

Orexin-A (KK09): sc-80263

BACKGROUND

The hypothalamus is essential for maintaining homeostasis by integrating the vertebrate endocrine and nervous systems, thereby controlling temperature, thirst and hunger. Orexin-A and Orexin-B (also designated hypocretins) are hypothalamic neuropeptides that are derived from a single precursor, preproorexin, by proteolytic processing. These peptides bind to and activate two closely related, G protein-coupled receptors, designated Orexin receptor-1 (Orexin R-1) and Orexin receptor-2 (Orexin R-2). Orexin-A protein and prepro-orexin mRNA are localized to neurons within the lateral section of the hypothalamus, designated the "feeding center". Prepro-orexin mRNA is up-regulated during fasting, suggesting that orexins may play a role in the central feedback mechanism that regulates feeding behavior. Orexin has been shown to increase the release of GABA and glutamate from axons, a response seen as a result of most synaptic activities in the hypothalamic region.

REFERENCES

1. Campbell, N. 1990. Biology, 2nd ed. Redwood City, CA: The Benjamin/Cummings Publishing Company, Inc., 916-921.
2. Sakurai, T., et al. 1998. Orexins and orexin receptors: a family of hypothalamic neuropeptides and G protein-coupled receptors that regulate feeding behavior. *Cell* 92: 573-585.
3. de Lecea, L., et al. 1998. The hypocretins: hypothalamus-specific peptides with neuroexcitatory activity. *Proc. Natl. Acad. Sci. USA* 95: 322-327.

CHROMOSOMAL LOCATION

Genetic locus: HCRT (human) mapping to 17q21.2; Hcrt (mouse) mapping to 11 D.

SOURCE

Orexin-A (KK09) is a mouse monoclonal antibody raised against amino acids 34-66 of Orexin-A of human origin.

PRODUCT

Each vial contains 50 µg IgG₁ kappa light chain in 0.5 ml of PBS with < 0.1% sodium azide and protein stabilizer.

APPLICATIONS

Orexin-A (KK09) is recommended for detection of Orexin-A of mouse, rat and 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); non cross-reactive with Orexin-B.

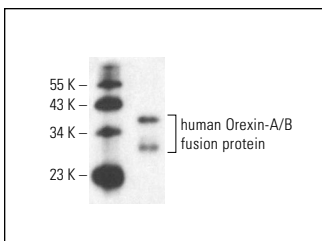
Suitable for use as control antibody for Orexin-A/B siRNA (h): sc-42152, Orexin-A/B siRNA (m): sc-42153, Orexin-A/B shRNA Plasmid (h): sc-42152-SH, Orexin-A/B shRNA Plasmid (m): sc-42153-SH, Orexin-A/B shRNA (h) Lentiviral Particles: sc-42152-V and Orexin-A/B shRNA (m) Lentiviral Particles: sc-42153-V.

Molecular Weight of Orexin-A: 13 kDa.

STORAGE

For immediate and continuous use, store at 4° C for up to one month. For sporadic use, freeze in working aliquots in order to avoid repeated freeze/thaw cycles. If turbidity is evident upon prolonged storage, clarify solution by centrifugation.

DATA



Orexin-A (KK09): sc-80263. Western blot analysis of human recombinant Orexin-A/B fusion protein. Detection reagent used: m-IgGκ: BP-HRP (Cruz Marker): sc-516102-CM.

SELECT PRODUCT CITATIONS

1. Maolood, N., et al. 2010. Nociceptin/orphanin FQ peptide in hypothalamic neurones associated with the control of feeding behaviour. *J. Neuroendocrinol.* 22: 75-82.
2. Meister, B., et al. 2013. Delta-like 1 homologue is a hypothalamus-enriched protein that is present in orexin-containing neurones of the lateral hypothalamic area. *J. Neuroendocrinol.* 25: 617-625.
3. Kastman, H.E., et al. 2016. Nucleus incertus Orexin2 receptors mediate alcohol seeking in rats. *Neuropharmacology* 110: 82-91.
4. Suo, L., et al. 2018. The Orexin-A-regulated Akt/mTOR pathway promotes cell proliferation through inhibiting apoptosis in pancreatic cancer cells. *Front. Endocrinol.* 9: 647.
5. Zhan, S., et al. 2019. Molecular mechanism of tumour necrosis factor α regulates hypocretin (orexin) expression, sleep and behaviour. *J. Cell. Mol. Med.* 23: 6822-6834.
6. Takahashi, T.M., et al. 2020. A discrete neuronal circuit induces a hibernation-like state in rodents. *Nature* 583: 109-114.
7. Wang, Y., et al. 2021. EASI-FISH for thick tissue defines lateral hypothalamus spatio-molecular organization. *Cell* 184: 6361-6377.e24.
8. Duffet, L., et al. 2022. A genetically encoded sensor for *in vivo* imaging of orexin neuropeptides. *Nat. Methods* 19: 231-241.
9. Nakamoto, K., et al. 2023. Nicotine suppresses central post-stroke pain via facilitation of descending noradrenergic neuron through activation of orexinergic neuron. *Eur. J. Pharmacol.* 943: 175518.

RESEARCH USE

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