

Dr. Vinay Chopra  
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Chairman & Consultant Pathologist

Dr. Yugam Chopra  
MD (Pathology)  
CEO & Consultant Pathologist

**NAME** : Mrs. POONAM  
**AGE/ GENDER** : 28 YRS/FEMALE  
**COLLECTED BY** :  
**REFERRED BY** :  
**BARCODE NO.** : 01522630  
**CLIENT CODE.** : KOS DIAGNOSTIC LAB  
**CLIENT ADDRESS** : 6349/1, NICHOLSON ROAD, AMBALA CANTT

**PATIENT ID** : 1702241  
**REG. NO./LAB NO.** : 012412180031  
**REGISTRATION DATE** : 18/Dec/2024 12:03 PM  
**COLLECTION DATE** : 18/Dec/2024 12:04PM  
**REPORTING DATE** : 19/Dec/2024 10:11AM

Test Name	Value	Unit	Biological Reference interval
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## HAEMATOLOGY

### HAEMOGLOBIN - HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HB-HPLC)


#### HAEMOGLOBIN VARIANTS


HAEMOGLOBIN A0 (ADULT) by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	86.2	%	83.00 - 90.00
HAEMOGLOBIN F (FOETAL) by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	<0.8	%	0.00 - 2.0
HAEMOGLOBIN A2 by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	<b>3.8<sup>H</sup></b>	%	1.50 - 3.70
PEAK 3 by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	4.5	%	< 10.0
OTHERS-NON SPECIFIC by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	ABSENT	%	ABSENT
HAEMOGLOBIN S by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	NOT DETECTED	%	< 0.02
HAEMOGLOBIN D (PUNJAB) by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	NOT DETECTED	%	< 0.02
HAEMOGLOBIN E by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	NOT DETECTED	%	< 0.02
HAEMOGLOBIN C by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	NOT DETECTED	%	< 0.02
UNKNOWN UNIDENTIFIED VARIANTS by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	NOT DETECTED	%	< 0.02
GLYCOSYLATED HAEMOGLOBIN (HbA1c): WHOLE BLOOD by HPLC (HIGH PERFORMANCE LIQUID CHROMATOGRAPHY)	4.5	%	4.0 - 6.4

#### RED BLOOD CELLS (RBCS) COUNT AND INDICES

HAEMOGLOBIN (HB) by AUTOMATED HEMATOLOGY ANALYZER	<b>11.2<sup>L</sup></b>	gm/dL	12.0 - 16.0
RED BLOOD CELL (RBC) COUNT by AUTOMATED HEMATOLOGY ANALYZER	3.63	Millions/cmm	3.50 - 5.00
PACKED CELL VOLUME (PCV) by AUTOMATED HEMATOLOGY ANALYZER	<b>35.1<sup>L</sup></b>	%	37.0 - 50.0
MEAN CORPUSCULAR VOLUME (MCV) by AUTOMATED HEMATOLOGY ANALYZER	96.9	fL	80.0 - 100.0



  
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MEAN CORPUSCULAR HAEMOGLOBIN (MCH) <i>by AUTOMATED HEMATOLOGY ANALYZER</i>	30.8	pg	27.0 - 34.0
MEAN CORPUSCULAR HEMOGLOBIN CONC. (MCHC) <i>by AUTOMATED HEMATOLOGY ANALYZER</i>	<b>31.8<sup>L</sup></b>	g/dL	32.0 - 36.0
RED CELL DISTRIBUTION WIDTH (RDW-CV) <i>by AUTOMATED HEMATOLOGY ANALYZER</i>	14.5	%	11.00 - 16.00
RED CELL DISTRIBUTION WIDTH (RDW-SD) <i>by AUTOMATED HEMATOLOGY ANALYZER</i>	52.2	fL	35.0 - 56.0
<b>OTHERS</b>			
NAKED EYE SINGLE TUBE RED CELL OSMOTIC FRAGILITY TEST <i>by SINGLE RED CELL OSMOTIC FRAGILITY</i>	NEGATIVE (-ve)		NEGATIVE (-ve)
MENTZERS INDEX <i>by CALCULATED</i>	26.69	RATIO	BETA THALASSEMIA TRAIT: < 13.0 IRON DEFICIENCY ANEMIA: >13.0

#### INTERPRETATION

Borderline high HbA2 suggestive of Beta thalassemia. May be repeated after delivery. Parental screening &/or DNA analysis advised. Husband screening is advised.

#### INTERPRETATION:

The Thalassemia syndromes, considered the most common genetic disorder worldwide, are a heterogenous group of mendelian disorders, all characterized by a lack of/or decreased synthesis of either the alpha-globin chains (alpha thalassemia) or the beta-globin chains (beta thalassemia) of haemoglobin.

#### HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC):

1. HAEMOGLOBIN VARIANT ANALYSIS, BLOOD- High Performance liquid chromatography (HPLC) is a fast & accurate method for determining the presence and for quantitation of various types of normal haemoglobin and common abnormal hb variants, including but not limited to Hb S, C, E, D and Beta -thalassemia.
2. The diagnosis of these abnormal haemoglobin should be confirmed by DNA analysis.
3. The method use has a limited role in the diagnosis of alpha thalassemia.
4. Slight elevation in haemoglobin A2 may also occur in hyperthyroidism or when there is deficiency of vitamin b12 or folate and this should be distinguished from inherited elevation of HbA2 in Beta- thalassemia trait.

#### NAKED EYE SINGLE TUBE RED CELL OSMOTIC FRAGILITY TEST (NESTROFT):

1. It is a screening test to distinguish beta thalassemia trait. Also called as Naked Eye Single Tube Red Cell Osmotic Fragility Test.
2. The test showed a sensitivity of 100%, specificity of 85.47%, a positive predictive value of 66% and a negative predictive value of 100%.
3. A high negative predictive value can reasonably rule out beta thalassemia trait cases. So, it should be adopted as a screening test for beta thalassemia trait, as it is not practical or feasible to employ HbA2 in every case of anemia in childhood.

#### MENTZERS INDEX:

1. The Mentzer index, helpful in differentiating iron deficiency anemia from beta thalassemia. If a CBC indicates microcytic anemia, the Mentzer index is said to be a method of distinguishing between them.



*[Signature]*

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2.If the index is less than 13, thalassemia is said to be more likely. If the result is greater than 13, then iron-deficiency anemia is said to be more likely.


3.The principle involved is as follows: In iron deficiency, the marrow cannot produce as many RBCs and they are small (microcytic), so the RBC count and the MCV will both be low, and as a result, the index will be greater than 13. Conversely, in thalassemia, which is a disorder of globin synthesis, the number of RBC's produced is normal, but the cells are smaller and more fragile. Therefore, the RBC count is normal, but the MCV is low, so the index will be less than 13.

**NOTE:** In practice, the Mentzer index is not a reliable indicator and should not, by itself, be used to differentiate. In addition, it would be possible for a patient with a microcytic anemia to have both iron deficiency and thalassemia, in which case the index would only suggest iron deficiency.

\*\*\* End Of Report \*\*\*



  
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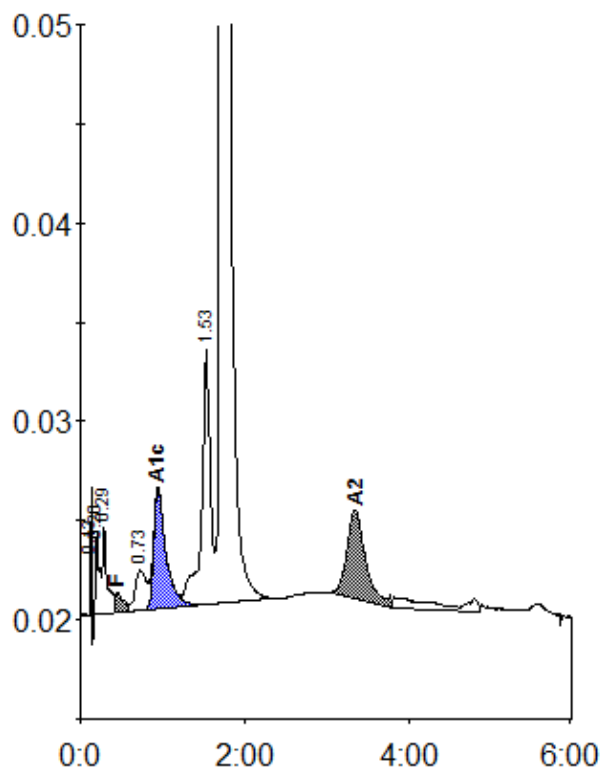




# Patient report

Bio-Rad  
D-10  
S/N: #DJ6F040603  
Sample ID:  
Injection date  
Injection #: 4  
Rack #: ---

DATE: 12/18/2024  
TIME: 04:12 PM  
Software version: 4.30-2  
01522630  
12/18/2024 03:43 PM  
Method: HbA2/F  
Rack position: 4



Peak table - ID: 01522630

Peak	R.time	Height	Area	Area %
Unknown	0.13	6441	5270	0.2
A1a	0.20	4064	14048	0.7
A1b	0.29	4433	16891	0.8
F	0.45	994	8272	< 0.8 *
LA1c/CHb-1	0.73	2032	18936	0.9
A1c	0.94	5999	63109	4.5
P3	1.53	12905	94386	4.5
A0	1.71	425245	1818554	86.2
A2	3.35	4482	70540	3.8
Total Area:	2110006			

Concentration:	%
F	< 0.8 *
A1c	4.5
A2	3.8