SANTA CRUZ BIOTECHNOLOGY, INC.

MGP (52.1#1): sc-81546

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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, and contains 5 to 6 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. and Nishimoto, M. 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.
9. SWISS-PROT/TrEMBL (127074). World Wide Web URL: http://www.expasy.ch/sprot/sprot-top.html

CHROMOSOMAL LOCATION

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

RESEARCH USE

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

SOURCE

MGP (52.1#1) is a mouse monoclonal antibody raised against amino acids 22-34 (SHESMESYELNPF) of MGP of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 500 µl of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

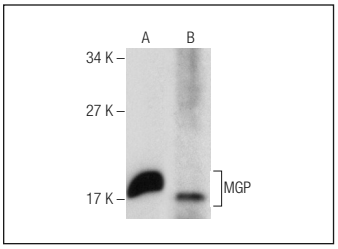
MGP (52.1#1) is recommended for detection of carboxylated and non-carboxylated MGP, also designated matrix Gla protein, of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

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 or human kidney extract: sc-363764.

DATA



MGP (52.1#1): sc-81546. Western blot analysis of MGP expression in SHP-77 whole cell lysate (**A**) and human kidney tissue extract (**B**).

SELECT PRODUCT CITATIONS

1. Du, Y., et al. 2012. Multipotent stem cells from trabecular meshwork become phagocytic TM cells. Invest. Ophthalmol. Vis. Sci. 53: 1566-1575.
2. Wang, W., et al. 2016. A novel molecular and clinical staging model to predict survival for patients with esophageal squamous cell carcinoma. Oncotarget 7: 63526-63536

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 for detailed protocols and support products.