

Human Syndecan-1/CD138 Matched Antibody Pair for ELISA

Catalog No.: CDK100D

Size: 20 x 96 tests

Lot No.: TBD

Exp. Date: TBD

NOTE: this is a sample protocol which is subject to variation by Lot Number. Refer to the protocol inserted in your package for the current lot number specifications and expiration date or contact our technical support at tech@cellsciences.com

1. Intended Use:

The Cell Sciences® Syndecan-1/CD138 Matched Antibody Pair is intended for use in a 'do it yourself' solid phase sandwich ELISA for the *in vitro* qualitative and quantitative determination of Syndecan-1/CD138.

A capture antibody highly specific for CD138 is coated to the wells of a microtiter plate. Binding of CD138 in samples and known standards to the capture antibodies and subsequent binding of the biotinylated "detection" antibody to the analyte is completed during the same incubation period. Any excess unbound analyte and detection antibody is removed. The HRP conjugate solution is then added to every well and, following incubation, excess conjugate is removed by careful washing. A chromogen substrate is added to the wells resulting in the progressive development of a blue colored complex with the conjugate. The color development is then stopped by the addition of acid, turning the resultant product yellow. The intensity of the colored complex is directly proportional to the concentration of analyte present in the samples and standards. The absorbance of the color complex is measured and the OD values for each standard are plotted against expected concentration forming a standard curve. This standard curve is used to determine the concentration of analyte in any sample tested.

2. Reagents Provided:

| Catalog No. / Item | Description | Preparation | Storage |
|--|-----------------------|--------------------------------------|---------|
| CDK100D-A CD138 standard, 256 ng/mL | 20 vials, lyophilized | Reconstitute as per kit instructions | 2-8 °C |
| CDK100D-B Capture Antibody | 4 vials, 500 µL each | Dilute as per kit instructions | 2-8 °C |
| CDK100D-C Biotinylated Anti-CD138 Detection Antibody | 4 vials, lyophilized | Reconstitute as per kit instructions | 2-8 °C |
| CDK100D-D Streptavidin-HRP Conjugate | 4 vials, 25 µL each | Dilute as per kit instructions | 2-8 °C |
| CDK100D-E TMB Substrate | 8 bottles, 25 mL | Ready to use | 2-8 °C |

3. Materials/Reagents Not Provided:

- 96-well Microtiter plates, high affinity binding
- Reconstitution Buffer (1x PBS, 0.09% Azide). *Store at 2-8 °C for up to 1 week.*
- Coating Buffer (1x PBS, pH 7.2-7.4). *Store at 2-8 °C for up to 1 week.*
- Wash Buffer (1x PBS, 0.05% Tween 20). *Use immediately.*
- Blocking Buffer (1x PBS, 5% BSA). *Store at 2-8 °C for up to 1 week.*



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- Standard and Detection Antibody Dilution Buffer (1x PBS, 1% BSA). *Store at 2-8 °C for up to 1 week.*
- HRP Diluent Buffer (1x PBS, 1% BSA, 0.1% Tween20). *Store at 2-8 °C for up to 1 week.*
- Stop Reagent (1N Sulfuric Acid)
- Microtiter plate reader with appropriate filters (450nm required with optional 630nm reference filter)
- Microplate washer or wash bottle
- Adjustable single channel and multi-channel micropipettes with disposable tips
- Multichannel micropipette reagent reservoirs
- Distilled water
- Vortex mixer
- Miscellaneous laboratory plastic and/or glass, if possible sterile.

4. STORAGE INSTRUCTIONS

Store the kit reagents 2-8 °C. Immediately after use, remaining reagents should be returned to cold storage (2-8 °C). Expiration date of the kit and reagents is stated on box label. The expiration date of the kit components can only be guaranteed if the components are stored properly, and if, in case of repeated use of one component, the reagent is not contaminated during handling.

