SANTA CRUZ BIOTECHNOLOGY, INC.

MGP (R-15): sc-32821

BACKGROUND

Matrix Gla protein, or MGP, is involved in regulating calcification in the extracellular matrix, in particular in cartilage and arteries. MGP is a vitamin K-dependent protein containing five to six residues of g-carboxy-glutamic acid (Gla), a Ca^{2+} binding amino acid requiring vitamin K-dependent g 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 heart, kidney and lung, and over-expression 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 C-terminus; 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.

CHROMOSOMAL LOCATION

Genetic locus: MGP (human) mapping to 12p13.1-p12.3; Mgp (mouse) mapping to 6 G1.

SOURCE

MGP (R-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of MGP of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-32821 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

MGP (R-15) is recommended for detection of MGP of human and, to a lesser extent, mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (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 siRNA (m): sc-44627, MGP siRNA (r): sc-270356, MGP shRNA Plasmid (h): sc-44626-SH, MGP shRNA Plasmid (m): sc-44627-SH, MGP shRNA Plasmid (r): sc-270356-SH, MGP shRNA (h) Lentiviral Particles: sc-44626-V, MGP shRNA (m) Lentiviral Particles: sc-44627-V and MGP shRNA (r) Lentiviral Particles: sc-270356-V.

Molecular Weight of MGP: 10 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.