SANTA CRUZ BIOTECHNOLOGY, INC.

CatSper4 (D-15): sc-83123

BACKGROUND

CatSpers (cation channel, sperm associated proteins) are ion transport proteins located on the surface of sperm cells in the principal piece of the sperm tail. CatSpers are vital to sperm motility, fertilization and cAMP-mediated calcium influx in sperm. There are four CatSper proteins in mammalian sperm, namely CatSper (or CatSper1), CatSper2, CatSper3 and CatSper4. CatSper proteins contain a single, six-transmembrane-spanning segment and exhibit the voltage-dependent Ca^{2+} channel four-repeat structure. CatSper proteins are believed to assemble into a heterotetrameric complex, forming an alkalinization-activated Ca^{2+}-selective channel. Mutations in any of the genes encoding CatSper family proteins can result in male infertility. CatSper3 plays an important role in the hyperactivated motility of sperm cells, a process that is required in the preparation of sperm for fertilization.

REFERENCES

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2. Zhang, D., et al. 2006. Association of CatSper1 or 2 with Ca(v)3.3 leads to suppression of T-type calcium channel activity. J. Biol. Chem. 281: 22332-22341.
3. Jin, J., et al. 2007. CatSper3 and CatSper4 are essential for sperm hyperactivated motility and male fertility in the mouse. Biol. Reprod. 77: 37-44.
4. Xia, J., et al. 2007. CATSPER channel-mediated Ca^{2+} entry into mouse sperm triggers a tail-to-head propagation. Biol. Reprod. 77: 551-559.
5. Liu, J., et al. 2007. CatSperbeta, a novel transmembrane protein in the CatSper channel complex. J. Biol. Chem. 282: 18945-18952.
6. Li, H.G., et al. 2007. Expression of CatSper family transcripts in the mouse testis during post-natal development and human ejaculated spermatozoa: relationship to sperm motility. Mol. Hum. Reprod. 13: 299-306.
7. Marquez, B., et al. 2007. Contributions of extracellular and intracellular Ca^{2+} to regulation of sperm motility: Release of intracellular stores can hyperactivate CatSper1 and CatSper2 null sperm. Dev. Biol. 303: 214-221.
8. Qi, H., et al. 2007. All four CatSper ion channel proteins are required for male fertility and sperm cell hyperactivated motility. Proc. Natl. Acad. Sci. USA 104: 1219-1223.

CHROMOSOMAL LOCATION

Genetic locus: CATSPER4 (human) mapping to 1p36.11; Catsper4 (mouse) mapping to 4 D3.

SOURCE

CatSper4 (D-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of CatSper4 of human origin.

STORAGE

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

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-83123 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

CatSper4 (D-15) is recommended for detection of CatSper4 of mouse, rat and human 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); non cross-reactive with family members CatSper, CatSper2, or CatSper3.

CatSper4 (D-15) is also recommended for detection of CatSper4 in additional species, including equine and bovine.

Suitable for use as control antibody for CatSper4 siRNA (h): sc-72813, CatSper4 siRNA (m): sc-72814, CatSper4 shRNA Plasmid (h): sc-72813-SH, CatSper4 shRNA Plasmid (m): sc-72814-SH, CatSper4 shRNA (h) Lentiviral Particles: sc-72813-V and CatSper4 shRNA (m) Lentiviral Particles: sc-72814-V.

Molecular Weight of CatSper4: 51 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.

RESEARCH USE

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

PROTOCOLS

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