SANTA CRUZ BIOTECHNOLOGY, INC.

MGP (H-4): sc-271907

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Matrix Gla protein, or MGP, is a protein involved in regulating calcification in the extracellular matrix, in particular in cartilage and arteries. MGP is a vitamin K-dependent protein, and contains five to six residues of γ-carboxy-glutamic acid (Gla), a Ca^{2+} binding amino acid requiring vitamin K-dependent γ carboxylase for its formation. In humans MGP is an 84 residue protein along with a 19 amino acid transmembrane signal peptide. A shortened 77 residue form of MGP is found in human bone extracts, likely formed by COOH-terminal processing by carboxypeptidase B-like enzymatic activity. High levels of expression occur in the heart, kidney and lung, and overexpression of MGP occurs in the breast cancer cell line 600 PEI. Retinoic acid induces MGP expression in chondrocytes, fibroblasts and osteoblasts. Mutations in the gene coding for MGP can cause Keutel syndrome (KS), associated with abnormal cartilage calcification, substantiating the role of MGP in extracellular matrix calcification regulation. MGP can bind Vitronectin and Fibronectin via its carboxy-terminus, and phosphorlyation of MGP occurs near the N-terminus at three serine residues, which are part of a tandemly repeated Ser-X-Glu sequence.

REFERENCES

1. Price, P.A., et al. 1983. Matrix Gla protein, a new γ-carboxyglutamic acid-containing protein which is associated with the organic matrix of bone. Biochem. Biophys. Res. Commun. 117: 765-771.
2. Cancela, L., et al. 1990. Molecular structure, chromosome assignment, and promoter organization of the human matrix Gla protein gene. J. Biol. Chem. 265: 15040-15048.
3. Chen, L., et al. 1990. Overexpression of matrix Gla protein mRNA in malignant human breast cells: isolation by differential cDNA hybridization. Oncogene 5: 1391-1395.
4. Hale, J.E., et al. 1991. Carboxyl-terminal proteolytic processing of matrix Gla protein. J. Biol. Chem. 266: 21145-21149.
5. Price, P.A., et al. 1994. Conserved phosphorylation of serines in the Ser-X-Glu/Ser(P) sequences of the vitamin K-dependent matrix Gla protein from shark, lamb, rat, cow, and human. Protein Sci. 3: 822-830.
6. Munroe, P.B., et al. 1999. Mutations in the gene encoding the human matrix Gla protein cause Keutel syndrome. Nat. Genet. 21: 142-144.
7. Nishimoto, S.K., et al. 2005. Matrix Gla protein C-terminal region binds to vitronectin. Co-localization suggests binding occurs during tissue development. Matrix Biol. 24: 353-361.
8. Brancaccio, D., et al. 2005. Matrix GLA protein gene polymorphisms: clinical correlates and cardiovascular mortality in chronic kidney disease patients. Am. J. Nephrol. 25: 548-552.

CHROMOSOMAL LOCATION

Genetic locus: MGP (human) mapping to 12p12.3.

SOURCE

MGP (H-4) is a mouse monoclonal antibody raised against amino acids 1-103 representing full length MGP of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MGP (H-4) is recommended for detection of MGP of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MGP siRNA (h): sc-44626, MGP shRNA Plasmid (h): sc-44626-SH and MGP shRNA (h) Lentiviral Particles: sc-44626-V.

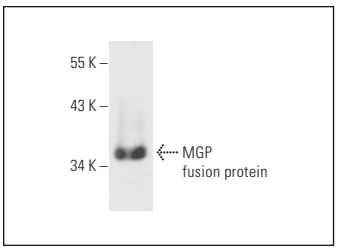
Molecular Weight of MGP: 10 kDa.

Positive Controls: SHP-77 whole cell lysate: sc-364258.

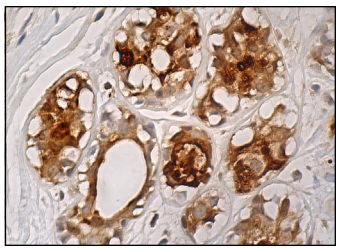
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



MGP (H-4): sc-271907. Western blot analysis of full length human recombinant MGP fusion protein.



MGP (H-4): sc-271907. Immunoperoxidase staining of formalin fixed, paraffin-embedded human breast tissue showing cytoplasmic staining of glandular cells.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.