



## LABORATORY REPORT



Name : TWISHA AMITBHAI PATEL	Sex/Age : Female / 19 Years	Case ID : 40603608090
Ref. By : DR JAYESH GHOGHARI	Dis. At :	Pt. ID :
Bill. Loc. : VR PATHOLOGY LABORATORY KATARGAM		Pt. Loc. :
Reg Date and Time : 10-Jun-2024 21:40	Sample Type :	Mobile No. :
Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time :	Acc. Remarks :	Ref Id2 :

## Abnormal Result(s) Summary

Test Name	Result Value	Unit	Reference Range
<b>Iron Studies (TIBC)</b>			
Iron	8.00	µg/dL	20 - 162
Unsaturated Iron Binding Capacity	422.00	ug/dl	70 - 310
Transferrin Saturation %	1.9	%	20.00 - 40.00
Ferritin	2.42	ng/mL	4.63 - 204.00

Abnormal Result(s) Summary End

Note:(LL-VeryLow,L-Low,H-High,HH-VeryHigh ,A-Abnormal)

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Bill. Loc. : VR PATHOLOGY LABORATORY KATARGAM		Pt. Loc. :
Reg Date and Time : 10-Jun-2024 21:40	Sample Type : Whole Blood EDTA	Mobile No. :
Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time : 10-Jun-2024 23:48	Acc. Remarks :	Ref Id2 :

TEST	RESULTS	UNIT BIOLOGICAL REF RANGE	REMARKS
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## HAEMATOLOGY INVESTIGATIONS

## COOMBS TEST DIRECT

Undiluted (D) Manual	Negative	Negative
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Note:(LL-VeryLow,L-Low,H-High,HH-VeryHigh ,A-Abnormal)

Dr. Prashant Naik

M.D.(Path),D.C.P.

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Reg Date and Time : 10-Jun-2024 21:40	Sample Type : Serum	Mobile No. :
Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time : 10-Jun-2024 23:48	Acc. Remarks :	Ref Id2 :

TEST	RESULTS	UNIT BIOLOGICAL REF RANGE	REMARKS
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## HAEMATOLOGY INVESTIGATIONS

## COOMBS TEST INDIRECT

**Undiluted**  
*Manual*

Negative

Negative

**Dilution**

-

- Anti-globulin (Coomb's, direct and indirect) are carried out by gel agglutination (solid phase) technique (Diamed) using poly-specific anti-human globulin (AHG) reagents directed against IgG and complement C3d.
- The gel cards used contain microtubes containing anti-human globulin (AHG) reagent. During centrifugation, unagglutinated cells pass through gel and settle at the bottom to form a button whereas agglutinated cells don't pass through the gel and remain at the top or suspended in the middle. As the reagent is present in the microtube, no washing or addition of IgG coated control cells to negative tests is required.
- For the indirect antiglobulin test (IAT), labour intensive washing procedures are eliminated, due to the fact that the red cell suspension is added to the microtube before the plasma/serum, creating a barrier over the gel suspension, thus avoiding neutralization of the AHG by serum IgG proteins.
- A negative reaction indicates absence of detectable IgG antibodies or C3d complement component on the red cells.
- A positive reaction ( $\pm$  to +++) indicates that the patient's red cells are sensitized (red cells coated with IgG antibodies and/or C3d).
- Positive antiglobulin test result commonly occurs in AIHA (with or without hemolysis), HDN, HTR & drug induced hemolytic anemia. Uncommon conditions are passive infusion of allo-antibodies through donor plasma/derivatives, administration of immunoglobulin with ABO or D antibodies, anti-D injection for ITP and in D negative mothers for prophylaxis against HDN, antibodies produced by passenger lymphocytes following solid organ or BM transplantation and presence of cross reacting antiphospholipid antibodies,

**CAUTION****False positive results may be due to:**

- In vitro sensitization if blood sample other than EDTA is used.
  - Pseudo-agglutination if silica gel derived from glass is used.
  - Presence of air bubbles or gel drops in ID cards (upper part of the microtubes and/or the seal).
  - Poly-agglutinable cells due to crypt-antigen exposure e.g. T antigen, either in vivo or in vitro may react with all human sera.
  - Bacterial or other contamination of materials used can cause false positive or false negative results.
  - Fibrin residues in the red cell suspension may trap non-agglutinated cells presenting a fine pink line on top of the gel while most of the cells are on the bottom of the microtube after centrifugation. Too heavy or too weak red cell suspensions can cause aberrant results.
- A finding of positive DAT of variable incidence in hospitalized patients with no correlation between the result and hemolysis or anemia has been reported by many workers. Most cases have shown anti C specificity of the antibody and reaction between the antibody and immune complexes adsorbed to RBDs as possible explanation

**False negative results may occur with:**

- Failure to wash red cells properly
- Neutralization of AHG by serum/plasma containing immunoglobulin and/or complement.
- Deterioration and/or elution of AHG in the microtubes during storage or testing.
- AHG lacking specificity to detect corresponding immunoglobulin subclass or complement component.

