CaptureSelect™ VII Select Leakage ELISA

INSTRUCTIONS

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Introduction

The CaptureSelect™ VII Select Leakage ELISA (Enzyme Linked Immuno-Sorbent Assay) is designed for the detection of less than 1 ng/mL Factor VII ligand that may be present in product purified with GE-Healthcare's VII Select affinity media, which contains the Factor VII ligand as capturing agent. The assay is designed to minimize interference and to provide accurate quantitation in the presence of human Factor VII and other proteins. The VII Select Leakage ELISA can be used as a tool to aid in optimal purification process development and in routine quality control of in-process streams as well as final product.

Principle of the assay

The CaptureSelect™ leakage assays enable detection of the affinity ligand in solutions with and without the presence of the target protein. These sandwich assays involve the following steps:

- A microtiter plate is coated with affinity-purified anti-affinity ligand.
- Samples containing the affinity ligand are incubated in the coated plate wells.
- Bound affinity ligand is detected by biotinylated affinity ligand.
- Streptavidin horseradish peroxidase conjugate is added to bind to the biotinylated antibody in the sandwich complex.
- Substrate reactive with horseradish peroxidase (tetramethylbenzidine-hydrogen peroxide) is added.
- The amount of hydrolyzed substrate is determined and is directly proportional to the concentration of affinity ligand present.

Kit contents

Note: After thawing and before use, spin the tubes to ensure that all reagents are at the bottom of the tube.

Item	Description	Storage
Coating reagent (green label)	Goat IgG anti-VII Select affinity ligand, 100 µL	-20°C (-4°F)
Standard solution (blue label)	CaptureSelect™ Factor VII affinity ligand, 100 µL	
Biotinylated reagent (yellow label)	Biotinylated Goat IgG anti-VII Select affinity ligand, 100 µL	

Required materials and equipment (not provided)

- PBS: Phosphate buffered saline pH 7.4
- PBST: Phosphate buffered saline (PBS) pH 7.4 + 0.05 (v/v)% Tween® 20 Solution
- Bovine Serum Albumin (BSA), Fraction V 99% pure (Sigma-Aldrich A3059)

  Note: Other qualities of Bovine Serum Albumin or other blocking proteins might result in higher background levels.
- Dilution Buffer A for assays *without* target protein:
  - Dilution Buffer A: 2 (w/v)% BSA + 0.05 (v/v)% Tween® 20 Solution in PBS pH 7.4
  - 2X Dilution Buffer A: 4 (w/v)% BSA + 0.1 (v/v)% Tween® 20 Solution in PBS pH 7.4
- Dilution Buffer B for assays *with* target protein:

  PBS pH 7.4 plus Human Factor VII at a concentration that is half of the concentration of target in samples
- Blocking solution: 4 (w/v)% BSA in PBS pH 7.4
- Human Factor VII (for protocol for samples containing Factor VII)
- Streptavidin-Horseradish Peroxidase diluted immediately before using according to manufacturer guidelines
- Tetramethylbenzidine (TMB) and hydrogen peroxide (H_2O_2) substrate (prepare 1:1 solution immediately before use)
- 1 M H_2SO_4
- Microtiter plate (Maxisorp, Nunc)
- Microtiter plate shaker
- Microtiter plate reader (450 nm)
- Milli-Q® water

Procedure 1: Samples without target protein

Coat the plate

1. Make a 1:100 dilution of the Coating reagent with PBS pH 7.4.
2. Add 100 µL diluted Coating reagent to each well in a microtiter plate and incubate overnight at 4°C (39°F). This step captures fragments of the leached ligand.

Prepare standards

1. Prepare a 6.4 µg/mL stock Standard dilution series: Add 10 µL Standard solution to 770 µL Dilution Buffer A.
2. Using the stock Standard solution from step 1, prepare a standard dilution series according to the table below.

Tube	Concentration (ng/mL)	Standard	Dilution Buffer A
1	64.0	10 µL diluted Standard solution	990 µL
2	16.0	250 µL 64.0 ng/mL	750 µL
3	8.0	500 µL 16.0 ng/mL	500 µL
4	4.0	500 µL 8.0 ng/mL	500 µL
5	2.0	500 µL 4.0 ng/mL	500 µL
6	1.0	500 µL 2.0 ng/mL	500 µL
7	0.5	500 µL 1.0 ng/mL	500 µL
8	0.25	500 µL 0.5 ng/mL	500 µL
9	0	0	500 µL

Prepare assay samples

Dilute 75 µL sample with 75 µL PBS pH 7.4.

