Human sVCAM-1 ELISA Kit

Catalog Number KHT0601

Pub. No. MAN0004028 **Rev.** 2.0

CAUTION! This kit contains materials with small quantities of sodium azide. Sodium azide reacts with lead and copper plumbing to form explosive metal azides. Upon disposal, flush drains with a large volume of water to prevent azide accumulation. Avoid ingestion and contact with eyes, skin and mucous membranes. In case of contact, rinse affected area with plenty of water. Observe all federal, state, and local regulations for disposal.

Note: For safety and biohazard guidelines, see the "Safety" appendix in the *ELISA Technical Guide* (Pub. no. MAN0006706). Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Product description

The Invitrogen™ Human sVCAM-1 ELISA Kit is a solid-phase sandwich Enzyme-Linked Immunosorbent Assay (ELISA). This assay is designed to detect and quantify the level of human sVCAM-1 in human serum, plasma, buffered solution, or cell culture medium. The assay will recognize both natural and recombinant human sVCAM-1.

VCAM-1 is a member of the Ig superfamily of adhesion molecules expressed on the surface of various cell types. Soluble VCAM-1 (sVCAM-1) can also be found in serum, and while the mechanism by which it is produced is unclear *in vivo*, release of sVCAM-1 by hydrolytic cleavage of cell surface anchored VCAM-1 has been demonstrated *in vitro*.

Contents and storage

Upon receipt, store the kit at 2°C to 8°C.

Contents	Cat. No. KHT0601 (96 tests)
Hu sVCAM-1 Standard, lyophilized. Refer to vial label for quantity and reconstitution volume	2 vials
Standard Diluent Buffer; contains 15 mM sodium azide	60 mL
Antibody Coated Wells, 96-well strip-well plate	1 plate
Hu sVCAM-1 Biotin Conjugate; contains 15 mM sodium azide	6 mL
Streptavidin-HRP (100X); contains 3.3 mM thymol	0.125 mL
Streptavidin HRP Diluent; contains 3.3 mM thymol	25 mL
Wash Buffer Concentrate (25X)	100 mL
Stabilized Chromogen, Tetramethylbenzidine (TMB)	25 mL
Stop Solution	25 mL
Plate Covers, adhesive strips	3

Materials required but not supplied

- Distilled or deionized water
- Microtiter plate reader with software capable of measurement at or near 450 nm
- Plate washer–automated or manual (squirt bottle, manifold dispenser, or equivalent)
- Calibrated adjustable precision pipettes and glass or plastic tubes for diluting solutions

Before you begin

IMPORTANT! Reagents are lot-specific. Do not mix or interchange different reagent lots from various kit lots.

- Review the **Procedural guidelines** and **Plate washing directions** in the *ELISA Technical Guide* available at **thermofisher.com**.
- Allow reagents to reach room temperature before use. Mix to redissolve any precipitated salts.

Prepare 1X Wash Buffer

1. Dilute 16 mL of Wash Buffer Concentrate (25X) with 384 mL of deionized or distilled water. Label as 1X Wash Buffer.
2. Store the concentrate and 1X Wash Buffer in the refrigerator. Use the diluted buffer within 14 days.

Sample preparation guidelines

- Refer to the *ELISA Technical Guide* at **thermofisher.com** for detailed sample preparation procedures.
- Collect samples in pyrogen/endotoxin-free tubes.
- Freeze samples after collection if samples will not be tested immediately. Avoid multiple freeze-thaw cycles of frozen samples. Thaw completely and mix well (do not vortex) prior to analysis.
- Avoid the use of hemolyzed or lipemic sera. If large amounts of particulate matter are present in the sample, centrifuge or filter sample prior to analysis.

Pre-dilute samples

Sample concentrations should be within the range of the standard curve. Because conditions may vary, each investigator should determine the optimal dilution for each application.

