



Ferritin ELISA

Catalog No. BQ 065T (96 Tests)

3. Sensitivity

The sensitivity was determined by calculating the mean plus 2SD of the standard zero point tested 20 times in the same run.

Serum	No. of Replicates	Mean ng/ml	Standard Deviation	Mean + 2SD (Sensitivity)
Zero Standard	20	0.23	0.14	0.51 ng/ml

REFERENCES

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- Essen A; Ozen H; Ayhan A; Ergen A; Tasar C; Remzi F. Serum ferritin: a tumor marker for renal cell carcinoma. J Urol 1990;145(6):1134-7.
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Warning

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INTENDED USE

The Ferritin ELISA Kit is intended for the quantitative measurement of Ferritin in human serum.

SUMMARY AND EXPLANATION

Human Ferritin has a molecular weight of approximately 450,000 Daltons, and consists of a protein shell around an iron core; each molecule of Ferritin may contain as many as 4,000 iron atoms. Under normal conditions, this may represent 25% of the total iron found in the body. In addition, Ferritin can be found in several isomers. High concentrations of Ferritin are found in the cytoplasm of the reticuloendothelial system, the liver, spleen and bone marrow. Methods previously used to measure iron in such tissues are invasive, cause patient trauma and lack adequate sensitivity. The measurement of Ferritin in serum is useful in determining changes in body iron storage, and is non-invasive with relatively little patient discomfort. Serum Ferritin levels can be measured routinely and are particularly useful in the early detection of iron-deficiency anemia in apparently healthy people. Serum Ferritin measurements are also clinically significant in the monitoring of the iron status of pregnant women, blood donors, and renal dialysis patients. High Ferritin levels may indicate iron overload without apparent liver damage, as may be noted in the early stages of idiopathic hemochromatosis. Ferritin levels in serum have also been used to evaluate clinical conditions not related to iron storage, including inflammation, chronic liver disease, and malignancy.

PRINCIPLE OF THE TEST

The Ferritin is a solid phase direct sandwich ELISA method. The standards, samples and controls are added into the selected wells, coated with anti ferritin monoclonal antibody, and incubated with 100µl of incubation buffer. Ferritin in the standards, controls and patient's serum binds to anti-Ferritin Ab on the wells. Unbound protein is washed off by wash buffer. The anti-ferritin-HRP conjugated detection antibody is added and then binds to ferritin. Unbound HRP conjugate is washed off by wash buffer. Upon the addition of the substrate, the intensity of color is proportional to the concentration of Ferritin in the samples. A standard curve is prepared relating color intensity to the concentration of the Ferritin.

MATERIALS PROVIDED	96 Tests
1. Microwells coated with Ferritin MAb	12x8x1
2. Ferritin Standards: 6 vials (ready to use)	0.5ml
3. Incubation Buffer: 1vial (Ready to use)	12ml
4. Enzyme Conjugate: 1 bottle (ready to use)	12ml
5. TMB Substrate: 1 bottle (ready to use)	12ml
6. Stop Solution: 1 bottle (ready to use)	12ml
7. 20X Wash concentrate: 1 bottle	25ml

MATERIALS NOT PROVIDED

- Distilled or deionized water
- Precision pipettes
- Disposable pipette tips
- ELISA reader capable of reading absorbance at 450nm
- Absorbance paper or paper towel
- Graph paper

STORAGE AND STABILITY

1. Store the kit at 2 - 8° C.
2. Keep microwells sealed in a dry bag with desiccants.
3. The reagents are stable until expiration of the kit.
4. Do not expose reagent to heat, sun, or strong light.

