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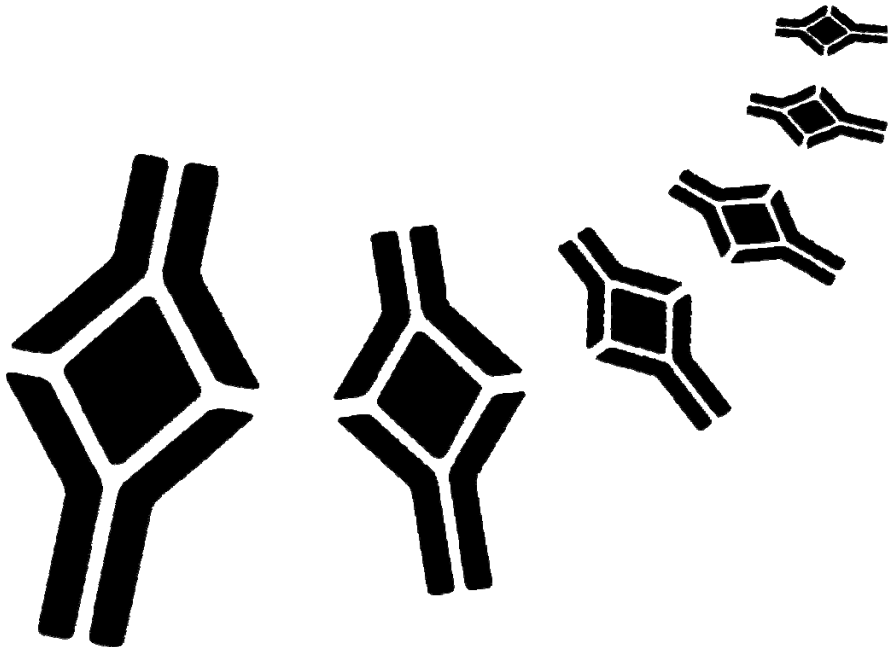


HUMAN sICAM-1 ELISA

Product Data Sheet

Cat. No.: RBMS201R

For Research Use Only

CONTENTS

» This kit is manufactured by:
BioVendor – Laboratorní medicína, a.s.

» Use only the current version of Product Data Sheet enclosed with the kit!

1 INTENDED USE

The human sICAM-1 ELISA is an enzyme-linked immunosorbent assay for the quantitative detection of human sICAM-1. The human sICAM-1 ELISA is for research use only. Not for diagnostic or therapeutic procedures.

2 SUMMARY

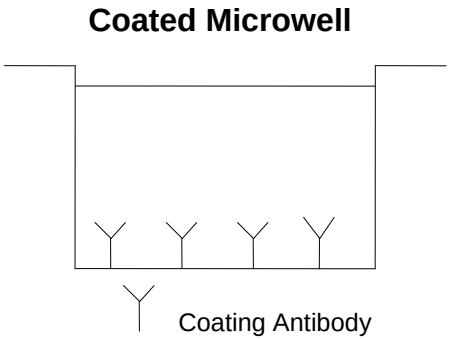
Intercellular Adhesion Molecule-1 (ICAM-1) is a member of the immunoglobulin supergene family (16) and functions as a ligand for the Lymphocyte Function-Associated Antigen-1 (LFA-1), an alpha-beta-complex that is a member of the leukocyte integrin family (11) of cell-cell and cell-matrix receptors. This family consists of the leukocyte adhesion glycoproteins LFA-1 which mediates lymphocyte adhesion, Mac-1 which mediates granulocyte adhesion and p150,95.
ICAM-1 is a single-chain glycoprotein with a polypeptide core of 55kD that can be expressed on non-hematopoietic cells of many lineages such as vascular endothelial cells, thymic epithelial cells, other epithelial cells and fibroblasts and on hematopoietic cells such as tissue macrophages, mitogen-stimulated T-lymphoblasts, germinal center B-cells and dendritic cells in tonsils, lymph nodes and Peyer's patches. ICAM-1 is inducible on fibroblasts and endothelial cells by inflammatory mediators such as IL-1, TNF and IFNγ within few hours and is correlated to the infiltration of lymphocytes into inflammatory lesions (6, 13, 15). ICAM-1 seems to be the initial marker of inflammatory reactions and is expressed prior to, and to a greater extent than is HLA-DR.
The role of ICAM-1 as a disease marker has been demonstrated for a number of different indications and pathological situations.
ICAM-1 upregulation in allergic airway inflammation is responsible for the recruitment of activated leukocytes and the pathogenesis of allergic rhinitis.
In allergic contact dermatitis ICAM-1 on keratinocytes was induced already 4 hours after application of the allergic patch test (19).
In bladder cancer there is a direct correlation between constitutive ICAM-1 expression and the histopathologic grade of the tumor. Sera of GI-cancer patients with liver metastasis showed significant higher sICAM-1 levels than those of patients without metastasis.
ICAM-1 is expressed on malignant cells in myeloid as well as B lymphoid malignancies. In lymphoproliferative disorders ICAM-1 is related to the degree of malignancy. In HTLV-1 associated myelopathy, and adult T-cell leukemia sICAM-1 serum levels are elevated (8, 17).
Patients with malignant melanoma have significantly increased serum levels of sICAM-1, which is of prognostic importance (3, 5, 7).
Significantly elevated concentrations of sICAM-1 are detected in HIV-1 infected persons (12).
In malaria tropica ICAM-1 serves in the adhesion of infected erythrocytes to the capillary endothelium which event is important in the pathogenesis of cerebral malaria.
sICAM-1 is a good prognostic parameter of responsiveness of hepatitis B infection to IFNβ-therapy.

