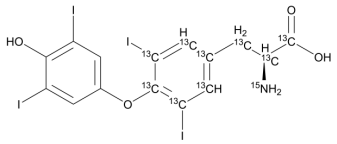
L-Thyroxine-$^{13}C_6$,^{15}N

Cat. No.:	HY-18341S3
CAS No.:	1431868-11-9
Molecular Formula:	$C_6{}^{13}C_9H_{11}I_4{}^{15}NO_4$
Molecular Weight:	786.8
Target:	Isotope-Labeled Compounds
Pathway:	Others
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	L-Thyroxine-$^{13}C_6$,^{15}N is the $^{13}C_6$ ans ^{15}N labeled L-Thyroxine (HY-18341)[1].
In Vitro	Stable heavy isotopes of hydrogen, carbon, and other elements have been incorporated into drug molecules, largely as tracers for quantitation during the drug development process. Deuteration has gained attention because of its potential to affect the pharmacokinetic and metabolic profiles of drugs[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
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[2]. 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 ($p=0.03$)[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Russak EM, et al. Impact of Deuterium Substitution on the Pharmacokinetics of Pharmaceuticals. Ann Pharmacother. 2019 Feb;53(2):211-230.

Caution: Product has not been fully validated for medical applications. For research use only.

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