such material completely. Thus handle kit controls, standards and patient samples as if capable of transmitting infectious diseases and according to national requirements.

The kit contains material of animal origin as stated in the table of contents, handle according to national requirements.

5.2 General directions for use

In case that the product information, including the labeling, is defective or incorrect please contact the manufacturer or the supplier of the test kit.

Do not mix or substitute Controls, Calibrators, Conjugates or microplates from different lot numbers. This may lead to variations in the results.

Allow all components to reach room temperature (20-32°C/68-89.6°F) before use, mix well and follow the recommended incubation scheme for an optimum performance of the test.

Incubation: We recommend test performance at 30°C/86°F for automated systems.

Never expose components to higher temperature than 37°C/ 98.6°F.

Always pipette substrate solution with brand new tips only. Protect this reagent from light. Never pipette conjugate with tips used with other reagents prior.

A definite clinical diagnosis should not be based on the results of the performed test only, but should be made by the physician after all clinical and laboratory findings have been evaluated. The diagnosis is to be verified using different diagnostic methods.

6 Sample Collection, Handling and Storage

Use preferentially freshly collected serum samples. Blood withdrawal must follow national requirements. Do not use icteric, lipemic, hemolysed or bacterially contaminated samples. Sera with particles should be cleared by low speed centrifugation (<1000 x g). Blood samples should be collected in clean, dry and empty tubes.

After separation, the serum samples should be used during the first 8h, respectively stored tightly closed at 2-8°C/35-46°F up to 48h, or frozen at -20°C/-4°F for longer periods

7 Assay Procedure

7.1 Preparations prior to starting

Dilute concentrated reagents:

Dilute the concentrated sample buffer 1:5 with distilled water (e.g. 20 ml plus 80 ml).

Dilute the concentrated wash buffer 1:50 with distilled water (e.g. 20 ml plus 980 ml).

To avoid mistakes we suggest to mark the cap of the different calibrators.

Samples:

Dilute serum samples 1:101 with sample buffer (1x)

e.g. 1000 µl sample buffer (1x) + 10 µl serum. Mix well !

Washing:

Prepare 20 ml of diluted wash buffer (1x) per 8 wells or 200 ml for 96 wells

e.g. 4 ml concentrate plus 196 ml distilled water.

Automated washing:

Consider excess volumes required for setting up the instrument and dead volume of robot pipette.

Manual washing:

Discard liquid from wells by inverting the plate. Knock the microwell frame with wells downside vigorously on clean adsorbent paper. Pipette 300 µl of diluted wash buffer into each well, wait for 20 seconds. Repeat the whole procedure twice again.

Microplates:

Calculate the number of wells required for the test. Remove unused wells from the frame, replace and store in the provided plastic bag, together with desiccant, seal tightly (2-8°C/35-46°F).

7.2 Pipetting Scheme

We suggest pipetting calibrators, controls and samples as follows:

For *QUANTITATIVE* interpretation

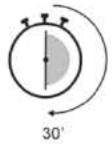
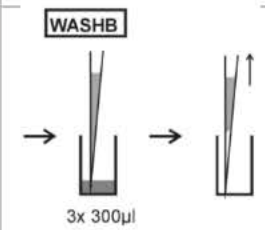
	1	2	3	4...
A	Cal A	Cal E	P1	
B	Cal A	Cal E	P1	
C	Cal B	Cal F	P2	
D	Cal B	Cal F	P2	
E	Cal C	PC	P3	
F	Cal C	PC	P3	
G	Cal D	NC	...	
H	Cal D	NC	...	

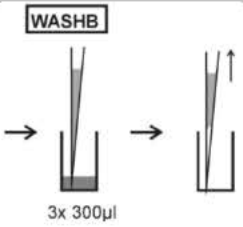
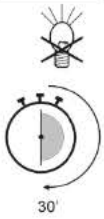
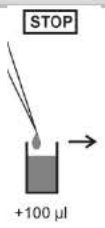
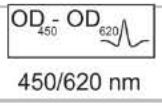
For *QUALITATIVE* interpretation

	1	2	3	4...
A	NC	P2		
B	NC	P2		
C	CC	P3		
D	CC	P3		
E	PC	...		
F	PC	...		
G	P1	...		
H	P1	...		

