



TECHNICAL NOTICE

SOUTH BEND MEDICAL FOUNDATION

November 2009

25-Hydroxy Vitamin D, Total, and 25-Hydroxy Vitamin D₂ and D₃

Clinical Significance:

Vitamin D is one of the fat soluble vitamins and plays a major role in calcium homeostasis. It 1) promotes the optimal intestinal absorption of dietary calcium, 2) aids Parathyroid Hormone (PTH) in mobilization of calcium from bone, and 3) stimulates PTH dependent reabsorption of calcium in the distal renal tubules. Deficiency of Vitamin D and subsequent hypocalcemia have been linked to many skeletal disorders including osteoporosis and also can be associated with non-skeletal diseases including multiple sclerosis, some forms of cancer and type 1 and type 2 diabetes. Although 25-OH-Vitamin D is further hydroxylated in the kidneys to the biologically active form, 1,25-diOH-Vitamin D, the half-life of 1,25-diOH-Vitamin D is very short and its serum levels do not correlate well with overall Vitamin D levels. **The measurement of serum 25-OH-Vitamin D is the most optimal way of evaluating the adequacy of Vitamin D in performing its important biologic functions.**

25-OH-Vitamin D in the body is composed mainly of two forms, Vitamin D₃ (cholecalciferol) and Vitamin D₂ (ergocalciferol). Vitamin D₃ is endogenously produced in the skin from the action of ultraviolet light on 7-dehydrocholesterol. It is also present in cod liver oil and some Vitamin D supplements that include the ingredient of cholecalciferol. Vitamin D₂ is NOT found naturally in animals and is manufactured by irradiating ergosterol, found in fungal membranes, by UV light. Vitamin D₂ is the predominant form of Vitamin D in prescription forms used in the U.S., particularly in high dose preparations.

Measurements of serum Vitamin D₂ and Vitamin D₃ have roles in determining 1) whether a low total 25-OH-Vitamin D is due to lack of endogenous Vitamin D₃ production and/or a defect in intestinal absorption of Vitamin D₂ or 2) to confirm that an excess of Vitamin D is mainly due to an excess in dietary supplemental Vitamin D₂. Vitamins D₂ and D₃ are available as a test separate from total 25-OH Vitamin D.

Test Specifications for

Vitamin D, 25-Hydroxy, Total, by Chemiluminescent Immunoassay (CLIA):

Specimen Requirements and Collection:

- Patient Preparation: • Fasting specimen is recommended, but not required
- Preferred Specimen: • Serum from gold top (SST) or red top (serum) tube
- Alternate Specimen: • Plasma from lavender top (EDTA) tube
- Requested Volume: • 0.5 mL Minimum Volume: • 0.3 mL
- Processing: • Immediately after centrifugation, transfer serum or plasma to separate plastic tube
- Stability: • 5 days refrigerated (2-8°C) • 9 weeks frozen (-20°C)
- Storage/Transport: • Refrigerated

Reference Range: • 25-80 ng/mL

Interpretation of Results:

- Less than 10 ng/mL: Severe deficiency
- 10–24 ng/mL: Suboptimal
- Greater than 80 ng/mL: Excess
- Consistently greater than 150 ng/mL: Toxic

Order: • Vitamin D, 25-Hydroxy, Total..... Test #: **30054**..... CPT: • 82306

Testing Schedule: • Monday-Friday • If specimen received by 8:00 am, results available by 5:00 pm same day

SOUTH BEND MEDICAL FOUNDATION

530 N. Lafayette Boulevard • South Bend, IN 46601 • (574) 234-4176
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Robert J. Tomec, M.D. • *Medical Director*

25-Hydroxy Vitamin D, Total, and 25-Hydroxy Vitamin D₂ and D₃ (continued)

Test Specifications for

Vitamin D₂ and D₃, 25-Hydroxy (includes Total), by LC-MS/MS:

Specimen Requirements and Collection:

Patient Preparation: • Fasting specimen is recommended, but not required

Preferred Specimen: • Serum from gold top (SST) or red top (serum) tube

Requested Volume: • 1.0 mL Minimum Volume: • 0.5 mL

Processing: • After clotting, centrifuge 15 minutes, immediately transfer serum to separate amber tube, and freeze

Stability: • 3 days (72 hours) refrigerated (2-8°C) and protected from light • 6 months frozen (-20°C)

Storage/Transport: • Frozen and protected from light

Reference Range: • 25-80 ng/mL

Interpretation of Results:

- Less than 10 ng/mL: Severe deficiency
- 10–24 ng/mL: Suboptimal
- Greater than 80 ng/mL: Excess
- Consistently greater than 150 ng/mL: Toxic

Order: • Vitamin D₂ and D₃, 25-Hydroxy (includes Total), by LC-MS/MS Test #: **31404** CPT: • 82306

Testing Schedule: • Tuesday and Thursday • If specimen received by 8:00 am, results available by 5:00 pm same day

Please direct questions or comments regarding this notice to William J. Kaliney, M.D., Deborah H. Sun, Ph.D., or Prentiss Jones, Ph.D., South Bend Medical Foundation, (574) 234-4176 or (800) 544-0925.