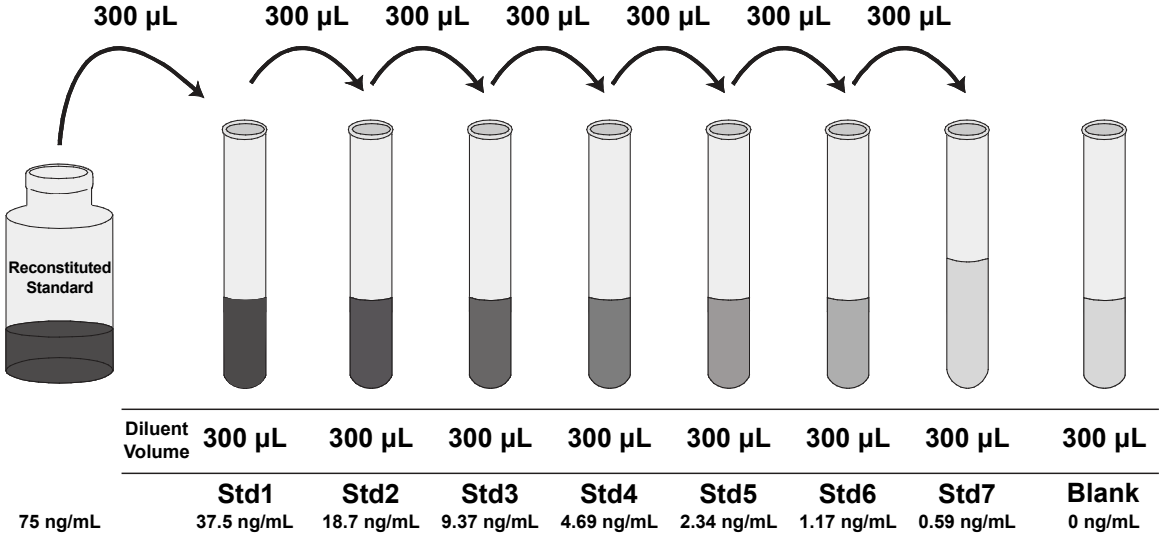
- Perform sample dilutions with Standard Diluent Buffer.
- Dilute all samples 1:50 with Standard Diluent Buffer (e.g., add 10 µL of sample to 490 µL Standard Diluent Buffer).

Note: Individual samples may require a greater or lesser dilution to fall within the range of the assay.

Dilute standards

Note: Use glass or plastic tubes for diluting standards.

1. Reconstitute Hu sVCAM-1 Standard to 75 ng/mL with Standard Dilution Buffer. Refer to the standard vial label for instructions. Swirl or mix gently and allow the contents to sit for 10 minutes to ensure complete reconstitution. Label as 75 ng/mL human sVCAM-1. **Use the standard within 1 hour of reconstitution.**
2. Add 300 µL Standard Diluent Buffer to each of 8 tubes labeled as follows: 37.5, 18.7, 9.37, 4.69, 2.34, 1.17, 0.59, and 0 ng/mL human sVCAM-1.
3. Make serial dilutions of the standard as shown in the following dilution diagram. Mix thoroughly between steps.
4. Discard any remaining reconstituted standard. Return the Standard Diluent Buffer to the refrigerator.



Prepare 1X Streptavidin-HRP solution

Note: Prepare 1X Streptavidin-HRP within 15 minutes of usage.

The Streptavidin-HRP (100X) is in 50% glycerol, which is viscous. To ensure accurate dilution:

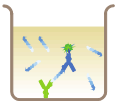
1. For each 8-well strip used in the assay, pipet 10 µL Streptavidin-HRP (100X) solution, wipe the pipette tip with clean absorbent paper to remove any excess solution, and dispense the solution into a tube containing 1 mL of Streptavidin-HRP Diluent. Mix thoroughly.
2. Return the unused Streptavidin-HRP (100X) solution to the refrigerator.

Perform ELISA (Total assay time: 3 hours)

IMPORTANT! Perform a standard curve with each assay.

- Allow all components to reach room temperature before use. Mix all liquid reagents prior to use.
- Determine the number of 8-well strips required for the assay. Insert the strips in the frames for use. Re-bag any unused strips and frames, and store at 2°C to 8°C for future use.

1 Bind antigen



a. Add 100 µL of standards, controls, or samples (see "Pre-dilute samples" on page 2) to the appropriate wells. Leave the wells for chromogen blanks empty.
b. Add 50 µL Hu sVCAM-1 Biotin Conjugate solution into each well except the chromogen blanks.
c. Tap the side of the plate to mix. Cover the plate with a plate cover and incubate for 2 hours at 37°C.
d. Thoroughly aspirate the solution and wash wells 4 times with 1X Wash Buffer.

2 Add Streptavidin-HRP

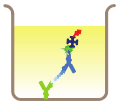
a. Add 100 µL 1X Streptavidin-HRP solution (see page 2) into each well except the chromogen blanks.
b. Cover the plate with a plate cover and incubate for 30 minutes at room temperature.
c. Thoroughly aspirate the solution from the wells and wash wells 4 times with 1X Wash Buffer.

3 Add Stabilized Chromogen

a. Add 100 µL Stabilized Chromogen to each well. The substrate solution begins to turn blue.
b. Incubate for 30 minutes at room temperature in the dark.

Note: TMB should not touch aluminum foil or other metals.

4 Add Stop Solution



Add 100 µL Stop Solution to each well. Tap the side of the plate to mix. The solution in the wells changes from blue to yellow.

Read the plate and generate the standard curve

1. Read the absorbance at 450 nm. Read the plate within 2 hours after adding the Stop Solution.
2. Use curve-fitting software to generate the standard curve. A 4 parameter algorithm provides the best standard curve fit. Optimally, the background absorbance may be subtracted from all data points, including standards, unknowns and controls, prior to plotting.
3. Read the concentrations for unknown samples and controls from the standard curve. Multiply value(s) obtained for sample(s) by the appropriate factor to correct for the sample dilution.

