

**Dr. Vinay Chopra**  
 MD (Pathology & Microbiology)  
 Chairman & Consultant Pathologist

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

|                       |                                        |                          |                        |
|-----------------------|----------------------------------------|--------------------------|------------------------|
| <b>NAME</b>           | : Mr. PANKAJ DHIMAN                    | <b>PATIENT ID</b>        | : 1579054              |
| <b>AGE/ GENDER</b>    | : 23 YRS/MALE                          | <b>REG. NO./LAB NO.</b>  | : 012408130033         |
| <b>COLLECTED BY</b>   | :                                      | <b>REGISTRATION DATE</b> | : 13/Aug/2024 10:18 AM |
| <b>REFERRED BY</b>    | :                                      | <b>COLLECTION DATE</b>   | : 13/Aug/2024 10:33AM  |
| <b>BARCODE NO.</b>    | : 01515002                             | <b>REPORTING DATE</b>    | : 13/Aug/2024 12:42PM  |
| <b>CLIENT CODE.</b>   | : KOS DIAGNOSTIC LAB                   |                          |                        |
| <b>CLIENT ADDRESS</b> | : 6349/1, NICHOLSON ROAD, AMBALA CANTT |                          |                        |

| Test Name | Value | Unit | Biological Reference interval |
|-----------|-------|------|-------------------------------|
|-----------|-------|------|-------------------------------|

### ENDOCRINOLOGY

#### THYROID FUNCTION TEST: TOTAL

|                                                                                                                                           |                     |        |              |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------|--------------|
| TRIIODOTHYRONINE (T3): SERUM<br><i>by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)</i>                                               | 1.456               | ng/mL  | 0.35 - 1.93  |
| THYROXINE (T4): SERUM<br><i>by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)</i>                                                      | 6.65                | µgm/dL | 4.87 - 12.60 |
| THYROID STIMULATING HORMONE (TSH): SERUM<br><i>by CMIA (CHEMILUMINESCENT MICROPARTICLE IMMUNOASSAY)</i><br>3rd GENERATION, ULTRASENSITIVE | 20.224 <sup>H</sup> | µIU/mL | 0.35 - 5.50  |

#### INTERPRETATION:

TSH levels are subject to circadian variation, reaching peak levels between 2-4 a.m and at a minimum between 6-10 pm. The variation is of the order of 50%. Hence time of the day has influence on the measured serum TSH concentrations. TSH stimulates the production and secretion of the metabolically active hormones, thyroxine (T4) and triiodothyronine (T3). Failure at any level of regulation of the hypothalamic-pituitary-thyroid axis will result in either underproduction (hypothyroidism) or overproduction (hyperthyroidism) of T4 and/or T3.

| CLINICAL CONDITION           | T3                    | T4                    | TSH                             |
|------------------------------|-----------------------|-----------------------|---------------------------------|
| Primary Hypothyroidism:      | Reduced               | Reduced               | Increased (Significantly)       |
| Subclinical Hypothyroidism:  | Normal or Low Normal  | Normal or Low Normal  | High                            |
| Primary Hyperthyroidism:     | Increased             | Increased             | Reduced (at times undetectable) |
| Subclinical Hyperthyroidism: | Normal or High Normal | Normal or High Normal | Reduced                         |

#### LIMITATIONS:-

1. T3 and T4 circulates in reversibly bound form with Thyroid binding globulins (TBG), and to a lesser extent albumin and Thyroid binding Pre Albumin so conditions in which TBG and protein levels alter such as pregnancy, excess estrogens, androgens, anabolic steroids and glucocorticoids may falsely affect the T3 and T4 levels and may cause false thyroid values for thyroid function tests.
2. Normal levels of T4 can also be seen in Hyperthyroid patients with :T3 Thyrotoxicosis, Decreased binding capacity due to hypoproteinemia or ingestion of certain drugs (eg: phenytoin , salicylates).
3. Serum T4 levels in neonates and infants are higher than values in the normal adult , due to the increased concentration of TBG in neonate serum.
4. TSH may be normal in central hypothyroidism , recent rapid correction of hyperthyroidism or hypothyroidism , pregnancy , phenytoin therapy.

| TRIIODOTHYRONINE (T3) |                          | THYROXINE (T4)    |                           | THYROID STIMULATING HORMONE (TSH) |                           |
|-----------------------|--------------------------|-------------------|---------------------------|-----------------------------------|---------------------------|
| Age                   | Refferance Range (ng/mL) | Age               | Refferance Range ( µg/dL) | Age                               | Reference Range ( µIU/mL) |
| 0 - 7 Days            | 0.20 - 2.65              | 0 - 7 Days        | 5.90 - 18.58              | 0 - 7 Days                        | 2.43 - 24.3               |
| 7 Days - 3 Months     | 0.36 - 2.59              | 7 Days - 3 Months | 6.39 - 17.66              | 7 Days - 3 Months                 | 0.58 - 11.00              |
| 3 - 6 Months          | 0.51 - 2.52              | 3 - 6 Months      | 6.75 - 17.04              | 3 Days - 6 Months                 | 0.70 - 8.40               |



  
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| Test Name                                                    | Value       | Unit                | Biological Reference interval |
|--------------------------------------------------------------|-------------|---------------------|-------------------------------|
| 6 - 12 Months                                                | 0.74 - 2.40 | 6 - 12 Months       | 7.10 - 16.16                  |
| 1 - 10 Years                                                 | 0.92 - 2.28 | 1 - 10 Years        | 6.00 - 13.80                  |
| 11- 19 Years                                                 | 0.35 - 1.93 | 11 - 19 Years       | 4.87- 13.20                   |
| > 20 years (Adults)                                          | 0.35 - 1.93 | > 20 Years (Adults) | 4.87 - 12.60                  |
| RECOMMENDATIONS OF TSH LEVELS DURING PREGNANCY ( $\mu$ U/mL) |             |                     |                               |
| 1st Trimester                                                |             |                     | 0.10 - 2.50                   |
| 2nd Trimester                                                |             |                     | 0.20 - 3.00                   |
| 3rd Trimester                                                |             |                     | 0.30 - 4.10                   |

#### INCREASED TSH LEVELS:

- 1.Primary or untreated hypothyroidism may vary from 3 times to more than 100 times normal depending upon degree of hypofunction.
- 2.Hypothyroid patients receiving insufficient thyroid replacement therapy.
- 3.Hashimotos thyroiditis
- 4.DRUGS: Amphetamines, idonie containing agents & dopamine antagonist.
- 5.Neonatal period, increase in 1st 2-3 days of life due to post-natal surge

#### DECREASED TSH LEVELS:

- 1.Toxic multi-nodular goitre & Thyroiditis.
- 2.Over replacement of thyroid hormone in treatment of hypothyroidism.
- 3.Autonomously functioning Thyroid adenoma
- 4.Secondary pituitary or hypothalamic hypothyroidism
- 5.Acute psychiatric illness
- 6.Severe dehydration.
- 7.DRUGS: Glucocorticoids, Dopamine, Levodopa, T4 replacement therapy, Anti-thyroid drugs for thyrotoxicosis.
- 8.Pregnancy: 1st and 2nd Trimester

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



  
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