ICAM-1 seems to provide the mechanism crucial to allograft rejection of the cornea.
Expression of ICAM-1 is also increased during rejection on the capillary endothelium, the myocardial membrane, and the endocardium of the transplanted heart.
sICAM-1 serum levels significantly increased with acute renal graft rejection. Measuring sICAM-1 is helpful in discriminating rejection from Cyclosporine-A intoxication of the transplanted kidney.
Strong expression of ICAM-1 is also seen in patients with acute rejection versus stable liver transplants, or patients with non-rejection complications (1, 2).
Serum levels of circulating ICAM-1 and L-selectin were found elevated in insulin-dependent diabetes mellitus (IDDM) and in subjects at risk of IDDM (9).
Significant elevation of serum ICAM-1 has been demonstrated in anterior uveitis in intermediate uveitis and in patients with sarcoidosis (4).
In the first 12-24 hours of monitoring acute myocardial infarction a decrease of sICAM-1 is measurable. This can provide prognostic significance to sICAM-1 also for myocardial ischemia and reperfusion.
Increased glomerular ICAM-1 expression is seen in early cases of different forms of glomerulonephritis and tubular *de novo* expression of ICAM-1 shows a strong correlation with disease activity.
In asthma ICAM-1 is upregulated on inflamed airway epithelium and bronchial endothelium, thereby mediating eosinophil adhesion (20). sICAM-1 is significantly elevated in the sera of patients with idiopathic pulmonary fibrosis or sarcoidosis.
sICAM-1 is a reliable marker for an inflammatory process within the central nervous system which is associated with blood: CSF barrier disturbance.
Soluble ICAM-1 is not detectable in most midtrimester amniotic fluid samples but when present is significantly related to intrauterine growth retardation and elevated midtrimester levels of maternal serum alpha fetoprotein (18).
Eelvated levels of sICAM-1 correlate with the activity of the rheumatoid arthritis (14).
In psoriasis ICAM-1 on keratinocytes shows strong correlation with severity of disease and decreases under successful therapy. Before treatment sICAM-1 levels are significantly elevated compared to healthy controls (10).

3 PRINCIPLES OF THE TEST

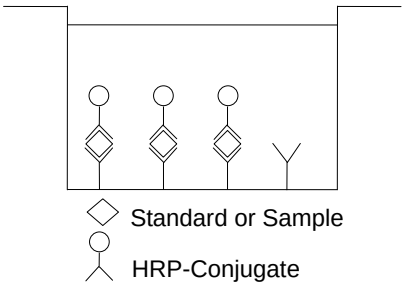
An anti-human sICAM-1 coating antibody is adsorbed onto microwells.

Figure 1



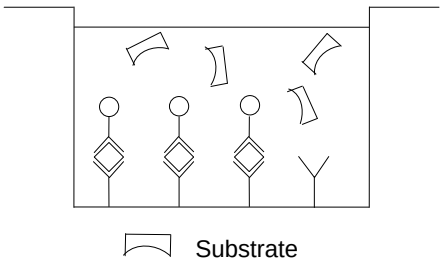
Human sICAM-1 present in the sample or standard binds to antibodies adsorbed to the microwells. A HRP-conjugated anti-human sICAM-1 antibody is added and binds to human sICAM-1 captured by the first antibody.

Figure 2



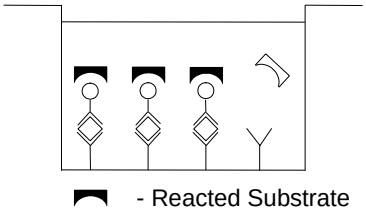
Following incubation unbound HRP-conjugated anti-human sICAM-1 is removed during a wash step, and substrate solution reactive with HRP is added to the wells.

Figure 3



A coloured product is formed in proportion to the amount of human sICAM-1 present in the sample or standard. The reaction is terminated by addition of acid and absorbance is measured at 450 nm. A standard curve is prepared from 5 human sICAM-1 standard dilutions and human sICAM-1 concentration determined.

Figure 4



4 REAGENTS PROVIDED

1 aluminium pouch with a **Antibody Coated Microtiter Strips** with monoclonal antibody to human sICAM-1
1 vial (100 µl) **HRP-Conjugate** anti-human sICAM-1 monoclonal antibody
2 vials (500 µl) human sICAM-1 **Standard**, 100 ng/ml
1 vial **Control**, lyophilized
1 vial (12 ml) **Sample Diluent**
1 vial (5 ml) **Assay Buffer Concentrate** 20x (PBS with 1% Tween 20 and 10% BSA)
1 bottle (50 ml) **Wash Buffer Concentrate** 20x (PBS with 1% Tween 20)
1 vial (15 ml) **Substrate Solution** (tetramethyl-benzidine)
1 vial (12 ml) **Stop Solution** (1M Phosphoric acid)
1 vial (0.4 ml) **Blue-Dye**
1 vial (0.4 ml) **Green-Dye**
2 **Adhesive Films**

5 STORAGE INSTRUCTIONS – ELISA KIT

Store kit reagents between 2° and 8°C except control. Store lyophilized control at -20°C. Immediately after use remaining reagents should be returned to cold storage (2° to 8°C), control to -20°C, respectively. Expiry of the kit and reagents is stated on labels.
Expiry of the kit components can only be guaranteed if the components are stored properly, and if, in case of repeated use of one component, this reagent is not contaminated by the first handling.