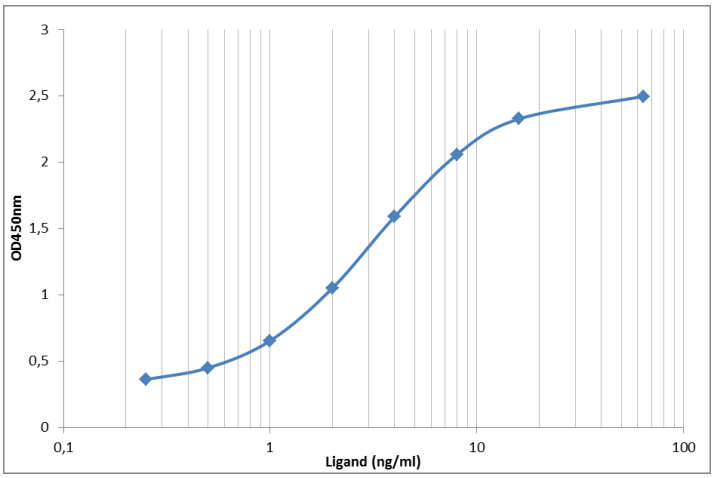
ELISA assay procedure

1. Block the plate:
   a. Wash the coated plate 5 times with PBST.
   b. Add 250 µL/well of Blocking solution to the coated plate. Leave at room temperature for 30 minutes on a microtiter plate shaker.
   c. Wash the plate 1 time with PBST.
2. Add samples and standards:
   a. Add 100 µL of each concentration of the standard dilution series (0 to 64.0 ng/mL) or sample to appropriate wells.
   b. Incubate the plate 1 hour at room temperature on a microtiter plate shaker.
   c. Wash the plate 5 times with PBST.
3. Add Biotinylated reagents (detects leached ligand):
   a. Make a 1:100 dilution of the Biotinylated reagents with Dilution Buffer A.
   b. Add 100 µL diluted Biotinylated reagents to each well containing sample or standard and incubate the plate 1 hour at room temperature.
   c. Wash the plate 5 times with PBST.
4. Add Streptavidin-Horseradish peroxidase (colorometric reagent that binds to the biotinylated reagents):
   a. Dilute in Dilution Buffer A according to the manufacturer's guidelines.
   b. Add 100 µL diluted Streptavidin-Horseradish peroxidase to each well containing sample or standard.
   c. Incubate the plate 1 hour at room temperature on a microtiter plate shaker.
   d. Wash the plate 5 times with PBST.
   e. Wash the plate 2 times with Milli-Q® water.
5. Develop and read the plate:
   a. Prepare a 1:1 solution of TMB:H_2O_2 substrate.
   b. Add 100 µL to each well containing sample or standard.
   c. Incubate the plate for approximately 10-15 minutes on a microtiter plate shaker.
   d. When the background signal starts to develop, add 50 µL 1 M H_2SO_4 to stop the coloring reaction and achieve a maximal signal-to-noise ratio.
   e. Measure the OD of the microtiter plate at 450 nm with a microtiter plate reader.

Calculate results

Create a standard curve using the OD values from the standards reported in ng/mL. Use curve-fitting routines such as 4-parameter logistic fit. Do not use linear regression analysis to interpolate values for samples, which may lead to significant inaccuracies.

Figure 1 Example calibration curve VII Select leakage assay for samples without human Factor VII.



Validate the assay

Perform validation studies that include at least the following experiments to validate this kit for your application: 1) Intra- and inter-assay precision experiments to establish reproducibility, 2) Recovery experiments using test samples with known amounts of the 500 µg/mL Standard solution, which is included in the kit.

Ordering information

CaptureSelect™ VII Select Leakage ELISA	Part Number
1 assay	810299001
10 assays	810299010

For more information

For more information on CaptureSelect™ products, go to **www.lifetechnologies.com/captureselect**

Safety information

Obtaining SDSs

Safety Data Sheets (SDSs) are available from **www.lifetechnologies.com/support**.

Note: For the SDSs of chemicals not distributed by Life Technologies, contact the chemical manufacturer.

Limited Product Warranty

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