CalA: calibrator A
CalB: calibrator B
CalC: calibrator C
CalD: calibrator D
CalE: calibrator E
CalF: calibrator F
PC: positive control
NC: negative control
CC: cut-off calibrator
P1: patient 1
P2: patient 2
P3: patient 3

7.3 Test Steps

Step	*Description*
1.	Ensure preparations from step 7.1 above have been carried out prior to pipetting.
2.	Use the following steps in accordance with quantitative/ qualitative interpretation results desired:
	CONTROLS & SAMPLES
3.	 Pipette into the designated wells as described in chapter 7.2 above, 100 µl of either: a. Calibrators (CAL.A to CAL.F) for *QUANTITATIVE* or b. Cut-off Calibrator (CC) for *QUALITATIVE* interp. and 100 µl of each of the following: • Negative control (NC) and Positive control (PC), and • Patients diluted serum (P1, P2...)
4.	 Incubate for 30 minutes at 20-32°C/68-89.6°F.
5.	 Wash 3x with 300 µl washing buffer (diluted 1:50).

	CONJUGATE	
6.		Pipette 100 µl conjugate into each well.
7.		Incubate for 30 minutes at 20-32°C/68-89.6°F.
8.		Wash 3x with 300 µl washing buffer (diluted 1:50).
	SUBSTRATE	
9.		Pipette 100 µl TMB substrate into each well.
10.		Incubate for 30 minutes at 20-32°C/68-89.6°F, protected from intense light.
	STOP	
11.		Pipette 100 µl stop solution into each well, using the same order as pipetting the substrate.
12.		Incubate 5 minutes minimum.
13.		Agitate plate carefully for 5 sec.
14.		Read absorbance at 450 nm (recommended 450/620 nm) within 30 minutes.

8 Quantitative and Qualitative Interpretation

For **quantitative interpretation** establish the standard curve by plotting the optical density (OD) of each calibrator (y-axis) with respect to the corresponding concentration values in U/ml (x-axis). For best results we recommend log/lin coordinates and 4-Parameter Fit. From the OD of each sample, read the corresponding antibody concentrations expressed in U/ml.

Normal Range	Equivocal Range	Positive Results
< 12 U/ml	12 - 18 U/ml	>18 U/ml

Example of a standard curve

We recommend pipetting calibrators in parallel for each run.

Calibrators IgG	OD 450/620 nm	CV % (Variation)
0 U/ml	0.018	2.9
3 U/ml	0.127	1.1
10 U/ml	0.263	0.3
30 U/ml	0.598	2.8
100 U/ml	1.215	1.1
300 U/ml	2.222	1.3

Example of calculation

Patient	Replicate (OD)	Mean (OD)	Result (U/ml)
P 01	1.354/1.322	1.338	111.2
P 02	0.823/0.863	0.843	52.9

Samples above the highest calibrator range should be reported as >Max. They should be diluted as appropriate and re-assayed. Samples below calibrator range should be reported as < Min.

For lot specific data, see enclosed quality control leaflet. Medical laboratories might perform an in-house quality control by using own controls and/or internal pooled sera, as foreseen by national regulations.

Each laboratory should establish its own normal range based upon its own techniques, controls, equipment and patient population according to their own established procedures.

In case that the values of the controls do not meet the criteria the test is invalid and has to be repeated.

The following technical issues should be verified: Expiration dates of (prepared) reagents, storage conditions, pipettes, devices, photometer, incubation conditions and washing methods.

If the items tested show aberrant values or any kind of deviation or that the validation criteria are not met without explicable cause please contact the manufacturer or the supplier of the test kit.

For **qualitative interpretation** read the optical density of the cut-off calibrator and the patient samples. Compare patient´s OD with the OD of the cut-off calibrator. For qualitative interpretation we recommend to consider sera within a range of 20% around the cut-off value as equivocal. All samples with higher ODs are considered positive, samples with lower ODs are considered negative.

