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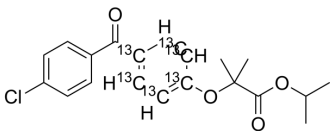
Fenofibrate-$^{13}C_6$

Cat. No.:	HY-17356S2
CAS No.:	1261395-55-4
Molecular Formula:	$C_{14}{}^{13}C_6H_{21}ClO_4$
Molecular Weight:	366.79
Target:	Cytochrome P450; PPAR; Autophagy; Isotope-Labeled Compounds
Pathway:	Metabolic Enzyme/Protease; Cell Cycle/DNA Damage; Vitamin D Related/Nuclear Receptor; Autophagy; Others
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Fenofibrate-13C6 is a deuterated labeled Fenofibrate[1]. Fenofibrate is a selective PPARα agonist with an EC_{50} of 30 μM. Fenofibrate also inhibits human cytochrome P450 isoforms, with IC_{50}s of 0.2, 0.7, 9.7, 4.8 and 142.1 μM for CYP2C19, CYP2B6, CYP2C9, CYP2C8, and CYP3A4, respectively.
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]. Fenofibrate is a relatively potent inhibitor of CYP2B6 (IC_{50}=0.7±0.2 μM) and CYP2C19 (IC_{50}=0.2±0.1 μM). Fenofibrate is also a moderate inhibitor of CYP2C8 (IC_{50}=4.8±1.7 μM) and CYP2C9 (IC_{50}=9.7 μM)[2]. Fenofibrate binds to and inhibits cytochrome P450 epoxygenase (CYP)2C with higher affinity than to PPARα. Fenofibrate is a well-known PPARα agonist, but an in vitro assessment of 209 frequently prescribed drugs and related xenobiotics suggests that Fenofibrate is also a potent inhibitor of cytochrome P450 epoxygenase (CYP)2C. The affinity of Fenofibrate to CYP2C is >10 times higher (EC_{50}=2.39±0.4 μM) than to PPARα (EC_{50}=30 μM). Fenofibrate at a low dose inhibits CYP2C8 activity without PPARα activation[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Daily intake of Fenofibrate at this low dose (10 μg/g/day) inhibits retinal and choroidal neovascularization induced by CYP2C8 overexpression by 29% (P=0.021) and 36% ($P=1.2\times10^{?9}$) respectively[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Gong Y, et al. Fenofibrate Inhibits Cytochrome P450 Epoxygenase 2C Activity to Suppress Pathological Ocular Angiogenesis. EBioMedicine. 2016 Sep 30. pii: S2352-3964(16)30448-0.

[2]. Schelleman H, et al. Pharmacoepidemiologic and in vitro evaluation of potential drug-drug interactions of sulfonylureas with fibrates and statins. Br J Clin Pharmacol. 2014 Sep;78(3):639-48.

[3]. Russak EM, et al. Impact of Deuterium Substitution on the Pharmacokinetics of Pharmaceuticals. Ann Pharmacother. 2019 Feb;53(2):211-216.

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

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