

## OC (Osteocalcin) - ELISA

**Analyte:** Osteocalcin

**Specimen Type:** Serum, EDTA Plasma

**Optimum Volume:** 1 mL

**Stability:**

2-8 Degrees C	-20 Degrees C	-70 Degrees C
1h, 2d*	2 months	2 years

**Reporting Units:** ng/mL

**Method:** ELISA

**Biological or Clinical Significance:**

Osteocalcin, or bone Gla protein (BGP), is the major non-collagenous protein of bone matrix. It has a molecular weight of approximately 5800 Dalton and consists of 49 amino acids, including three residues of gamma-carboxyglutamic acid. Osteocalcin is synthesized in bone by osteoblasts. After production, it is partly incorporated into the bone matrix and partly delivered to the circulatory system. Osteocalcin has a high affinity for calcium and exhibits a compact calcium-dependent  $\alpha$ -helical conformation, in which the Gla residues promote absorption to hydroxyapatite (the primary bone mineral; calcium phosphate hydroxide) in the bone matrix. A large number of studies have shown that the circulating level of osteocalcin reflects the rate of bone formation and is associated with changes in the rate of bone turnover in metabolic bone disease such as osteoporosis, primary hyperparathyroidism, hyperthyroidism, Paget disease, and renal osteodystrophy. Determination of serum osteocalcin has proven to be valuable as an indicator of osteoblastic activity in human serum and plasma in the prevention of osteoporosis and aid in identifying women at risk of developing osteoporosis, for monitoring bone metabolism in perimenopausal and postmenopausal women, and during antiresorptive therapy.

**Principle of Test Method:**

The osteocalcin assay is an enzyme immunosorbent assay (ELISA) for the quantitation of osteocalcin.

\* Refrigerated stability is 1 hour in serum and 2 days in EDTA plasma.

**References:**

1. Carlson TH, Leary ET, Wu C, Kuo MM, Aggoune T, Chu J, and McLaughlin K. Long-term stability of osteocalcin at  $-70^{\circ}\text{C}$  determined by the Elecsys 2010 analyzer. Clin Chem, 50(Suppl): A109, (2004).
2. Rosenquist C, Qvist P, Bjarnason N and Christiansen C. Measurement of a more stable region of osteocalcin in serum by ELISA with two monoclonal antibodies. Clin Chem 1995; 41:1439-1445.
3. Takahashi M, Kushida K, Nagano A and Inoue, T. Comparison of the analytical and clinical performance characteristics of an N-MID versus an intact osteocalcin immunoradiometric assay. Clin Chim Acta 2000; 294:67-76.
4. Leary ET, Wu C, McLaughlin K, Carlson TH. N-MID osteocalcin measured by Roche Elecsys is a stable analyte. JBMR 2005; 20: S227.