

**Dr. Vinay Chopra**  
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 Chairman & Consultant Pathologist

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

<b>NAME</b>	: Mrs. KULDEEP KAUR	<b>PATIENT ID</b>	: 1761065
<b>AGE/ GENDER</b>	: 64 YRS/FEMALE	<b>REG. NO./LAB NO.</b>	: 012502180035
<b>COLLECTED BY</b>	:	<b>REGISTRATION DATE</b>	: 18/Feb/2025 10:53 AM
<b>REFERRED BY</b>	:	<b>COLLECTION DATE</b>	: 18/Feb/2025 10:55AM
<b>BARCODE NO.</b>	: 01525717	<b>REPORTING DATE</b>	: 18/Feb/2025 01:30PM
<b>CLIENT CODE.</b>	: KOS DIAGNOSTIC LAB		
<b>CLIENT ADDRESS</b>	: 6349/1, NICHOLSON ROAD, AMBALA CANTT		

Test Name	Value	Unit	Biological Reference interval
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### CLINICAL CHEMISTRY/BIOCHEMISTRY

#### CALCIUM

CALCIUM: SERUM <i>by ARSENAZO III, SPECTROPHOTOMETRY</i>	9.56	mg/dL	8.50 - 10.60
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**INTERPRETATION:-**

1. Serum calcium (total) estimation is used for the diagnosis and monitoring of a wide range of disorders including diseases of bone, kidney, parathyroid gland, or gastrointestinal tract.
2. Calcium levels may also reflect abnormal vitamin D or protein levels.
3. The calcium content of an adult is somewhat over 1 kg (about 2% of the body weight). Of this, 99% is present as calcium hydroxyapatite in bones and <1% is present in the extra-osseous intracellular space or extracellular space (ECS).
4. In serum, calcium is bound to a considerable extent to proteins (approximately 40%), 10% is in the form of inorganic complexes, and 50% is present as free or ionized calcium.

**NOTE:-** Calcium ions affect the contractility of the heart and the skeletal musculature, and are essential for the function of the nervous system. In addition, calcium ions play an important role in blood clotting and bone mineralization.

**HYPOCALCEMIA (LOW CALCIUM LEVELS) CAUSES :-**

1. Due to the absence or impaired function of the parathyroid glands or impaired vitamin-D synthesis.
2. Chronic renal failure is also frequently associated with hypocalcemia due to decreased vitamin-D synthesis as well as hyperphosphatemia and skeletal resistance to the action of parathyroid hormone (PTH).
3. **NOTE:-** A characteristic symptom of hypocalcemia is latent or manifest tetany and osteomalacia.

**HYPERCALCEMIA (INCREASE CALCIUM LEVELS) CAUSES:-**

1. Increased mobilization of calcium from the skeletal system or increased intestinal absorption.
  2. Primary hyperparathyroidism (pHPT)
  3. Bone metastasis of carcinoma of the breast, prostate, thyroid gland, or lung.
- NOTE:-** Severe hypercalcemia may result in cardiac arrhythmia.



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TEST PERFORMED AT KOS DIAGNOSTIC LAB, AMBALA CANTT.

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<b>BARCODE NO.</b>	: 01525717	<b>REPORTING DATE</b>	: 18/Feb/2025 01:26PM
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Test Name	Value	Unit	Biological Reference interval
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**VITAMINS**

**VITAMIN D/25 HYDROXY VITAMIN D3**

VITAMIN D (25-HYDROXY VITAMIN D3): SERUM <i>by CLIA (CHEMILUMINESCENCE IMMUNOASSAY)</i>	45.379	ng/mL	DEFICIENCY: < 20.0 INSUFFICIENCY: 20.0 - 30.0 SUFFICIENCY: 30.0 - 100.0 TOXICITY: > 100.0
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**INTERPRETATION:**

<b>DEFICIENT:</b>	< 20	ng/mL
<b>INSUFFICIENT:</b>	21 - 29	ng/mL
<b>PREFERRED RANGE:</b>	30 - 100	ng/mL
<b>INTOXICATION:</b>	> 100	ng/mL

- Vitamin D compounds are derived from dietary ergocalciferol (from plants, Vitamin D2), or cholecalciferol (from animals, Vitamin D3), or by conversion of 7- dihydrocholecalciferol to Vitamin D3 in the skin upon Ultraviolet exposure.
- 25-OH--Vitamin D represents the main body reservoir and transport form of Vitamin D and transport form of Vitamin D, being stored in adipose tissue and tightly bound by a transport protein while in circulation.
- Vitamin D plays a primary role in the maintenance of calcium homeostasis. It promotes calcium absorption, renal calcium absorption and phosphate reabsorption, skeletal calcium deposition, calcium mobilization, mainly regulated by parathyroid hormone (PTH).
- Severe deficiency may lead to failure to mineralize newly formed osteoid in bone, resulting in rickets in children and osteomalacia in adults.

**DECREASED:**

- Lack of sunshine exposure.
- Inadequate intake, malabsorption (celiac disease)
- Depressed Hepatic Vitamin D 25- hydroxylase activity
- Secondary to advanced Liver disease
- Osteoporosis and Secondary Hyperparathyroidism (Mild to Moderate deficiency)
- Enzyme Inducing drugs: anti-epileptic drugs like phenytoin, phenobarbital and carbamazepine, that increases Vitamin D metabolism.

**INCREASED:**

- Hypervitaminosis D is Rare, and is seen only after prolonged exposure to extremely high doses of Vitamin D. When it occurs, it can result in severe hypercalcemia and hyperphosphatemia.

**CAUTION:** Replacement therapy in deficient individuals must be monitored by periodic assessment of Vitamin D levels in order to prevent hypervitaminosis D

**NOTE:-** Dark coloured individuals as compare to whites, is at higher risk of developing Vitamin D deficiency due to excess of melanin pigment which interfere with Vitamin D absorption.

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



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