



上海源叶生物科技有限公司
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产品名称: **Sobetirome**
产品别名: **GC-1; QRX-431**

生物活性:				
Description	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.			
IC ₅₀ & Target	EC50: 0.16 μ M (TR β -1), 0.58 μ M (TR α -1)[1]			
In Vivo	Sobetirome (GC-1) is a thyroid hormone receptor β (TR β)- and liver uptake-selective agonist. Sobetirome (48 nmol/kg) reduces high-density lipoprotein (HDL) cholesterol and very low-density lipoprotein (VLDL) triglyceride levels in euthyroid Mice. Sobetirome reduces HDL cholesterol and triglyceride Levels in hypercholesterolemic mice. Sobetirome increases hepatic HDL receptors and stimulates bile acid synthesis in hypercholesterolemic mice[2]. Treatment with 10 $\times$ Sobetirome (GC-1) results in a gain of fat mass of only 21% (1.7 g), and treatment with 20 $\times$ Sobetirome (GC-1) induces a decrease in fat mass of 20% (1.3 g)[3].			
Solvent&Solubility	In Vitro: Methanol : 125 mg/mL (380.63 mM; Need ultrasonic) DMSO : 100 mg/mL (304.51 mM; Need ultrasonic)			
		Solvent Concentration	Mass	
	Preparing	1 mM	3.0451 mL	15.2253 mL
	Stock Solutions	5 mM	0.6090 mL	3.0451 mL
		10 mM	0.3045 mL	1.5225 mL
	*请根据产品在不同溶剂中的溶解度选择合适的溶剂配制储备液; 一旦配成溶液, 请分装保存, 避免反复冻融造成的产品失效。			
	储备液的保存方式和期限 -80°C, 6 months; -20°C, 1 month。 -80°C 储存时, 请在 6 个月内使用, -20°C 储存时, 请在 1 个月内使用。			
	In Vivo: 请根据您的实验动物和给药方式选择适当的溶解方案。以下溶解方案都请先按照 In Vitro 方式配制澄清的储备液, 再依次添加助溶剂:			
	——为保证实验结果的可靠性, 澄清的储备液可以根据储存条件, 适当保存; 体内实验的工作液, 建议您现用现配, 当天使用; 以下溶剂前显示的百分比是指该溶剂在您配制终溶液中的体积占比; 如在配制过程中出现沉淀、析出现象, 可以通过加热和/或超声的方式助溶			
	1.请依序添加每种溶剂: 10% DMSO→40% PEG300 →5% Tween-80 → 45% saline Solubility: $\geq$ 2.5 mg/mL (7.61 mM); Clear solution 此方案可获得 $\geq$ 2.5 mg/mL (7.61 mM, 饱和度未知) 的澄清溶液。 以 1 mL 工作液为例, 取 100 μ L 25.0 mg/mL 的澄清 DMSO 储备液加到 400 μ L PEG300 中, 混合均匀; 向上述体系中加入 50 μ L Tween-80, 混合均匀; 然后继续加入 450 μ L 生理盐水定容至 1 mL。			
	2.请依序添加每种溶剂: 10% DMSO→ 90% (20% SBE- β -CD in saline) Solubility: $\geq$ 2.5 mg/mL (7.61 mM); Clear solution 此方案可获得 $\geq$ 2.5 mg/mL (7.61 mM, 饱和度未知) 的澄清溶液。			