WARNINGS AND PRECAUTIONS

1. Potential biohazardous materials:
The standard set contains human source components, which have been tested and found non-reactive for hepatitis B surface antigen as well as HIV antibody with FDA licensed reagents. However, as there is no test method that can offer complete assurance that HIV, Hepatitis B virus or other infectious agents are absent, these reagents should be handled at the Biosafety Level 2, as recommended in the Centers for Disease Control/National Institutes of Health manual, "Biosafety in Microbiological and Biomedical Laboratories." 1984
2. This test kit is designed for research use only.
3. Do not pipette by mouth. Do not smoke, eat, or drink in the areas in which specimens or kit reagents are handled.
4. The components in this kit are intended for use as an integral unit. The components of different lots should not be mixed.
5. It is recommended that standards, control and serum samples be run in duplicate.
6. Optimal results will be obtained by strict adherence to this protocol. Accurate and precise pipetting, as well as following the exact time and temperature requirements prescribed are essential. Any deviation from this may yield invalid data.

SPECIMEN COLLECTION HANDLING

1. Collect blood specimens and separate the serum immediately.
2. Specimens may be stored refrigerated at (2-8°C) for 5 days. If storage time exceeds 5 days, store frozen at (-20° C) for up to one month.
3. Avoid multiple freeze-thaw cycles.
4. Prior to assay, frozen sera should be completely thawed and mixed well.
5. Do not use grossly lipemic specimens.

REAGENTS PREPARATION

Prepare 1X Wash buffer by adding the contents of the bottle (25 ml, 20X) to 475 ml of distilled or deionized water. Store at room temperature (18-26° C).

ASSAY PROCEDURE

Prior to assay, allow reagents to stand at room temperature. Gently mix all reagents before use.

1. Place the desired number of coated strips into the holder
2. Pipette 25µl of Ferritin standards, control and patient's sera.
3. Add 100µl of incubation buffer to all wells. Shake the plate gently (20 seconds) to mix the reagents.
4. Cover the plate and incubate for 30 minutes at room temperature (18-26° C).
5. Remove liquid from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbent paper towels.
6. Add 100µl of enzyme conjugate to all wells.
7. Cover the plate and incubate for 30 minutes at room temperature (18-26° C).
8. Remove liquid from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbent paper towels.
9. Add 100µl of TMB substrate to all wells.
10. Incubate for 15 minutes at room temperature (18-26° C).
11. Add 50 µl of stop solution to all wells. Shake the plate gently to mix the solution.

12. Read absorbance on ELISA Reader at 450 nm within 15 minutes after adding the stopping solution.

CALCULATION OF RESULTS

The standard curve is constructed as follows:

1. Check Ferritin standard value on each standard vial. This value might vary from lot to lot. Make sure you check the value on every kit. See example of the standard attached.
2. To construct the standard curve, plot the absorbance for the Ferritin standards (vertical axis) versus the Ferritin standard concentrations (horizontal axis) on a linear graph paper. Draw the best curve through the points.
3. Read the absorbance for controls and each unknown sample from the curve. Record the value for each control or unknown sample.

Example of a Standard Data

	OD 450 nm	Conc. ng/mL
Std 1	0.04	0
Std 2	0.23	10
Std 3	0.79	50
Std 4	1.54	150
Std 5	2.24	400
Std 6	2.62	800

EXPECTED VALUES

It is recommended that each laboratory establish its own normal ranges based on a representative sampling of the local population. The following values may be used as initial guideline ranges only:

Men: 15-250 ng/ml
Women: 10-125 ng/ml

LIMITATIONS OF THE TEST

1. Do not use sodium azide as preservative. Sodium azide inhibits HRP enzyme activities.

PERFORMANCE CHARACTERISTICS

1. Correlation with a Reference ELISA kit:

A total of 60 sera were tested by this kit and a commercially available ferritin reference ELISA kit. The linear regression curve was calculated as:
 $Y = 1.1x + 0.168, r = 0.99$

2. Precision

Intra-Assay

Serum	No. of Replicates	Mean ng/ml	Standard Deviation	Coefficient of Variation (%)
1	16	31.7	1.45	4.6
2	16	90.3	2.16	2.4
3	16	268	9.05	3.4

Inter-assay

Serum	No. of Replicates	Mean ng/ml	Standard Deviation	Coefficient of Variation (%)
1	16	31.2	1.9	6.1
2	16	89.8	2.8	3.1
3	16	266.1	10.5	3.9