

Product data sheet



MedKoo Cat#: 319857 Name: Sobetirome CAS#: 211110-63-3 Chemical Formula: C ₂₀ H ₂₄ O ₄ Exact Mass: 328.1675 Molecular Weight: 328.41	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Sobetirome, also known as GC-1 and QRX-431, is a thyroid hormone receptor β (TR β) agonist. Sobetirome inhibits proliferation but induces differentiation and TR β mRNA expression in mouse and rat osteoblast-like cells. Sobetirome selectively binds to and activates TR β over TR α and this receptor selectivity led to the hypothesis that sobetirome would lower cholesterol through activation of liver TR β without stimulating cardiac function through TR α activation in the heart. The tissue selective thyromimetic properties of sobetirome have been demonstrated in numerous animal models, which led to its clinical development as a novel cholesterol-lowering agent.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under “QC And Documents” section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	100	304.51

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.04 mL	15.22 mL	30.45 mL
5 mM	0.61 mL	3.04 mL	6.09 mL
10 mM	0.30 mL	1.52 mL	3.04 mL
50 mM	0.06 mL	0.30 mL	0.61 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of “Calculator”

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

- Mészáros L, Himmler M, Schneider Y, Arnold P, Dörje F, Schubert DW, Winkler J. Sobetirome rescues α -synuclein-mediated demyelination in an in vitro model of multiple system atrophy. *Eur J Neurosci*. 2024 Jan;59(2):308-315. doi: 10.1111/ejn.16215. Epub 2023 Dec 12. PMID: 38086536.
- Gu HJ, Ahn JS, Ahn GJ, Shin SH, Ryu BY. Restoration of PM2.5-induced spermatogonia GC-1 cellular damage by parthenolide via suppression of autophagy and inflammation: An in vitro study. *Toxicology*. 2023 Nov;499:153651. doi: 10.1016/j.tox.2023.153651. Epub 2023 Oct 17. PMID: 37858773.

In vivo study

- Bohlen JF, Cleary CM, Das D, Sripathy SR, Sadowski N, Shim G, Kenney RF, Buchler IP, Banerji T, Scanlan TS, Mulkey DK, Maher BJ. Promyelinating drugs promote functional recovery in an autism spectrum disorder mouse model of Pitt-Hopkins syndrome. *Brain*. 2023 Aug 1;146(8):3331-3346. doi: 10.1093/brain/awad057. PMID: 37068912; PMCID: PMC10393406.

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2. Pourvali K, Shimi G, Ghorbani A, Shakery A, Shirazi FH, Zand H. Selective thyroid hormone receptor beta agonist, GC-1, is capable to reduce growth of colorectal tumor in syngeneic mouse models. J Recept Signal Transduct Res. 2022 Oct;42(5):495-502. doi: 10.1080/10799893.2022.2032748. Epub 2022 Apr 27. PMID: 35473566.

7. Bioactivity

Biological target:

Sobetirome is a thyroid hormone receptor β (TR β)-specific agonist which bind selectively to TR β -1 with an EC50 of 0.16 μ M.

In vitro activity

Sobetirome may be a promising thyromimetic compound targeting an important neuropathological hallmark of multiple system atrophy (MSA), a rare and rapidly progressive atypical Parkinsonian disorder. Sobetirome enhanced the production of myelin-related proteins in both normal and MSA-related cells. It also increased myelin length and quantity in oligodendrocytes.

Reference: Eur J Neurosci. 2024 Jan;59(2):308-315. <https://pubmed.ncbi.nlm.nih.gov/38086536/>

In vivo activity

Specific activation of TR β by sobetirome impeded tumor growth and restored gene expression in colorectal cancer (CRC) tumors in mice. Tumor growth analysis showed that sobetirome profoundly inhibited tumor growth and ¹⁸F-FDG uptake. TR β expression was decreased in CRC tumors; however, it was upregulated by sobetirome administration.

Reference: J Recept Signal Transduct Res. 2022 Oct;42(5):495-502. <https://pubmed.ncbi.nlm.nih.gov/35473566/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.