SANTA CRUZ BIOTECHNOLOGY, INC.

β-casein (F20.14): sc-53189

BACKGROUND

Milk proteins are crucial for the development of all newborn mammals and caseins constitute the major proteins in mammalian milk. β- and κ-caseins are the only caseins present in human milk. The β-casein/κ-casein ratio is higher in colostrum than in transitional and mature milk and is related to a better digestibility of colostrum casein micelles by the neonate during the first days of life. Human β-casein-encoding gene (Bca) contains a highly phosphorylated site, which is responsible for the calcium-binding capacity of β-casein. A common set of transcription factors are required for the expression of β-casein. Multiple binding sites for Stat5, C/EBP β (CCAAT/enchancer-binding protein) and several half-sites for glucocorticoid receptor (GR) are identified in the distal human enhancer of the β-casein gene. β-casein gene transcription is regulated primarily by a composite response element (CoRE), which integrates signaling from the lactogenic hormones PRL, Insulin and hydrocortisone in mammary epithelial cells. NFκB functions as a negative regulator of β-casein gene expression during pregnancy by interfering with Stat5 tyrosine phosphorylation.

REFERENCES

1. Greenberg, R., et al. 1984. Human β-casein. Amino acid sequence and identification of phosphorylation sites. J. Biol. Chem. 259: 5132-5138.
2. Burchell, J., et al. 1985. Production and characterization of monoclonal antibodies to human casein. A monoclonal antibody that cross-reacts with casein and α-lactalbumin. Hybridoma 4: 341-350.
3. Lonnerdal, B., et al. 1990. Cloning and sequencing of a cDNA encoding human milk β-casein. FEBS Lett. 269: 153-156.
4. Menon, R.S., et al. 1992. Regional localization of human β-casein gene (CSN2) to 4pter-q21. Genomics 13: 25-26.
5. Hansson, L., et al. 1994. Structure of the human β-casein encoding gene. Gene 139: 193-199.
6. Winklehner-Jennewein, P., et al. 1998. A distal enhancer region in the human β-casein gene mediates the response to prolactin and glucocorticoid hormones. Gene 217: 127-139.
7. Cuilliere, M.L., et al. 1999. Changes in the κ-casein and β-casein concentrations in human milk during lactation. J. Clin. Lab. Anal. 13: 213-218.
8. Lykos, M.A., et al. 2000. Autocrine Insulin-like growth factor II inhibits β-casein mRNA expression in a mammary cell line. J. Dairy Sci. 83: 285-295.
9. Wyszomierski, S.L. and Rosen, J.M. 2001. Cooperative effects of Stat5 (signal transducer and activator of transcription 5) and C/EBP β (CCAAT/enhancer-binding protein-β) on β-casein gene transcription are mediated by the glucocorticoid receptor. Mol. Endocrinol. 15: 228-240.

CHROMOSOMAL LOCATION

Genetic locus: CSN2 (human) mapping to 4q13.3.

SOURCE

β-casein (F20.14) is a mouse monoclonal antibody raised against purified human casein.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

β-casein (F20.14) is available conjugated to agarose (sc-53189 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-53189 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-53189 PE), fluorescein (sc-53189 FITC), Alexa Fluor® 488 (sc-53189 AF488), Alexa Fluor® 546 (sc-53189 AF546), Alexa Fluor® 594 (sc-53189 AF594) or Alexa Fluor® 647 (sc-53189 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-53189 AF680) or Alexa Fluor® 790 (sc-53189 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

β-casein (F20.14) is recommended for detection of β-casein of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for β-casein siRNA (h): sc-40384, β-casein shRNA Plasmid (h): sc-40384-SH and β-casein shRNA (h) Lentiviral Particles: sc-40384-V.

Molecular Weight of β-casein: 29 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, BT-20 cell lysate: sc-2223 or MDA-MB-231 cell lysate: sc-2232.

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) 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.

SELECT PRODUCT CITATIONS

1. Hassiotou, F., et al. 2013. Expression of the pluripotency transcription factor OCT4 in the normal and aberrant mammary gland. Front. Oncol. 3: 79.
2. Peters, A.A., et al. 2016. The calcium pump plasma membrane Ca^{2+}-ATPase 2 (PMCA2) regulates breast cancer cell proliferation and sensitivity to doxorubicin. Sci. Rep. 6: 25505.

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.