



PRODUCT DATA SHEET

Product: Osteocalcin (bovine), purified

Cat. No.: BP-010 (100 µg)

Background:

Osteocalcin, also known as Bone-Gla-Protein (BGP), is a single chain vitamin K-dependent protein produced by osteoblasts and found in high concentrations in bone. Post-translational modification by a vitamin K-dependent carboxylase produces three γ -carboxyglutamic acid residues at positions 17, 21 and 24. The mature protein contains 49 amino acids and a single intra-chain disulfide bond joining Cys23 to Cys29. The secondary structure is highly calcium-dependent and contains 14% α -helix, 20% β -sheet and 67% random form in the presence of calcium, and 1% α -helix, 20% β -sheet and 79% random form in the absence of calcium.

BGP binds to phospholipids vesicles in the presence of calcium ions ($K_d=6 \times 10^{-6}$ M). BGP also binds hydroxyapatite and is an efficient inhibitor of hydroxyapatite-seeded crystal growth, suggesting a regulatory role in bone mineralization. Although the fundamental role of BGP *in vivo* remains elusive, *in vitro* experimentation suggests roles in both bone resorption and bone formation. BGP has been shown to function as a chemo-attractant in an *in vitro* macrophage-mediated bone resorption system. The serum concentration of BGP has been linked to bone formation rates, and BGP levels are currently used in research assessment of osteoporosis and other metabolic bone disease states.

Localization:

Bone, plasma

Mode of action:

Unknown

MW:

5,800

Extinction Coefficient:

$E_{1\text{ cm}, 280\text{ nm}}^{1\%} = 13.3$

Structure:

Single chain, one intra-chain disulfide bond, Cys 23-29

Isoelectric Point:

4.0-4.5

Percent Carbohydrate:

0%

Post-translational Modifications:

Three glu-residues, 17, 21, 24

Production:

Prepared from bovine bone. This involves demineralization in EDTA, size exclusion and ion exchange chromatography.

Purity:

>98% by SDS-PAGE

Format:

100 µg at 10.3 mg/mL. Supplied in 50% (vol/vol) glycerol and H₂O.

Storage:

Store at -20°C.

Limitations:

For *in vitro* research use only. Not for use in diagnostics or in humans.

Warranty:

No warranties, expressed or implied, are made regarding the use of this product. KAMIYA BIOMEDICAL COMPANY is not liable for any damage, personal injury, or economic loss caused by this product.