	以 1 mL 工作液为例, 取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 20% 的 SBE-β-CD 生理盐水溶液中, 混合均匀。 3.请依序添加每种溶剂: 10% DMSO $\rightarrow$ 90% corn oil Solubility: $\geq$ 2.5 mg/mL (7.61 mM); Clear solution 此方案可获得 $\geq$ 2.5 mg/mL (7.61 mM, 饱和度未知) 的澄清溶液, 此方案不适用于实验周期在半个月以上的实验。 以 1 mL 工作液为例, 取 100 μL 25.0 mg/mL 的澄清 DMSO 储备液加到 900 μL 玉米油中, 混合均匀。
References	[1]. Gierach I, et al. Bacterial biosensors for screening isoform-selective ligands for human thyroid receptors α-1 and β-1. FEBS Open Bio. 2012 Aug 15;2:247-53. [2]. Johansson L, et al. Selective thyroid receptor modulation by GC-1 reduces serum lipids and stimulates steps of reverse cholesterol transport in euthyroid mice. Proc Natl Acad Sci U S A. 2005 Jul 19;102(29):10297-302. [3]. Villicev CM, et al. Thyroid hormone receptor beta-specific agonist GC-1 increases energy expenditure and prevents fat-mass accumulation in rats. J Endocrinol. 2007 Apr;193(1):21-9.
实验参考:	
Animal Administration	Mice[2] One hundred eighteen male C57BL/6 mice, 3 months old, are kept in standardized conditions with free access to water and normal chow. 3,5,3'-triiodo-L-thyronine (T_3) or Sobetirome is administered i.p. in 20% DMSO or propylene glycol for 8 days, once daily at 9:00 a.m.; controls receive vehicle. In one experiment, nine groups of six mice are treated with vehicle, or 5.4, 24, 48, and 97 nmol/kg per day of T_3 or Sobetirome. The lowest dose of T_3 induces euthyroidism in hypothyroid mice. In another experiment, one group of seven mice is given no additional supplementation; three groups of seven mice receive 10% corn oil and 2% cholesterol (cholesterol diet); and three groups of seven mice receive 10% corn oil, 2% cholesterol, and 0.5% cholic acid (cholic acid diet). For this experiment, mice are treated with vehicle or 97 nmol/kg per day Sobetirome or T_3. Food is withdrawn 5 h before kill. Blood is drawn by cardiac puncture under light isoflurane anesthesia. Animals are killed by cervical dislocation. Livers are immediately frozen in liquid nitrogen. For analysis of bile acid excretion, three groups of five chow-fed mice are treated with vehicle, 48 nmol/kg per day of Sobetirome, or T_3 for 5 days. Feces are collected group-wise 24 h before treatment and in the last 24 h of the experiment. Rats[3] Female Wistar rats are randomly divided into five groups (n=8 per group): (i) control, treated with saline; (ii) $10\times T_3$, treated with 3 μg T_3/100 g body weight (BW) per day, which is equivalent to ten times the physiological dose of T_3; (iii) $20\times T_3$, treated with double of the previous T_3 dosage (6 μg T_3/100 g body weight (BW) per day); (iv) $10\times$ Sobetirome, treated with 1.5 μg Sobetirome/100 g BW per day and (v) $20\times$ Sobetirome, treated with 3 μg Sobetirome/100 g BW per day. The latter two groups are treated with Sobetirome in equimolar doses of $10\times T_3$ and $20\times T_3$ respectively. The equimolar doses of Sobetirome are calculated from the molecular mass of T_3 (mol mass=651) and Sobetirome (mol mass=328.4). T_3 is dissolved in 40 mM NaOH, and Sobetirome is dissolved in



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	DMSO to a concentration of 1 mg/mL; either T ₃ or Sobetirome are then diluted in saline and administered i.p. every day for 6 weeks. BW is measured thrice a week. Body length (nose to base of the tail) is determined at the end of the experimental period.
References	[1]. Gierach I, et al. Bacterial biosensors for screening isoform-selective ligands for human thyroid receptors α-1 and β-1. FEBS Open Bio. 2012 Aug 15;2:247-53. [2]. Johansson L, et al. Selective thyroid receptor modulation by GC-1 reduces serum lipids and stimulates steps of reverse cholesterol transport in euthyroid mice. Proc Natl Acad Sci U S A. 2005 Jul 19;102(29):10297-302. [3]. Villicev CM, et al. Thyroid hormone receptor beta-specific agonist GC-1 increases energy expenditure and prevents fat-mass accumulation in rats. J Endocrinol. 2007 Apr;193(1):21-9.



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