6 SPECIMEN COLLECTION AND STORAGE INSTRUCTIONS

Cell culture supernatant, serum, plasma (EDTA, heparinized), amniotic fluid, spontaneous urine and bile were tested with this assay. Other biological samples might be suitable for use in the assay.
Remove serum or plasma from the clot or cells as soon as possible after clotting and separation.
Pay attention to a possible "Hook Effect" due to high sample concentrations (see chapter 11).
Samples containing a visible precipitate must be clarified prior to use in the assay. Do not use grossly hemolyzed or lipemic specimens.
Samples should be aliquoted and must be stored frozen at -20°C to avoid loss of bioactive human sICAM-1. If samples are to be run within 24 hours, they may be stored at 2° to 8°C (for sample stability refer to 13.5).
Avoid repeated freeze-thaw cycles. Prior to assay, the frozen sample should be brought to room temperature slowly and mixed gently.
To measure human sICAM-1 in spontaneous urine use undiluted samples.
Cell culture media without serum component are not suitable for human sICAM-1 determination with the ELISA.

7 MATERIALS REQUIRED BUT NOT PROVIDED

- 5 ml and 10 ml graduated pipettes
- 5 µl to 1000 µl adjustable single channel micropipettes with disposable tips
- 50 µl to 300 µl adjustable multichannel micropipette with disposable tips
- Multichannel micropipette reservoir
- Beakers, flasks, cylinders necessary for preparation of reagents
- Device for delivery of wash solution (multichannel wash bottle or automatic wash system)
- Microwell strip reader capable of reading at 450 nm (620 nm as optional reference wave length)
- Glass-distilled or deionized water
- Statistical calculator with program to perform regression analysis

8 PRECAUTIONS FOR USE

- All chemicals should be considered as potentially hazardous. We therefore recommend that this product is handled only by those persons who have been trained in laboratory techniques and that it is used in accordance with the principles of good laboratory practice. Wear suitable protective clothing such as laboratory overalls, safety glasses and gloves. Care should be taken to avoid contact with skin or eyes. In the case of contact with skin or eyes wash immediately with water. See material safety data sheet(s) and/or safety statement(s) for specific advice.
- Reagents are intended for in vitro diagnostic use only and are not for use in therapeutic procedures.
- Do not mix or substitute reagents with those from other lots or other sources.
- Do not use kit reagents beyond expiration date on label.
- Do not expose kit reagents to strong light during storage or incubation.
- Do not pipette by mouth.
- Do not eat or smoke in areas where kit reagents or samples are handled.
- Avoid contact of skin or mucous membranes with kit reagents or specimens.
- Rubber or disposable latex gloves should be worn while handling kit reagents or specimens.
- Avoid contact of substrate solution with oxidizing agents and metal.
- Avoid splashing or generation of aerosols.
- In order to avoid microbial contamination or cross-contamination of reagents or specimens which may invalidate the test use disposable pipette tips and/or pipettes.
- Use clean, dedicated reagent trays for dispensing the conjugate and substrate reagent.
- Exposure to acid inactivates the conjugate.
- Glass-distilled water or deionized water must be used for reagent preparation.
- Substrate solution must be at room temperature prior to use.
- Decontaminate and dispose specimens and all potentially contaminated materials as they could contain infectious agents. The preferred method of decontamination is autoclaving for a minimum of 1 hour at 121.5°C.
- Liquid wastes not containing acid and neutralized waste may be mixed with sodium hypochlorite in volumes such that the final mixture contains 1.0% sodium hypochlorite. Allow 30 minutes for effective decontamination. Liquid waste containing acid must be neutralized prior to the addition of sodium hypochlorite.

9 PREPARATION OF REAGENTS

Buffer concentrates should be brought to room temperature and should be diluted before starting the test procedure.

9.1 Wash Buffer

If crystals have formed in the Wash Buffer Concentrate, warm it gently until they have completely dissolved.
Pour entire contents (50 ml) of the Wash Buffer Concentrate into a clean 1000 ml graduated cylinder. Bring to final volume of 1000 ml with glass-distilled or deionized water. Mix gently to avoid foaming. The pH of the final solution should adjust to 7.4.
Transfer to a clean wash bottle and store at 2° to 25°C. Please note that Wash Buffer is stable for 30 days.
Wash Buffer may also be prepared as needed according to the following table:

Number of Strips	Wash Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	25	475
1 - 12	50	950

9.2 Assay Buffer (1x)

Pour the entire contents (5 ml) of the Assay Buffer Concentrate (20x) into a clean 100 ml graduated cylinder. Bring to final volume of 100 ml with distilled water. Mix gently to avoid foaming.
Store at 2° to 8°C. Please note that the Assay Buffer (1x) is stable for 30 days.
Assay Buffer (1x) may also be prepared as needed according to the following table:

