SANTA CRUZ BIOTECHNOLOGY, INC.

α-lactalbumin siRNA (h): sc-72407

BACKGROUND

α-lactalbumin is the B protein of lactose synthetase secreted by the mammary epithelial cells. It is a potent Ca^{2+}-elevating and apoptosis-inducing agent with broad, yet selective, cytotoxic activity. Multimeric α-lactalbumin has been shown to kill all transformed, embryonic and lymphoid cells tested, but not mature epithelial elements. This suggests that milk contributes to mucosal immunity not only by furnishing antimicrobial molecules but also by policing the function of lymphocytes and epithelium. α-lactalbumin may be helpful in discovering the site of origin of metastatic breast tumors. Human lactalbumin contains 123 amino acid residues. Comparison of the 5' flanking sequences of the two α-lactalbumin genes with those of five casein genes reveals the presence of a highly conserved region extending from position-140 to -110 in all seven sequences examined, suggesting a possible regulatory role in the hormonal control or tissue-specific expression of milk protein genes in the mammary gland.

REFERENCES

1. 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.
2. Anema, S.G., et al. 2006. Effect of protein, nonprotein-soluble components, and lactose concentrations on the irreversible thermal denaturation of β-lactoglobulin and α-lactalbumin in skim milk. J. Agric. Food Chem. 54: 7339-7348.
3. Barros, R.M., et al. 2006. Molecular characterization of peptides released from β-lactoglobulin and α-lactalbumin via cardosins A and B. J. Dairy. Sci. 89: 483-494.
4. Biziulevicius, G.A., et al. 2006. Food-protein enzymatic hydrolysates possess both antimicrobial and immunostimulatory activities: a "cause and effect" theory of bifunctionality. FEMS. Immunol. Med. Microbiol. 46: 131-138.

CHROMOSOMAL LOCATION

Genetic locus: LALBA (human) mapping to 12q13.11.

PRODUCT

α-lactalbumin siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see α-lactalbumin shRNA Plasmid (h): sc-72407-SH and α-lactalbumin shRNA (h) Lentiviral Particles: sc-72407-V as alternate gene silencing products.

For independent verification of α-lactalbumin (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-72407A, sc-72407B and sc-72407C.

PROTOCOLS

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

α-lactalbumin siRNA (h) is recommended for the inhibition of α-lactalbumin expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

α-lactalbumin (H-1): sc-393900 is recommended as a control antibody for monitoring of α-lactalbumin gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor α-lactalbumin gene expression knockdown using RT-PCR Primer: α-lactalbumin (h)-PR: sc-72407-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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