Reconstituted Biotinylated anti CD138 Detection Antibody: Once prepared store at 2-8 °C for up to one year

Reconstituted CD138 Standard: Discard after use

5. Safety and Precautions for Use:

- FOR RESEARCH ONLY. Not for diagnostic use.
- Handling of reagents, serum, or plasma specimens should be in accordance with local safety procedures (e.g., CDC/NIH Health manual: "Biosafety in Microbiological and Biomedical Laboratories" 2009.)
- Do not eat, drink, smoke or apply cosmetics where kit reagents are used.
- Do not pipette by mouth.
- All reagents should be warmed to room temperature before use.
- Cover or cap all reagents when not in use.
- Do not mix or interchange reagents between different lots.
- Do not use reagents beyond the expiration date of the kit.
- Use a clean, disposable, plastic pipette tip for each reagent, standard, or specimen addition in order to avoid cross contamination.
- For the dispensing of H₂SO₄ and substrate solution, avoid pipettes with metal parts.
- Use a clean plastic container to prepare the washing solution.
- Thoroughly mix the reagents and samples before use by agitation or swirling.
- **Warning:** TMB is toxic avoid direct contact with hands. Dispose of properly.
- TMB solution is light sensitive. Avoid prolonged exposure to light.
- Avoid contact of TMB solution with metal to prevent color development. If a dark blue colour develops within a few minutes after preparation, this indicates that the TMB solution has been contaminated and must be discarded.
- Read absorbance within 1 hour after completion of the assay.



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6. Specimen collection, processing and storage:

Cell culture supernatants, human serum, plasma or other biological samples are suitable for use in the assay. If not analyzed shortly after collection, samples should be aliquoted (250-500 µL) to avoid repeated freeze-thaw cycles and stored frozen at -80 °C. Avoid multiple freeze-thaw cycles of frozen specimens. DO NOT thaw by heating at 37 °C or 56 °C. Thaw at room temperature and make sure that sample is completely thawed and homogeneous before use.

Cell supernatants: Remove particulates and aggregates by spinning at approximately 1000 x g for 10 minutes.

Serum: Use pyrogen/endotoxin-free collecting tubes. Remove serum from the clot or red cells as soon as possible after clotting and separation, respectively. When possible avoid use of badly hemolysed or lipemic sera. If large amounts of particles are present, these should be removed prior to use by centrifugation or filtration.

Plasma: EDTA, citrate and heparin plasma can be assayed. Spin samples at 1000 x g for 30 minutes to remove particulates. Harvest plasma.

Microtiter plate preparation – coating of capture antibody:

Centrifuge Capture Antibody (CDK100D-B) vial for a few seconds in microfuge to collect all the volume at the bottom of vial. This reagent is supplied sterile, once opened – keep the vial sterile for optimal performance.

For 1 96-well plate, add 100 µL of Capture Antibody to 10 mL of Coating Buffer. *Discard diluted antibody after use.*

| | | |
|--|------------|---|
| 1. | Addition | Add 100 µL of diluted Capture Antibody to each well. |
| 2. | Incubation | Cover with a plastic plate cover and incubate at 4 °C overnight. |
| 3. | Wash | Remove the cover and wash the plate as follows: a) Aspirate the liquid from each well. b) Dispense 300 µL of Wash Solution into each well. c) Aspirate the contents of each well. d) Repeat steps b and c. |
| 4. | Addition | Add 100 µL of Blocking Buffer to each well. |
| 5. | Incubation | Cover with a plastic plate cover and incubate at room temperature (18 to 25 °C) for 2 hours. |
| 6. | Wash | Remove the cover and wash the plate as follows: a) Aspirate the liquid from each well. b) Dispense 300 µL of Wash Solution into each well. c) Aspirate the contents of each well. d) Repeat steps b and c twice more. |
| For immediate use of the plate, continue to Assay Preparation (next section). | | |
| To store the coated and blocked plates for future use, dry the plate on the bench at room temperature for 24 hours. Cover the plates and store at 2-8 °C in a sealed plastic bag with desiccant for up to 12 months. | | |



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7. Assay Preparation

*** Bring all reagents to room temperature before use. ***

Assay Design

Determine the number of microwell strips required to test the desired number of samples, plus the number of wells needed for blanks and standards. Each sample, standard and blank should be tested in duplicate.

Example Plate Layout:

| | Standards (ng/mL) | | Sample Wells | | | | | | | | | |
|---|----------------------|-------|--------------|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A | 256 | 256 | | | | | | | | | | |
| B | 128 | 128 | | | | | | | | | | |
| C | 64 | 64 | | | | | | | | | | |
| D | 32 | 32 | | | | | | | | | | |
| E | 16 | 16 | | | | | | | | | | |
| F | 8 | 8 | | | | | | | | | | |
| G | blank | blank | | | | | | | | | | |
| H | | | | | | | | | | | | |

All remaining empty wells can be used to test samples in duplicate

Preparation of Standard

Standard vials (CDK100D-A) must be reconstituted with the volume of Standard Dilution Buffer shown on the vial immediately prior to use. This reconstitution gives a stock solution of 256 ng/mL of Syndecan-1/CD138. Mix the reconstituted standard gently by inversion only. Serial dilutions of the standard are made directly in the assay plate to provide the concentration range from 256 to 8 ng/mL. A fresh standard curve should be produced for each new assay. *Discard reconstituted standard after use.*

Note: A fresh standard curve should be produced for each new assay.

1. Immediately after reconstitution add 200 μ L of the reconstituted standard to wells A1 and A2, which provides the highest concentration standard at 256 ng/mL.
2. Add 100 μ L of appropriate Standard Dilution Buffer to the remaining standard wells B1/ B2 through F1/ F2.
3. Transfer 100 μ L from wells A1 to B1 and A2 to B2. Mix the well contents by repeated aspirations and ejections taking care not to scratch the inner surface of the wells.
4. Continue this 1:1 dilution using 100 μ L from wells B1 and B2 through to wells F1 and F2 providing a serially diluted standard curve ranging from 256 ng/mL to 8 ng/mL.
5. Discard 100 μ L from the final wells of the standard curve (F1 and F2).

Alternatively, these dilutions can be performed in separate clean tubes and immediately transferred directly into the relevant wells.

Preparation of Biotinylated anti-Syndecan-1/CD138 Detection Antibody (CDK100D-C)

It is recommended this reagent is prepared immediately before use. Reconstitute with 550 μ L Reconstitution Buffer prior to use. Gently mix the solution and wait until all the lyophilized material is back into solution. *Store reconstituted detection antibody at 2-8 °C for 1 year.*



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Dilute the reconstituted biotinylated anti-Syndecan-1/CD138 with the Biotinylated Antibody Dilution buffer in an appropriate clean glass vial. For one plate, add 100 µL of the reconstituted Detection Antibody into 5 mL of Biotinylated Antibody dilution buffer.

Preparation of Streptavidin-HRP

It is recommended to centrifuge vial for a few seconds in a micro-centrifuge to collect the volume at the bottom. Dilute 5 µL of Streptavidin-HRP into 500 µL of HRP Diluent Buffer immediately before use. To prepare the working solution of Streptavidin-HRP conjugate, further dilute 150 µL of the diluted HRP solution into 10 mL of HRP Diluent Buffer. *Discard diluted Streptavidin-HRP conjugate after use.*

8. Assay Method

We strongly recommend that every vial is mixed thoroughly without foaming prior to use, except the standard vial which must be mixed gently by inversion only.

Note: Prepare Biotinylated Detection Antibody (CDK100D-C) and Streptavidin-HRP (CDK100D-D) immediately before use.

| Assay Step | Details |
|--|---|
| 1. Preparation | Prepare Standard curve as per kit instructions |
| 2. Addition | Add 100 µL of each standard, sample, blank (Standard Dilution Buffer) to appropriate wells in duplicate. |
| 3. Addition | Add 50 µL of diluted Detection Antibody into all wells. |
| 4. Incubation | Cover with a plastic plate cover and incubate at room temperature (18-25 °C) for 1 hour. |
| 5. Wash | Remove the cover and wash the plate as follows: a) Aspirate the liquid from each well. b) Dispense 400 µL of Wash Solution into each well. c) Aspirate the contents of each well. d) Repeat step b and c. |
| 6. Addition | Add 100 µL of Streptavidin-HRP solution into all wells. |
| 7. Incubation | Cover with a plastic plate cover and incubate at room temperature (18-25°C) for 30 minutes. |
| 8. Wash | Repeat wash step 5. |
| 9. Addition | Add 100 µL of ready-to-use TMB Substrate Solution (CDK100D-E) into all wells. |
| 10. Incubation | Incubate in the dark for 5-15 minutes* at room temperature. Avoid direct exposure to light by wrapping the plate in aluminum foil. |
| 11. Addition | Add 100 µL of H ₂ SO ₄ Stop Reagent into all wells. |
| Read the absorbance value of each well immediately after step 11 on a spectrophotometer using 450 nm as the primary wavelength and 630 nm as the reference wavelength (610 nm to 650 nm are acceptable). | |

**Incubation time of the substrate solution is usually determined by the ELISA reader performance. Many ELISA readers only record absorbance up to 2.0 O.D. Therefore, the color development within individual microwells must be observed by the analyst, and the substrate reaction stopped before positive wells are no longer within recordable range.*



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Data Analysis

Calculate the average absorbance values for each set of duplicate standards and samples. Ideally duplicates should be within 20% of the mean.

Generate a linear standard curve by plotting the average absorbance of each standard on the vertical axis versus the corresponding Syndecan-1/CD138 standard concentration on the horizontal axis. The amount of Syndecan-1/CD138 in each sample is determined by extrapolating OD values against Syndecan-1/CD138 standard concentrations using the standard curve.

Assay Limitations

Do not extrapolate the standard curve beyond the maximum standard curve point. The dose-response is non-linear in this region and good accuracy is difficult to obtain. Concentrated samples above the maximum standard concentration must be diluted with Standard Diluent or with your own sample buffer to produce an OD value within the range of the standard curve. Following analysis of such samples, always multiply results by the appropriate dilution factor to produce actual final concentration.

The influence of various drugs on end results has not been investigated. Bacterial or fungal contamination and laboratory cross-contamination may also cause irregular results.

Improper or insufficient washing at any stage of the procedure will result in either false positive or false negative results. Completely empty wells before dispensing fresh Wash Buffer, fill with Wash Buffer as indicated for each wash cycle and do not allow wells to sit uncovered or dry for extended periods.

Disposable pipette tips, flasks or glassware are preferred, reusable glassware must be washed and thoroughly rinsed of all detergents before use.

As with most biological assays conditions may vary from assay to assay therefore a fresh standard curve must be prepared and run for every assay.

Performance characteristics:

Sensitivity

The minimum detectable dose of this Syndecan-1/CD138 antibody pair was determined using the comparable Cell Sciences® Syndecan-1/CD138 ELISA kit (which contains the same antibodies) and was found to be < 4.94 ng/mL. This was determined by adding 2 standard deviations to the mean OD obtained when the zero standard was assayed in 6 independent experiments.

Specificity

The assay recognizes natural human Syndecan-1/CD138. To define specificity of this Syndecan-1/CD138 antibody pair, several proteins were tested for cross reactivity using the Cell Sciences® Syndecan-1/CD138 pre-coated ELISA kit (which contains the same antibodies). There was no cross reactivity observed for any protein tested (human IL-1 β , IL-2, IL-4, IFN γ , IL-6, IL-6R, TRAIL, IL-7, IL-12 and IL-21).

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