CaptureSelect™ KappaXP Ligand Leakage ELISA (Lot 121118–XXX only)

Catalog Numbers 810321201 and 810321210

Pub. No. MAN0018420 **Rev.** B.0

WARNING! Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from **thermofisher.com/support**.

Product description

The CaptureSelect™ KappaXP Ligand Leakage ELISA (Lot 121118–XXX only) is designed for the detection of ≤1 ng/mL KappaXP affinity ligand that may be present in product purified with KappaXP affinity media. The KappaXP Ligand 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.

Contents and storage

Contents	Cat. No. 810321201 (1 assay)	Cat. No. 810321210 (10 assays)	Storage
Coating Reagent (green cap), Goat IgG anti-KappaXP affinity ligand	100 µL	1,000 µL	–20°C (–4°F)
Standard Solution (blue cap), KappaXP affinity ligand	100 µL	1,000 µL	
Biotinylated Reagent (yellow cap), Biotinylated Goat IgG anti-KappaXP affinity ligand	100 µL	1,000 µL	

Principle of the assay

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

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

Required materials not supplied

Unless otherwise indicated, all materials are available through **thermofisher.com**.

- 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: Use of lower-purity Bovine Serum Albumin or other blocking proteins might result in higher background levels.
- Dilution Buffer A: 0.05 (v/v)% Tween™ 20 Solution in PBS pH 7.4
- 2X Dilution Buffer A: 0.1 (v/v)% Tween™ 20 Solution in PBS pH 7.4
- Dilution Buffer B: 0.05 (v/v)% Tween™ 20 Solution in PBS pH 7.4 + half the concentration of target protein present in the samples
- Blocking solution: 4 (w/v)% BSA in PBS pH 7.4
- Streptavidin-Horseradish Peroxidase (dilute immediately before use 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

Methods

Coat the plate

1. Make a 1:100 dilution of the Coating Reagent with PBS pH 7.4.
2. Add 100 µL of diluted Coating Reagent to each well in a microtiter plate, then incubate overnight at 4°C (39°F).

Prepare the standards

1. Prepare a 6.4 µg/mL Standard Solution. Add the following to a microcentrifuge tube:

   Table 1 Standard Solution

Component	Volume
Standard Solution (blue cap)	10 µL
Dilution Buffer A	770 µL
Total	780 µL

2. Using the stock Standard Solution from step 1 and Dilution Buffer A, prepare a standard dilution series according to the following table.

   Table 2 Standard dilution series (Dilution Buffer A)

Dilution	Volume		Final concentration (ng/mL)
	Standard	Dilution Buffer A	
1	10 µL of stock Standard Solution	990 µL	64.0
2	250 µL of 64.0 ng/mL	750 µL	16.0
3	500 µL of 16.0 ng/mL	500 µL	8.0
4	500 µL of 8.0 ng/mL	500 µL	4.0
5	500 µL of 4.0 ng/mL	500 µL	2.0
6	500 µL of 2.0 ng/mL	500 µL	1.0
7	500 µL of 1.0 ng/mL	500 µL	0.5
8	500 µL of 0.5 ng/mL	500 µL	0.25
9	0	500 µL	0

Prepare the samples

Dilute the sample by adding the following to a microcentrifuge tube:

Table 3 Sample dilution

Component	Volume
Sample	75 µL
2X Dilution Buffer A	75 µL
Total	150 µL

(*Optional*) Heat treat the sample

Use heat treatment to increase protein recovery when the target protein present in the sample interferes with the detection of the ligand by the CaptureSelect™ KappaSelect Leakage ELISA (Lot 180821–XX only).

Note: This procedure requires different standard dilution buffer and sample dilution buffer.

1. Prepare a 6.4 µg/mL Standard Solution. Add the following to a microcentrifuge tube:

   Table 4 Standard Solution

Component	Volume
Standard Solution (blue cap)	10 µL
Dilution Buffer A	770 µL
Total	780 µL

2. Using the stock Standard Solution from step 1 and Dilution Buffer B, prepare a standard dilution series according to the following table.