Number of Strips	Assay Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	2.5	47.5
1 - 12	5.0	95.0

9.3 HRP-Conjugate

Please note that the HRP-Conjugate should be used within 30 minutes after dilution.
Make a 1:100 dilution of the concentrated HRP-Conjugate solution with Assay Buffer (1x) in a clean plastic tube as needed according to the following table:

Number of Strips	HRP-Conjugate (ml)	Assay Buffer (1x) (ml)
1 - 6	0.03	2.97
1 - 12	0.06	5.94

9.4 Human sICAM-1 Standard

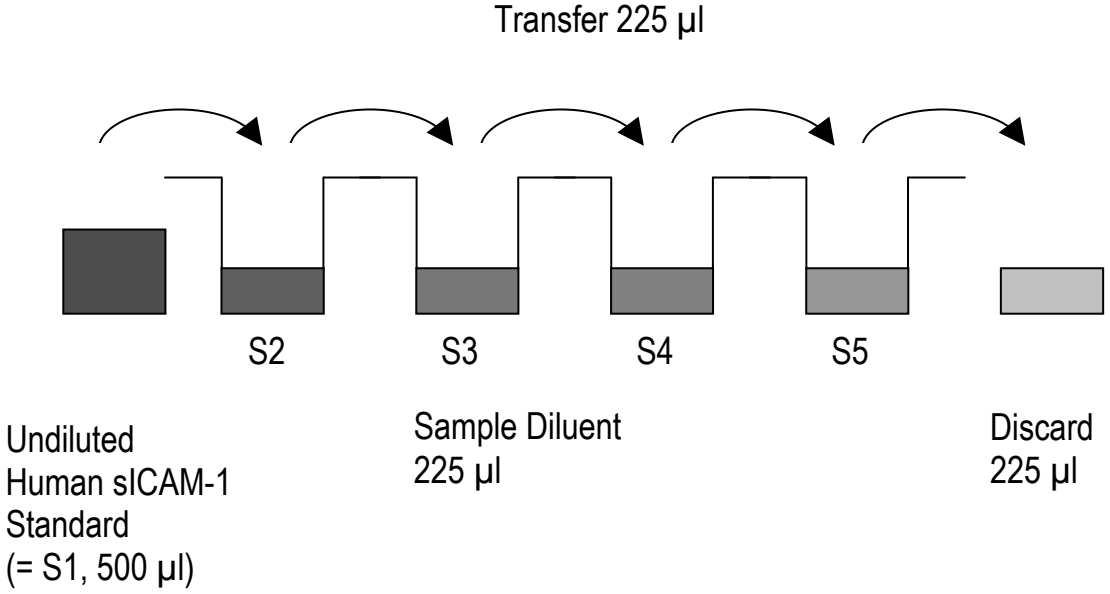
Standard dilutions can be prepared directly on the microwell plate (see 10.c) or alternatively in tubes (see 9.4.1).

9.4.1 External Standard Dilution

Label 4 tubes, one for each standard point.
S2, S3, S4, S5
Then prepare 1:2 serial dilutions for the standard curve as follows:
Pipette 225 µl of Sample Diluent into tubes S2 – S5.
Pipette 225 µl of undiluted standard (serves as the highest standard S1, concentration of standard 1= 100 ng/ml) into the first tube, labelled S2, and mix thoroughly before the next transfer (concentration of standard 2 = 50 ng/ml).
Repeat serial dilutions 3 more times thus creating the points of the standard curve
(see Figure 5).

Sample Diluent serves as blank.

Figure 5



9.5 Control

Reconstitute by adding 200 µl distilled water to lyophilized control. Swirl or mix gently to ensure complete and homogeneous solubilization. Further treat the control like your samples in the assay. For control range please refer to the Quality Control Sheet. Store reconstituted control aliquoted at -20°C. Avoid repeated freeze and thaw cycles.

9.6 Addition of Colour-giving Reagents: Blue-Dye, Green-Dye

This procedure is optional, does not in any way interfere with the test results, and is designed to help the customer with the performance of the test, but can also be omitted, just following the instruction booklet.
Alternatively, the dye solutions from the stocks provided (*Blue-Dye, Green-Dye*) can be added to the reagents according to the following guidelines:

1. Diluent:

Before standard and sample dilution add the *Blue-Dye* at a dilution of 1:250 (see table below) to the appropriate diluent (1x) according to the test protocol. After addition of *Blue-Dye*, proceed according to the instruction booklet.