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Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time : 10-Jun-2024 23:53	Acc. Remarks :	Ref Id2 :

TEST	RESULTS	UNIT	BIOLOGICAL REF RANGE	REMARKS
<b>Ferritin</b> CMIA	L 2.42	ng/mL	4.63 - 204.00	

**Introduction :**

Ferritin is a high-molecular weight iron-containing protein that functions in the body as an iron storage compound. It has been demonstrated that the Ferritin molecule, when fully saturated, may consist of over 20% iron by weight. Approximately 25% of the iron in a normal adult is present in various storage forms. About two-thirds of the iron stores in the human body exist in the form of Ferritin.

**Use :**

Diagnosis of iron deficiency or excess; correlates with total body iron stores

- Predict and monitor iron deficiency
- Determine response to iron therapy or compliance with treatment.
- Differentiate iron deficiency from chronic disease as cause of anaemia.
- Monitor iron status in patients with chronic renal disease with or without dialysis.
- Detect iron overload states and monitor rate of iron accumulation and response to iron depletion therapy.
- Population studies of iron levels and response to iron supplement.

**Clinical Significance :**

1. Increased ferritin is seen in iron overload as in multiple blood transfusions, hemochromatosis and anemia of chronic disorders.
2. Decreased ferritin levels are seen in iron deficiency anemia, early stage before iron deficiency manifests as anemia.
3. Levels of ferritin are used for monitoring of iron levels during pregnancy, dialysis and during iron therapy.

Serum Ferritin may not be decreased when iron deficiency coexists with these conditions.

Variations due to age Increases:

with age, higher in men than women, in women on OCP, in person who eat red meat compared to vegetarians

**DILUTION PROTOCOL: (on request):**

At our lab with kit, manual dilution protocol has been validated for FERRITIN up to 1:20 dilution and result up to 33000 NG/ML. After above dilution, it will be done manually and because of Ag-Ab reaction curve it may be erroneous if diluted after validated dilution.

Note:(LL-VeryLow,L-Low,H-High,HH-VeryHigh ,A-Abnormal)

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Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time : 10-Jun-2024 22:51	Acc. Remarks :	Ref Id2 :

TEST	RESULTS	UNIT	BIOLOGICAL REF RANGE	REMARKS
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## BIOCHEMICAL INVESTIGATIONS

## Iron Studies

Iron <i>Ferrozine</i>	L	8.00	µg/dL	20 - 162
Total Iron Binding Capacity <i>Ferene Method</i>		430.00	µg/dL	250 - 450
Unsaturated Iron Binding Capacity <i>Ferene Method</i>	H	422.00	ug/dl	70 - 310
Transferrin Saturation % <i>Calculated</i>	L	1.9	%	20.00 - 40.00

## Interpretation :

1. Serum iron exhibits significant diurnal variation and may transiently rise after dietary or iron supplements & post blood transfusion.
2. Presence of acute & chronic inflammatory processes significantly affects the concentrations of iron and transferrin, as part of the acute phase response irrespective of the iron stores in the body. Hence, Concurrent measurement of biomarkers mentioned in the below table provides a reliable work up for microcytic hypochromic anaemia.

Tests	Iron Deficiency anaemia	Anaemia of Chronic disease	Iron overload (Sideroblastic)	Hemoglobinopathy (especially Trait- BTT)
Serum Iron	Decreased	Decreased	Increased	Normal
Serum Total Iron Binding Capacity	Increased	Decreased or Normal	Increased or Normal	Normal
% Transferrin Saturation	Decreased	Decreased or Normal	Increased or Normal	Normal
Serum UIBC	Increased	Decreased or Normal	Decreased	Normal
Serum Ferritin	Decreased	Increased	Increased or Normal	Normal
Other specific tests	Serum Soluble Transferrin receptor (sTfr) Increased	Serum Hepcidin Increased	Bone marrow examination	Hemoglobin electrophoresis

Pending Services  
HB Electrophoresis (HPLC)

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Sample Date and Time : 10-Jun-2024 21:40	Sample Coll. By : non NAL	Ref Id1 :
Report Date and Time : 10-Jun-2024 22:51	Acc. Remarks :	Ref Id2 :

----- End Of Report -----

# For test performed on specimens received or collected from non-NSRL locations, it is presumed that the specimen belongs to the patient named or identified as labeled on the container/test request and such verification has been carried out at the point generation of the said specimen by the sender. NSRL will be responsible Only for the analytical part of test carried out. All other responsibility will be of referring Laboratory.

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