L-Thyroxine sodium

Cat. No.: HY-18341B

CAS No.: 55-03-8

Molecular Formula: $C_{15}H_{10}I_4NNaO_4$

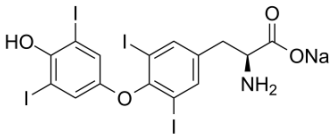
Molecular Weight: 798.85

Target: Thyroid Hormone Receptor

Pathway: Others

Storage: 4°C, protect from light

* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 250 mg/mL (312.95 mM; Need ultrasonic)

H_2O : 14 mg/mL (17.53 mM; ultrasonic and adjust pH to 12 with NaOH)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	1.2518 mL	6.2590 mL	12.5180 mL
	5 mM	0.2504 mL	1.2518 mL	2.5036 mL
	10 mM	0.1252 mL	0.6259 mL	1.2518 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (2.60 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

L-Thyroxine sodium (Levothyroxine sodium) is a synthetic hormone for the research of hypothyroidism. DIO enzymes convert biologically active thyroid hormone (Triiodothyronine,T3) from L-Thyroxine (T4)[1].

In Vivo

Deiodinases (DIOs), which catalyse the conversion of thyroxine (pro-hormone) to the active thyroid hormone, are associated with thyroid stimulating hormone (TSH) levels. DIO1 and DIO2 catalyze activation of thyroid hormone secretion in contrast to DIO3 playing role inactivation of the secretion. Activities of DIO1 and DIO2 play pivotal role in the negative feedback regulation of pituitary TSH secretion[1]. L-Thyroxine (T4) and Triiodothyronine (T3) hormones are known to modulate the expression of ionic channels, pumps and regulatory contractile proteins. Moreover, thyroid hormones have been shown to influence calcium homeostasis and flux responsible for excitation and contractility, with L-Thyroxine and Triiodothyronine modulating its pharmacological control and secretion. In rats fed 12 weeks with the iodine-free diet, a significant decrease in the levels of both Triiodothyronine and L-Thyroxine is observed when compared to the control group fed with standard diet ($p<0.001$). In the group treated with low doses of L-Thyroxine, an increase in L-Thyroxine levels is observed ($p=0.02$) while

	Triiodothyronine levels remain virtually similar to the control group (p=0.19). Rats treated with high doses of L-Thyroxine display a significant increase in both Triiodothyronine and L-Thyroxine circulating concentrations compared to the non-treated hypothyroid group (p<0.001 and p=0.004, respectively) and a significant increase in L-Thyroxine levels when compared to the control values (p=0.03)[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Arici M, et al. Association between genetic polymorphism and levothyroxine bioavailability in hypothyroid patients. Endocr J. 2018 Mar 28;65(3):317-323.

[2]. Corriveau S, et al. Levothyroxine treatment generates an abnormal uterine contractility patterns in an in vitro animalmodel. J Clin Transl Endocrinol. 2015 Sep 9;2(4):144-149.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA