Prepare test samples.

Add test samples and standards to the pre-coated human VEGF-C antibody coated wells. Dilute samples and reagents as needed to ensure they are mixed completely and evenly.

Add Biotinylated Antibody (Anti-human VEGF-C) and 30 μl of 10x ABC Solution to the wells. Incubate for 1 hour at 37°C. Avoid light exposure.

The assay reaction was incubated at 37°C for 27 min.

Figure 1: VEGF-C Standard Curve. Using the Human VEGF-C ELISA Kit, O.D. data was graphed against VEGF-C protein concentration. The TMB reaction was incubated at 37°C for 27 min.

1. Prepare test samples.
2. Prepare a protein standard of the target protein.
3. Add test samples and standards to the pre-coated 96-well plate. Do not wash.
5. Add Avidin-Biotin- Peroxidase Complex (ABC) Solution. Wash.
6. Add Tetramethylbenzidine (TMB) Color Developing Agent, containing HRP substrate.
7. Add TMB Stop Solution
8. Subject the plate to analysis.

NOTES:

- Before using the kit, quick spin tubes to bring down all solution to the bottom of tube.
- Duplicate assay wells are recommended for both standard and sample testing.
- Do not let the 96-well plate dry, this will lead to inactivation of plate components.
- When diluting samples and reagents, ensure that they are mixed completely and evenly.
- Pre-warm diluted ABC and TMB solutions at 37°C for 30 min before use to avoid variable temperature effects.
- For washes, use TBS or PBS. Do not touch well walls.
- A protein standard is included in the kit. A protein standard detection curve should be generated with each experiment, no more than 2 hours prior to the experiment.
- The user will determine sample dilution fold by estimation of target protein amount in samples.
ELISA PROTOCOL

Preparation of Test Samples
1. Process Test Samples in the following manner:
   - Cell culture supernate, tissue lysate or body fluids: Remove particulates by centrifugation, analyze immediately or aliquot and store at -20°C.
   - Serum: Allow the serum to clot in a serum separator tube (about 30 min) at room temperature. Centrifuge at approximately 1000 x g for 15 min. Analyze the serum immediately or aliquot and store frozen at -20°C.
   - Plasma: Collect plasma using heparin/EDTA as an anticoagulant. Centrifuge for 15 min at 1000 x g within 30 min of collection. Analyze immediately or aliquot and store frozen at -20°C.
2. Estimate the concentration of the target protein in the sample and select a proper dilution factor such that the diluted target protein concentration falls within the 31.2-2000 pg/ml standard curve range. Depending on the sample, several trial dilutions may be necessary. Dilute the sample using the provided diluent buffer, mixing well. Suggested working dilutions of samples are as follows:

<table>
<thead>
<tr>
<th>Target Protein Concentration Range</th>
<th>Sample Working Dilution</th>
<th>Sample Vol</th>
<th>Diluent Buffer Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-200 ng/ml</td>
<td>1:100</td>
<td>1 µl</td>
<td>99 µl</td>
</tr>
<tr>
<td>2-20 ng/ml</td>
<td>1:10</td>
<td>1 µl</td>
<td>99 µl</td>
</tr>
<tr>
<td>31.2-2000 pg/ml</td>
<td>1:2</td>
<td>50 µl</td>
<td>50 µl</td>
</tr>
<tr>
<td>≤31.2 µg/ml</td>
<td>n/a</td>
<td>100 µl</td>
<td>n/a</td>
</tr>
</tbody>
</table>

3. If samples will be assayed within 24 hours, store at 2-8°C. For long-term storage, aliquot and freeze samples at -20°C. Avoid repeated freeze-thaw cycles.

Preparation of Standard Solutions (31.2-2000 pg/ml)
4. Reconstitute the Lyophilized Recombinant Protein to make a 10,000 pg/ml VEGF-C solution. Add 1 ml Sample Diluent Buffer to a tube of lyophilized protein, keep the tube at room temperature for 10 min. Mix thoroughly.
5. Add 0.2 ml of the mixed 10,000 pg/ml VEGF-C solution to the 8-mL tube containing 0.8 ml diluent buffer and mix to make a 2000 pg/ml VEGF-C solution.
6. Label 6 1.5-mL tubes with the VEGF-C protein concentrations to be prepared by serial dilution: 1000 pg/ml, 500 pg/ml, 250 pg/ml, 125 pg/ml, 62.5 pg/ml, 31.25 pg/ml.
7. Aliquot 0.3 µl of the Sample Diluent Buffer to the labeled tubes.
8. Serially dilute the protein standards into their respectively labeled tubes. Transfer 0.3 µl from the 2000 pg/ml VEGF-C Solution to the 1000 pg/ml VEGF-C tube and mix thoroughly. Transfer 0.3 µl of the 1000 pg/ml solution to the 500 pg/ml tube and mix thoroughly. Transfer 0.3 µl of the 500 pg/ml solution to the 250 pg/ml tube and mix, and so on to make the 125, 62.5, and 31.2 pg/ml solutions.
9. Store at 4°C until use.

Loading the 96-well Plate
10. Aliquot 0.1 µl of each properly diluted test sample to empty wells of the precoated 96-well plate. Duplicate measurements of standards are recommended.
11. Aliquot 0.1 µl of the standard solutions of the Preparation of Standard Solutions (31.2-2000 pg/ml) into empty wells of the precoated 96-well plate. Duplicate measurements of standards are recommended.
12. Aliquot 0.1 ml of each properly diluted test sample to empty wells prepared in Step 2. Duplicate measurements of each test sample are recommended.
13. Cover the 96-well plate and incubate at 37°C for 90 min.
14. During the Step 13 incubation period, prepare a stock of Biotinylated 1:100 Antibody Working Solution. Count the number of reactions and multiply by 0.1 ml/well for the Working Solution total volume (preparation of 1-2 reactions in excess of the number of wells is recommended). Dilute the Biotinylated Antibody to 1:100 in Antibody Diluent Buffer and mix thoroughly. Use the working solution within 2 hours.
15. Upon completion of the 90 min incubation of Step 13, remove the cover of the 96 well plate and discard plate well contents. Blot the plate onto paper towels or other absorbent material. DO NOT let the wells completely dry at any time.
16. Add 0.1 ml of the Biotinylated 1:100 Antibody Working Solution (prepared in Step 14) to each well and incubate the plate at 37°C for 60 min.
17. During the incubation period of Step 16, prepare a stock of ABC Working Solution. Count the number of reactions and multiply by 0.1 ml/well for the Working Solution total volume (preparation of 1-2 reactions in excess of the number of wells is recommended). Dilute the ABC Stock Solution to 1:100 in ABC Diluent Buffer and mix thoroughly. Pre-warm the ABC working solution at 37°C for 30 min before use. Use the working solution within 1 h.
18. Upon completion of the 60 min incubation of Step 16, wash the plate 3 times with 0.3 ml TBS or PBS. For each wash, leave washing buffer in the wells for 1-2 min. Discard the washing buffer and blot the plate onto paper towels or other absorbent material.
19. Add 0.1 ml of prepared ABC Working Solution (prepared in Step 17) to each well and incubate the plate at 37°C for 30 min.
20. During the incubation period of Step 19, pre-warm TMB Color Developing Agent at 37°C for 30 min before use.
21. Upon completion of the 30 min incubation of Step 19, wash the plate 5 times with 0.3 ml TBS or PBS. For each wash, leave the washing buffer in the wells for 1-2 min. Discard the washing buffer and blot the plate onto paper towels or other absorbent material.
22. Add 90 µl of the pre-warmed TMB Color Developing Agent into each well and incubate at 37°C for 25-30 min (shades of blue can be seen in the wells with the four most concentrated Protein Standard Solutions; the other control wells should show no obvious color).
23. Add 0.1 ml of the TMB Stop Solution to each well. The acidic stop solution will change the mixture color to yellow. The yellow intensity is proportional to the amount of target protein captured by the plate.
24. Read the O.D. absorbance at 450nm in a microplate reader within 30 min after adding the stop solution. These readings are the O.D.450(Reading).

Calculating Protein Concentration
- For all wells, determine O.D.450(Blank):
  - O.D.450(Blank) = O.D.450(Reading) − O.D.450(Blank)
- Plot the standard curve: plot O.D.450(Relative) of each standard solution (Y) vs. the respective concentration of the standard solution (X). See Figure 1 for a typical standard curve.
- The VEGF-C concentration of the samples can be interpolated from the standard curve. Multiply the interpolated concentration by the dilution factor to obtain the target protein concentration in the sample.