Negative:		**OD patient**	**<**	**0.8 x OD cut-off**		
Equivocal:	**0.8 x**	**OD cut-off**	**≤**	**OD patient**	**≤**	**1.2 x OD cut-off**
Positive:		**OD patient**	**>**	**1.2 x OD cut-off**		

9 Technical Data

Sample material:	serum
Sample volume:	10 µl of sample diluted 1:101 with 1x sample buffer
Total incubation time:	90 minutes at 20-32°C/68-89.6°F
Calibration range:	0-300 U/ml
Analytical sensitivity:	1.0 U/ml
Storage:	at 2-8°C/35-46°F use original vials only.
Number of determinations:	96 tests

10 Performance Data

10.1 Analytical sensitivity

Testing sample buffer 30 times on AESKULISA SS-A-60 gave an analytical sensivity of 1.0 U/ml.

10.2 Specificity and sensitivity

The microplate is coated with native human 60 kDa SS-A. No crossreactivities to other autoantigens have been found. Antibodies against SS-A 60 occur in different diseases which are shown in the table below.

Disease	prevalence
primary SS	60-75%
SLE	40-50%

10.3 Linearity

Chosen sera have been tested with this kit and found to dilute linearly. However, due to the heterogeneous nature of human autoantibodies there might be samples that do not follow this rule.

Sample No.	Dilution Factor	Measured (U/ml)	Expected (U/ml)	Recovery (%)
1	1 / 100	174.0	175.0	99.4
	1 / 200	86.4	87.5	98.7
	1 / 400	42.8	43.8	97.7
	1 / 800	20.4	21.9	93.2
2	1 / 100	65.9	65.0	101.4
	1 / 200	33.4	32.5	102.8
	1 / 400	16.7	16.3	102.5
	1 / 800	8.6	8.1	106.2

10.4 Precision

To determine the precision of the assay, the variability (intra and inter-assay) was assessed by examining its reproducibility on three serum samples selected to represent a range over the standard curve.

Intra-assay		
Sample No.	**Mean (U/ml)**	**CV (%)**
1	172.0	3.6
2	65.0	3.1
3	23.0	2.8

Inter-assay		
Sample No.	**Mean (U/ml)**	**CV (%)**
1	175.0	4.1
2	68.0	3.8
3	25.0	4.2

10.5 Calibration

The AESKULISA SS-A-60 is calibrated against reference sera from the CDC (Centers for Disease Control and Prevention) Atlanta. The results are expressed in U/ml.

11 Literature

Itoh Y and Reichlin M (1992). Autoantibodies to the Ro/SS-A-60 autoantigen are conformation dependent. Anti-60 kDa antibodies are mainly directed to the native protein; anti-52 kDa antibodies are mainly directed to the denatured protein. Autoimmunity; 14: 57-65.

Kalden JR (1988). Sjögren-Syndrom. In Kalden JR (Hersg), Klinische Rheumatologie, S. 374-379; Springer-Verlag, Berlin.

Harley JB (1998). Autoantibodies in Sjögren`s syndrome. J. Autoimmun 2: 383-394.

Slobbe RL, Pruijn GJM, Damen WGM et al. (1991). Detection and occurrence of the 60 kDa and 52 kDa (Ro (SS-A-60) antigens and of autoantibodies against these proteins. Clin Exp Immunol 86: 99-105.