5 ml Sample Diluent	20 µl *Blue-Dye*
12 ml Sample Diluent	48 µl *Blue-Dye*
50 ml Sample Diluent	200 µl *Blue-Dye*

2. HRP-Conjugate:

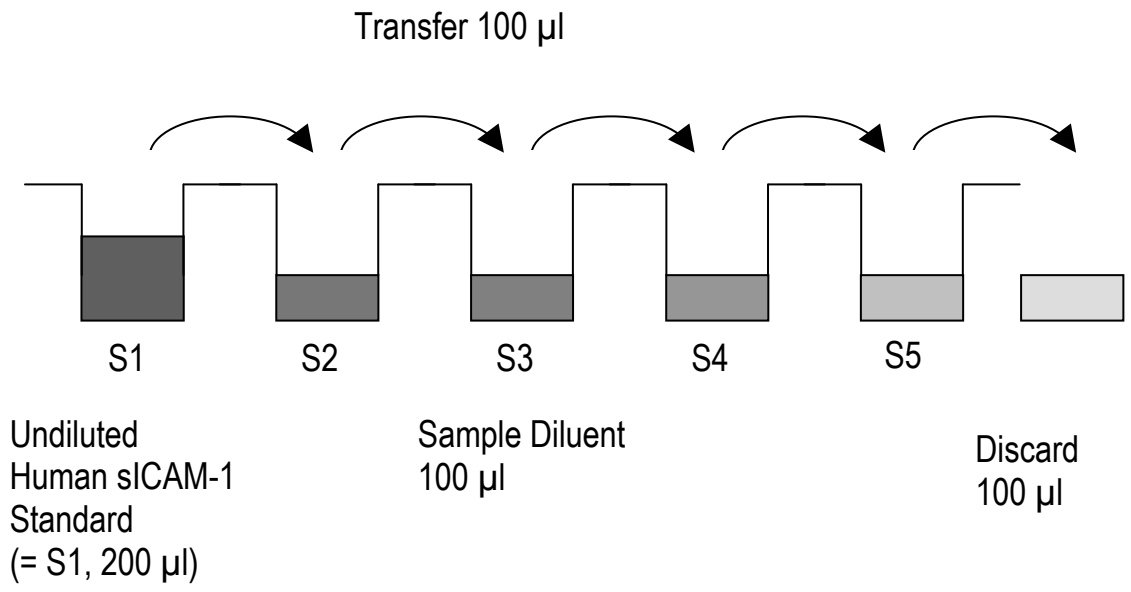
Before dilution of the concentrated HRP-Conjugate add the *Green-Dye* at a dilution of 1:100 (see table below) to the Assay Buffer (1x) used for the final conjugate dilution. Proceed after addition of *Green-Dye* according to the instruction booklet: Preparation of HRP-Conjugate.

3 ml Assay Buffer (1x)	30 µl *Green-Dye*
6 ml Assay Buffer (1x)	60 µl *Green-Dye*

10 TEST PROTOCOL

a. Determine the number of microwell strips required to test the desired number of samples plus appropriate number of wells needed for running blanks and standards. Each sample, standard, blank and optional control sample should be assayed in duplicate. Remove extra microwell strips from holder and store in foil bag with the desiccant provided at 2°-8°C sealed tightly.
b. Wash the microwell strips twice with approximately 400 µl Wash Buffer per well with thorough aspiration of microwell contents between washes. Allow the Wash Buffer to sit in the wells for about 10 – 15 seconds before aspiration. Take care not to scratch the surface of the microwells.
   After the last wash step, empty wells and tap microwell strips on absorbent pad or paper towel to remove excess Wash Buffer. Use the microwell strips immediately after washing. Alternatively microwell strips can be placed upside down on a wet absorbent paper for not longer than 15 minutes. Do not allow wells to dry.
c. Standard dilution on the microwell plate (Alternatively the standard dilution can be prepared in tubes - see 9.4.1):Add 100 µl of Sample Diluent in duplicate to standard wells B1/2-E1/2, leaving A1/2 empty. Pipette 200 µl of undiluted standard (concentration = 100 ng/ml) in duplicate into well A1 and A2 (see Table 1). Transfer 100 µl to wells B1 and B2. Mix the contents of wells B1 and B2 by repeated aspiration and ejection, and transfer 100 µl to wells C1 and C2, respectively. (see Figure 6). Take care not to scratch the inner surface of the microwells. Continue this procedure 2 times, creating two rows of human sICAM-1 standard dilutions ranging from 100.0 to 6.3 ng/ml. Discard 100 µl of the contents from the last microwells (E1, E2) used.

Figure 6



In case of an external standard dilution (see 9.4.1), pipette 100 µl of these standard dilutions (S1 – S5) in the standard wells according to Table 1.

Table 1
Table depicting an example of the arrangement of blanks, standards, control and samples in the microwell strips:

	1	2	3	4
A	Standard 1 (100.0 ng/ml)	Standard 1 (100.0 ng/ml)	Sample 2	Sample 2
B	Standard 2 (50.0 ng/ml)	Standard 2 (50.0 ng/ml)	Sample 3	Sample 3
C	Standard 3 (25.0 ng/ml)	Standard 3 (25.0 ng/ml)	Sample 4	Sample 4
D	Standard 4 (12.5 ng/ml)	Standard 4 (12.5 ng/ml)	Sample 5	Sample 5
E	Standard 5 (6.3 ng/ml)	Standard 5 (6.3 ng/ml)	Sample 6	Sample 6
F	Blank	Blank	Sample 7	Sample 7
G	Control	Control	Sample 8	Sample 8
H	Sample 1	Sample 1	Sample 9	Sample 9