   Table 5 Standard dilution series (Dilution Buffer B)

Dilution	Volume		Final concentraion (ng/mL)
	Standard	Dilution Buffer B	
1	10 µL of Standard Solution	990 µL	64.0
2	250 µL of 64.0 ng/mL	750 µL	16.0
3	500 µL of 16.0 ng/mL	500 µL	8.0
4	500 µL of 8.0 ng/mL	500 µL	4.0
5	500 µL of 4.0 ng/mL	500 µL	2.0
6	500 µL of 2.0 ng/mL	500 µL	1.0
7	500 µL of 1.0 ng/mL	500 µL	0.5
8	500 µL of 0.5 ng/mL	500 µL	0.25
9	0	500 µL	0

3. Dilute the sample by adding the following to a microcentrifuge tube:

Table 6 Sample dilution

Component	Volume
Sample	75 µL
0.1% Tween 20 in PBS, pH 7.4	75 µL
Total	150 µL

4. Incubate the Sample dilution and the standard dilution series for 15 minutes at 95°C.

5. Centrifuge the heat-treated samples and the standard dilution series for 5 minutes at 20,000 × *g*.

6. Transfer the supernatants to new microcentrifuge tubes.

ELISA assay procedure

1. Block the plate:
   a. Wash the coated plate 5 times with PBST.
   b. Add 200 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 at room temperature for 1 hour on a microtiter plate shaker.
   c. Wash the plate 5 times with PBST.

3. Add Biotinylated Reagent:
   a. Make a 1:100 dilution of the Biotinylated Reagent with Dilution Buffer A.
   b. Add 100 µL of diluted Biotinylated Reagent to each well and incubate the plate at room temperature for 1 hour.
   c. Wash the plate 5 times with PBST.

4. Add diluted Streptavidin-Horseradish Peroxidase:
   a. Dilute the Streptavidin-Horseradish Peroxidase in Dilution Buffer A according to the manufacturer's guidelines.
   b. Add 100 µL of diluted 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. Add 100 µL of 1:1 mixed TMB/H_2O_2 substrate per well.
   b. Incubate the plate for approximately 6 minutes on a microtiter plate shaker.
   c. When the background signal starts to develop, add 50 µL of 1 M H_2SO_4 to stop the coloring reaction and achieve a maximal signal-to-noise ratio.
   d. Measure the absorbance of the microtiter plate at 450 nm with a microtiter plate reader.

Calculate results

1. Construct a standard curve with values 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, as this method may lead to significant inaccuracies.

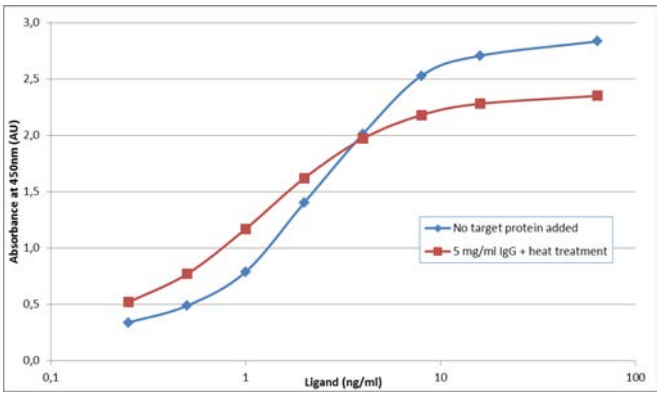

Figure 1 Example calibration curve: KappaXP ligand leakage assay. Results obtained using 1:2,000 diluted Streptavidin/HRP (Dako, P0379) and TMB Substrate Reagent Set (BD Biosciences, 55214).

2. Use the standard curve and the sample absorbance to determine the ligand concentration in your sample.

Validate the assay

Perform validation studies that include at least the following experiments to validate this kit for your application:

- Intra- and inter-assay precision experiments to establish reproducibility
- Recovery experiments using test samples with known amounts of the 500 µg/mL Standard Solution, which is included in the kit

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For descriptions of symbols on product labels or product documents, go to **thermofisher.com/symbols-definition**.

Revision history: Pub. No. MAN0018420

Revision	Date	Description
B.0	12 April 2019	Update to the volume of Blocking solution in the ELISA assay procedure.
A.0	15 January 2019	New document.