IVD	- Diagnosi in vitro	- For in vitro diagnostic use
	- Pour diagnostic in vitro	- Para uso diagnóstico in vitro
	- In Vitro Diagnostikum	- In Vitro Διαγνωστικό μέσο
	- Para uso Diagnóstico in vitro	
REF	Numero d'ordine	Catalogue number
	¨ Référence Catalogue	¨ Numéro de catálogo
	¨ Bestellnummer	¨ Αριθμός παραγγελίας
	¨ Número de catálogo	
LOT	Descrizione lotto	Lot
	¨ Lot	¨ Lote
	¨ Chargen Bezeichnung	¨ Χαρακτηρισμός παρτίδας
	¨ Lote	
CE	¨ Conformità europea	¨ EC Declaration of Conformity
	¨ Déclaration CE de Conformité	¨ Declaración CE de Conformidad
	¨ Europäische Konformität	¨ Ευρωπαϊκή συμφωνία
	¨ Déclaracão CE de Conformidade	
Σ 96	¨ 96 determinazioni	¨ 96 tests
	¨ 96 tests	¨ 96 pruebas
	¨ 96 Bestimmungen	¨ 96 προσδιορισμοί
	¨ 96 Testes	
	¨ Rispettare le istruzioni per l'uso	¨ See instructions for use
	¨ Voir les instructions d'utilisation	¨ Ver las instrucciones de uso
	¨ Gebrauchsanweisung beachten	¨ Λάβετε υπόψη τις οδηγίες χρήσης
	¨ Ver as instrucões de uso	
	¨ Da utilizzarsi entro	¨ Use by
	¨ Utilise avant le	¨ Utilizar antes de
	¨ Verwendbar bis	¨ Χρήση μέχρι
	¨ Utilizar antes de	
+2°C +8°C	Conservare a 2-8°C	Store at 2-8°C (35-46°F)
	Conserver à 2-8°C	Conservar a 2-8°C
	Lagerung bei 2-8°C	Φυλάσσεται στους 2-8°C
	Conservar entre 2-8°C	
	Prodotto da	Manufactured by
	Fabriqué par	Fabricado por
	Hergestellt von	Κατασκευάζεται από
	Fabricado por	
CO-CAL	¨ Calibratore cut-off	¨ Cut off Calibrator
	Etalon Seuil	Calibrador de cut-off
	Grenzwert Kalibrator	Οριακός ορός Αντιδραστήριο βαθμονόμησης
	Calibrador de cut-off	
CON +	¨ Controllo positivo	¨ Positive Control
	Contrôle Positif	Control Positivo
	Positiv Kontrolle	Θετικός ορός ελέγχου
	Controlo positivo	
CON −	¨ Controllo negativo	¨ Negative Control
	¨ Contrôle Négatif	¨ Control Negativo
	Negativ Kontrolle	Αρνητικός ορός ελέγχου
	Controlo negativo	
CAL	¨ Calibratore	¨ Calibrator
	¨ Etalon	¨ Calibrador
	Kalibrator	Αντιδραστήριο βαθμονόμησης
	Calibrador	
RC	¨ Recupero	¨ Recovery
	¨ Corrélation	¨ Recuperado
	¨ Wiederfindung	¨ Ανάκτηση
	Recuperacão	
CONJ	¨ Coniugato	¨ Conjugate
	¨ Conjugé	¨ Conjugado
	¨ Konjugat	¨ Σύζευγμα
	Conjugado	
MP	Micropiastra rivestita	Coated microtiter plate
	Microplaque sensibilisée	Microplaca sensibilizada
	Beschichtete Mikrotiterplatte	Επικαλυμμένη μικροπλάκα
	Microplaca revestida	
WASHB 50x	¨ Tampone di lavaggio	¨ Wash buffer
	Tampon de Lavage	Solución de lavado
	Waschpuffer	Ρυθμιστικό διάλυμα πλύσης
	Solucão de lavagem	
SUB	¨ Tampone substrato	¨ Substrate buffer
	Substrat	Tampón sustrato
	Substratpuffer	Ρυθμιστικό διάλυμα υποστρώματος
	Substrato	
STOP	¨ Reagente bloccante	¨ Stop solution
	¨ Solution d'Arrêt	¨ Solución de parada
	Stopreagenz	Αντιδραστήριο διακοπής αντίδρασης
	Solucão de paragem	
SB 5x	¨ Tampone campione	¨ Sample buffer
	¨ Tampon Echantillons	¨ Tampón Muestras
	¨ Probenpuffer	¨ Ρυθμιστικό διάλυμα δειγμάτων
	Diluente de amostra	