d. Add 100 µl of Sample Diluent in duplicate to the blank wells.
e. Add 90 µl of Sample Diluent to the sample wells.
f. Add 10 µl of each sample in duplicate to the sample wells.
g. Prepare HRP-Conjugate (see Preparation of HRP-Conjugate 9.3).
h. Add 50 µl of HRP-Conjugate to all wells.
i. Cover with an adhesive film and incubate at room temperature (18 to 25°C) for 1 hour, if available on a microplate shaker set at 100 rpm.
j. Remove adhesive film and empty wells. Wash microwell strips 3 times according to point b. of the test protocol. Proceed immediately to the next step.
k. Pipette 100 µl of TMB Substrate Solution to all wells.
l. Incubate the microwell strips at room temperature (18° to 25°C) for about 10 min. Avoid direct exposure to intense light.
   The colour development on the plate should be monitored and the substrate reaction stopped (see next point of this protocol) before positive wells are no longer properly recordable.Determination of the ideal time period for colour development has to be done individually for each assay.
   It is recommended to add the stop solution when the highest standard has developed a dark blue colour. Alternatively the colour development can be monitored by the ELISA reader at 620 nm. The substrate reaction should be stopped as soon as Standard 1 has reached an OD of 0.60 – 0.65.

m. Stop the enzyme reaction by quickly pipetting 100 µl of Stop Solution into each well. It is important that the Stop Solution is spread quickly and uniformly throughout the microwells to completely inactivate the enzyme. Results must be read immediately after the Stop Solution is added or within one hour if the microwell strips are stored at 2 - 8°C in the dark.
n. Read absorbance of each microwell on a spectro-photometer using 450 nm as the primary wave length (optionally 620 nm as the reference wave length; 610 nm to 650 nm is acceptable). Blank the plate reader according to the manufacturer's instructions by using the blank wells. Determine the absorbance of both the samples and the standards.

Note: In case of incubation without shaking the obtained O.D. values may be lower than indicated below. Nevertheless the results are still valid.

11 CALCULATION OF RESULTS

- Calculate the average absorbance values for each set of duplicate standards and samples. Duplicates should be within 20 per cent of the mean value.
- Create a standard curve by plotting the mean absorbance for each standard concentration on the ordinate against the human sICAM-1 concentration on the abscissa. Draw a best fit curve through the points of the graph (a 5-parameter curve fit is recommended).
- To determine the concentration of circulating human sICAM-1 for each sample, first find the mean absorbance value on the ordinate and extend a horizontal line to the standard curve. At the point of intersection, extend a vertical line to the abscissa and read the corresponding human sICAM-1 concentration.
- If instructions in this protocol have been followed samples have been diluted 1:10 (10 µl sample + 90 µl Sample Diluent), the concentration read from the standard curve must be multiplied by the dilution factor (x 10).
- Calculation of samples with a concentration exceeding standard 1 will result in incorrect, low human sICAM-1 levels (Hook Effect). Such samples require further external predilution according to expected human sICAM-1 values with Sample Diluent in order to precisely quantitate the actual human sICAM-1 level.
- It is suggested that each testing facility establishes a control sample of known human sICAM-1 concentration and runs this additional control with each assay. If the values obtained are not within the expected range of the control, the assay results may be invalid.
- A representative standard curve is shown in Figure 7. This curve cannot be used to derive test results. Each laboratory must prepare a standard curve for each group of microwell strips assayed.

Figure 7
Representative standard curve for human sICAM-1 ELISA. Human sICAM-1 was diluted in serial 2-fold steps in Sample Diluent. Do not use this standard curve to derive test results. A standard curve must be run for each group of microwell strips assayed.

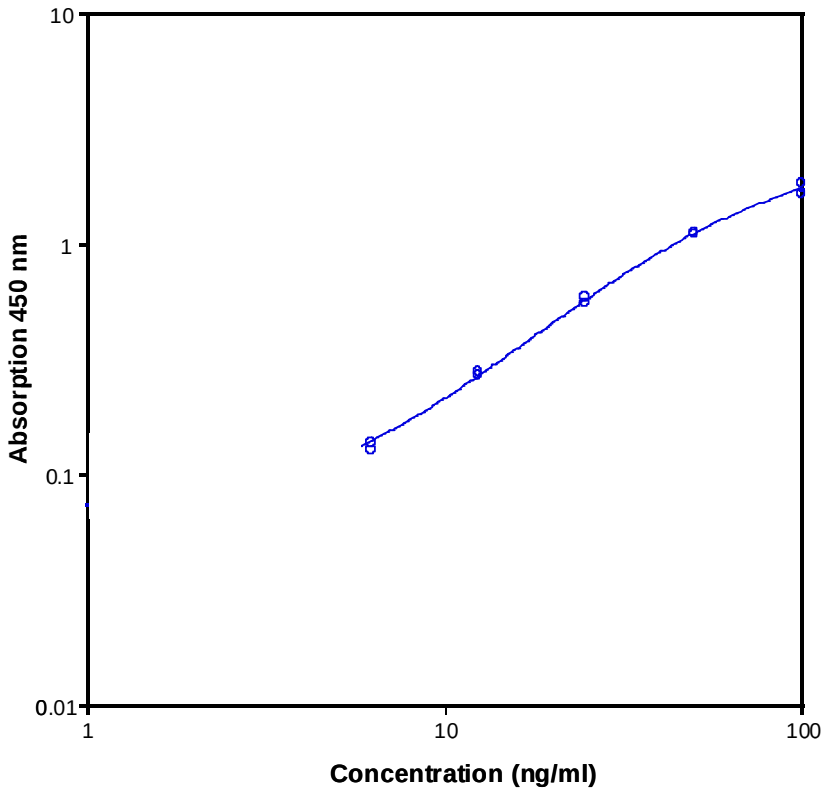


Table 2
Typical data using the human sICAM-1 ELISA
Measuring wavelength: 450 nm
Reference wavelength: 620 nm