   Note: Dilute samples producing signals greater than the upper limit of the standard curve in Standard Diluent Buffer and reanalyze. Multiply the concentration by the appropriate dilution factor.

Performance characteristics

Standard curve example

The following data was obtained for the various standards over the range of 0 to 37.5 ng/mL human sVCAM-1

Standard Hu sVCAM-1 (ng/mL)	Optical Density (450 nm)
37.5	2.75
18.7	1.94
9.37	1.01
4.69	0.50
2.34	0.26
1.17	0.14
0.59	0.09
0	0.04

Recovery

Recovery in serum and plasma were not determined due to high levels of endogenous human sVCAM-1.

Inter-assay precision

Samples were assayed 42 times in multiple assays to determine precision between assays.

Parameters	Sample 1	Sample 2	Sample 3
Mean (ng/mL)	14.6	25.7	49.1
Standard Deviation	1.2	1.5	2.5
% Coefficient of Variation	8.2	5.8	5.1

Intra-assay precision

Samples with known human sVCAM-1 concentration were assayed in replicates of 14 to determine precision within an assay.

Parameters	Sample 1	Sample 2	Sample 3
Mean (ng/mL)	1.23	4.33	18.59
Standard Deviation	0.06	0.33	1.43
% Coefficient of Variation	4.85	7.62	7.68

Expected values

Each laboratory must establish its own normal values. For guidance, a limited number (n=10) of sera from apparently normal individuals were evaluated with the Human sVCAM-1 ELISA Kit.

Sample	Range (ng/mL)	Average (ng/mL)
Sera (n=10)	431–2273 ng/mL	1179 ng/mL

Linearity of dilution

Human serum and plasma containing natural human sVCAM-1 and cell culture media spiked with human sVCAM-1 were serially diluted in Standard Diluent Buffer over the range of the assay. Linear regression analysis of samples versus the expected concentration yielded a correlation coefficient of 0.96 or greater in all sample types.

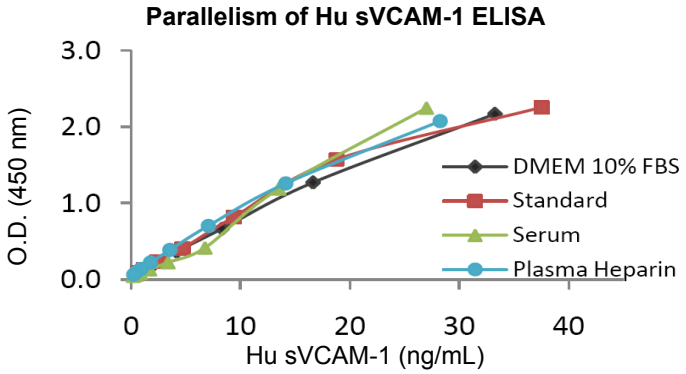
Dilution	Serum		
	Measured (ng/mL)	Expected	
		(ng/mL)	%
1:400	2.4	3.4	71
1:800	1.3	1.7	79
1:1600	0.7	0.8	86
1:3200	0.3	0.4	81

Dilution	EDTA plasma		
	Measured (pg/mL)	Expected	
		(ng/mL)	%
1:400	8.8	11.9	74.05
1:800	4.9	6.0	82
1:1600	2.7	3.0	92
1:3200	1.5	1.5	103

Dilution	DMEM + 10% FBS		
	Measured (ng/mL)	Expected	
		(ng/mL)	%
1/4	14.6	16.6	87.6
1/8	7.5	8.3	90.1
1/16	4.2	4.2	101.1
1/32	2.2	2.1	107.4
1/64	1.3	1.0	120.8

Parallelism

Serum and plasma samples were serially diluted in Standard Diluent Buffer. The O.D. of each dilution was plotted against the sVCAM-1 standard curve. The standard accurately reflects the full human sVCAM-1 content in samples.



Sensitivity

The analytical sensitivity for this assay is <0.5 ng/mL human sVCAM-1. This was determined by adding two standard deviations to the mean O.D. obtained when the zero standard was assayed 30 times.

Specificity

Buffered solutions containing a panel of substances at 10,000 pg/mL were assayed with the Human sVCAM-1 ELISA Kit. The following substances were tested and found to have no cross-reactivity: **human** IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-10, IL-12, IL-13, IL-15, IL-1RA, IL-17, IL-1β, sICAM-1; IFN-γ, TNF-α; MCP-1, MIP-2, MIP-1α, MIP-1β, IFN-α, IL-2R, IP-10, Eotaxin, MIG, HGF, GM-CSF, G-CSF, FGF-Basic, EGF, VEGF, RANTES, PECAM-1, E-Selectin, P-Selectin and PAI-1.

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.

Product label explanation of symbols and warnings

REF	Catalog Number	LOT	Batch code		Temperature limitation		Use by		Manufacturer		Consult instructions for use		Caution, consult accompanying documents

Manufacturer's address: Life Technologies Corporation | 7335 Executive Way | Frederick, MD 21704 | USA

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