

Ordering Physician:

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Accession #: **A1102150190** Date Collected: 02/14/2011
 Order #: G1234567 Date Received: 02/15/2011
 Reference #: Date of Report: 02/15/2011
 Patient: **Sample Report**
 Date of Birth: 02/05/1962 Telephone: 7704464583
 Age: 49 Fax: 7704412237
 Sex: Female
 Reprinted: 07/08/2013
 Comment:



0031 Vitamin K Assay - Serum

High Performance Liquid Chromatography

Ranges are for ages 13 and over



1. Undercarboxylated Osteocalcin (ucOC) 13.2 **H** 3.8 ≤ 12.1

Elevated ucOC is a functional marker of vitamin K deficiency. Vitamin K is required for the carboxylation of osteocalcin (OC) in order to bind calcium. OC is a product of mature, active osteoblasts that delivers calcium to form bone matrix. When Vitamin K is low, ucOC increases. By similarly affecting other calcium-binding proteins, insufficient vitamin K may lead to longer clotting times and has been associated with increased risk of vascular calcification.

References

1. Sokoll LJ, Booth SL, O'Brian ME, Davidson KW, Tsaion KI, Sadowski JA. Changes in serum osteocalcin, plasma phylloquinone, and urinary gamma-carboxyglutamic acid in response to altered intakes of dietary phylloquinone in human subjects. *Am J Clin Nutr.* Mar 1997;65(3):779-784.
2. Koyama N, O'Hara K, Yokota H, et al. A one step sandwich enzyme immunoassay for gamma-carboxylated osteocalcin using monoclonal antibodies. *J Immunol Methods.* May 17, 1991;139(1):17-23.
3. Jie, KS, Bots ML, Vermeer C, et al. Vitamin K intake and osteocalcin levels in women with and without aortic atherosclerosis: a population-based study. *Atherosclerosis.* July 1995;116(1):117-123.
4. Beulens JW, Bots ML, Atsma F, et al. High dietary menaquinone intake is associated with reduced coronary calcification. *Atherosclerosis.* Jul 19, 2008.