Standard	Human sICAM-1 Concentration (ng/ml)	O.D. at 450 nm	Mean O.D. at 450 nm	C.V. (%)
1	100.0	1.737	1.772	2.8
	100.0	1.806		
2	50.0	1.114	1.101	1.7
	50.0	1.087		
3	25.0	0.570	0.558	3.0
	25.0	0.546		
4	12.5	0.247	0.241	3.5
	12.5	0.235		
5	6.3	0.110	0.105	6.7
	6.3	0.100		
Blank	0	0.004	0.005	
	0	0.006		

The OD values of the standard curve may vary according to the conditions of assay performance (e.g. operator, pipetting technique, washing technique or temperature effects). Furthermore shelf life of the kit may affect enzymatic activity and thus colour intensity. Values measured are still valid.

12 LIMITATIONS

- Since exact conditions may vary from assay to assay, a standard curve must be established for every run.
- Bacterial or fungal contamination of either screen samples or reagents or cross-contamination between reagents may cause erroneous results.
- Disposable pipette tips, flasks or glassware are preferred, reusable glassware must be washed and thoroughly rinsed of all detergents before use.
- Improper or insufficient washing at any stage of the procedure will result in either false positive or false negative results. Empty wells completely before dispensing fresh wash solution, fill with Wash Buffer as indicated for each wash cycle and do not allow wells to sit uncovered or dry for extended periods.
- The use of radioimmunotherapy has significantly increased the number of patients with human anti-mouse IgG antibodies (HAMA). HAMA may interfere with assays utilizing murine monoclonal antibodies leading to both false positive and false negative results. Serum samples containing antibodies to murine immunoglobulins can still be analysed in such assays when murine immunoglobulins (serum, ascitic fluid, or monoclonal antibodies of irrelevant specificity) are added to the sample.

13 PERFORMANCE CHARACTERISTICS

13.1 Sensitivity

The limit of detection of human sICAM-1 defined as the analyte concentration resulting in an absorbance significantly higher than that of the dilution medium (mean plus 2 standard deviations) was determined to be 2.2 ng/ml (mean of 6 independent assays).

13.2 Reproducibility

13.2.1 Intra-assay

Reproducibility within the assay was evaluated in 2 independent experiments. Each assay was carried out with 6 replicates of 8 serum samples containing different concentrations of human sICAM-1. 2 standard curves were run on each plate. Data below show the mean human sICAM-1 concentration and the coefficient of variation for each sample (see Table 3). The calculated overall intra-assay coefficient of variation was 4.1%.

Table 3
The mean human sICAM-1 concentration and the coefficient of variation for each sample

Sample	Experiment	Mean Human sICAM-1 Concentration (ng/ml)	Coefficient of Variation (%)
1	1	330.1	7.8
	2	385.3	2.4
2	1	169.4	4.1
	2	187.3	3.4
3	1	518.9	7.2
	2	560.1	6.8
4	1	939.7	7.1
	2	1054.0	2.2
5	1	378.2	2.5
	2	404.1	4.2
6	1	318.3	2.1
	2	349.4	2.3
7	1	213.5	2.7
	2	231.3	3.3
8	1	149.6	3.4
	2	164.8	4.4

13.2.2 Inter-assay

Assay to assay reproducibility within one laboratory was evaluated in 2 independent experiments. Each assay was carried out with 6 replicates of 8 serum samples containing different concentrations of human sICAM-1. 2 standard curves were run on each plate. Data below show the mean human sICAM-1 concentration and the coefficient of variation calculated on 12 determinations of each sample (see Table 4). The calculated overall inter-assay coefficient of variation was 7.7%.

Table 4
The mean human sICAM-1 concentration and the coefficient of variation of each sample

Sample	Mean Human sICAM-1 Concentration (ng/ml)	Coefficient of Variation (%)
1	376.3	11.1
2	184.6	7.2
3	529.1	5.1
4	934.7	8.2
5	363.2	9.6
6	323.4	7.5
7	217.7	5.8
8	154.2	6.8

13.3 Spiking Recovery

The spiking recovery was evaluated by spiking 4 levels of human sICAM-1 into Sample Diluent (serum matrix). Recoveries were determined in 3 independent experiments with 4 replicates each.
The recovery ranged from 82% to 109% with an overall mean recovery of 99%.

13.4 Dilution Linearity

4 serum samples with different levels of human sICAM-1 were analysed at serial 2 fold dilutions with 4 replicates each.
The recovery ranged from 80% to 102% with an overall recovery of 93% (see Table 5).

Table 5

Sample	Dilution	Expected Human sICAM-1 Concentration (ng/ml)	Observed Human sICAM-1 Concentration (ng/ml)	Recovery of Expected Human sICAM-1 Concentration (%)
1	1:10	--	368	--
	1:20	184	148	80
	1:40	92	82	89
	1:80	46	46	100
2	1:10	--	163	--
	1:20	82	76	93
	1:40	41	40	98
	1:80	21	17	85
3	1:10	--	530	--
	1:20	265	238	90
	1:40	133	125	94
	1:80	66	67	102
4	1:10	--	602	--
	1:20	301	296	98
	1:40	151	135	89
	1:80	75	74	99

13.5 Sample Stability

13.5.1 Freeze-Thaw Stability

Aliquots of serum samples (spiked or unspiked) were stored at -20°C and thawed 5 times, and the human sICAM-1 levels determined. There was no significant loss of human sICAM-1 immunoreactivity detected by freezing and thawing.

13.5.2 Storage Stability

Aliquots of serum samples (spiked or unspiked) were stored at -20°C, 2-8°C, room temperature (RT) and at 37°C, and the human sICAM-1 level determined after 24, 48 and 96 h. There was no significant loss of human sICAM-1 immunoreactivity detected during storage under above conditions.

13.6 Comparison of Serum and Plasma

From 3 individuals, serum as well as EDTA, citrate and heparin plasma obtained at the same time point were evaluated. Human sICAM-1 levels were not significantly different and therefore all these blood preparations are suitable for human sICAM-1 determinations.

13.7 Specificity

The interference of circulating factors of the immune systeme was evaluated by spiking these proteins at physiologically relevant concentrations into a human sICAM-1 positive serum.
There was no cross reactivity detected with sTNF-R (60 kDa), sTNF-R (80 kDa), IL-8/NAP-1, TNFα, TNFβ, IFNγ, IFNα2C, IFNω, IL-6, IL-2R, ELAM-1 and L-selectin.

13.8 Expected Values

A panel of 50 sera samples from randomly selected apparently healthy donors (males and females) was tested for human sICAM-1.
The detected human sICAM-1 levels ranged between 129.9 and 297.4 ng/ml with a mean level of 230.3 ng/ml and a standard deviation of 47.4 ng/ml.
Normal human sICAM-1 levels may vary depending on the serum collective used ranging up to 400 ng/ml.

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15 REAGENT PREPARATION SUMMARY

15.1 Wash Buffer

Add Wash Buffer Concentrate 20x (50 ml) to 950 ml distilled water.

Number of Strips	Wash Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	25	475
1 - 12	50	950

15.2 Assay Buffer (1x)

Add Assay Buffer Concentrate 20x (5 ml) to 95 ml distilled water.

Number of Strips	Assay Buffer Concentrate (ml)	Distilled Water (ml)
1 - 6	2.5	47.5
1 - 12	5.0	95.0

15.3 HRP-Conjugate

Make a 1:100 dilution of HRP-Conjugate in Assay Buffer (1x):

Number of Strips	HRP-Conjugate (ml)	Assay Buffer (1x) (ml)
1 - 6	0.03	2.97
1 - 12	0.06	5.94

15.4 Control

Add 200 µl distilled water to lyophilized control. For control range please refer to the Quality Control Sheet.

16 TEST PROTOCOL SUMMARY

1. Determine the number of microwell strips required.
2. Wash microwell strips twice with Wash Buffer.
3. Standard dilution on the microwell plate: Add 100 µl Sample Diluent, in duplicate, to all standard wells leaving the first wells empty. Pipette 200 µl undiluted standard into the first wells and create standard dilutions by transferring 100 µl from well to well. Discard 100 µl from the last wells. Alternatively external standard dilution in tubes (see 9.4.1): Pipette 100 µl of these standard dilutions in the microwell strips.
4. Add 100 µl Sample Diluent, in duplicate, to the blank wells.
5. Add 90 µl Sample Diluent to sample wells.
6. Add 10 µl sample in duplicate, to designated sample wells.
7. Prepare HRP-Conjugate.
8. Add 50 µl HRP-Conjugate to all wells.
9. Cover microwell strips and incubate 1 hour at room temperature (18° to 25°C).
10. Empty and wash microwell strips 3 times with Wash Buffer.
11. Add 100 µl of TMB Substrate Solution to all wells.
12. Incubate the microwell strips for about 10 minutes at room temperature (18°to 25°C).
13. Add 100 µl Stop Solution to all wells.
14. Blank microwell reader and measure colour intensity at 450 nm.

Note: If instructions in this protocol have been followed samples have been diluted 1:10 (10 µl sample + 90 µl Sample Diluent), the concentration read from the standard curve must be multiplied by the dilution factor (x 10).

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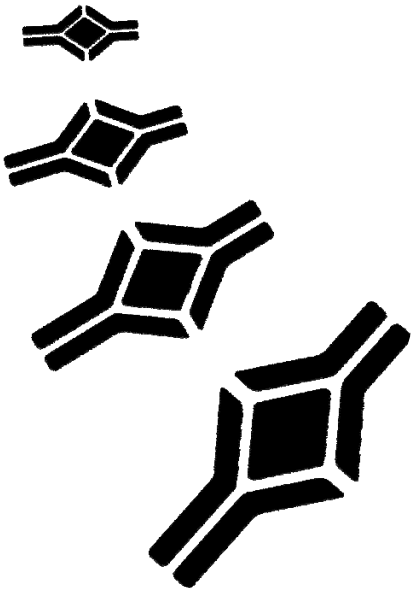

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