
Product Data Sheet

Product Name: Roflumilast-d4 N-Oxide

Cat. No.: GC68325

Chemical Properties

Cas. No. 1794760-31-8

Formula $C_{17}H_{10}D_4Cl_2F_2N_2O_4$

M.Wt 423.23

Solubility

Storage

Store at -20°C

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure

Background

Roflumilast-d4 N-Oxide is the deuterium labeled Roflumilast. Roflumilast is a selective **PDE4** inhibitor with **IC₅₀**s of 0.7, 0.9, 0.7, and 0.2 nM for **PDE4A1**, **PDEA4**, **PDEB1**, and **PDEB2**, respectively, without affecting PDE1, PDE2, PDE3 or PDE5 isoenzymes from various cells^{[1][2]}.

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].

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

[2]. Hatzelmann A, et al. The preclinical pharmacology of roflumilast--a selective, oral phosphodiesterase 4 inhibitor in development for chronic obstructive pulmonary disease. *Pulm Pharmacol Ther.* 2010 Aug;23(4):235-56.

[3]. Rabe KF. Update on roflumilast, a phosphodiesterase 4 inhibitor for the treatment of chronic obstructive pulmonary disease. *Br J Pharmacol.* 2011 May;163(1):53-67.

[4]. Hatzelmann A, et al. Anti-inflammatory and immunomodulatory potential of the

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

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- novel PDE4 inhibitor roflumilast in vitro. J Pharmacol Exp Ther. 2001 Apr;297(1):267-79.
- [5]. Richmond BW, et al. Airway bacteria drive a progressive COPD-like phenotype in mice with polymeric immunoglobulin receptor deficiency. Nat Commun. 2016 Apr 5;7:11240.
- [6]. Ding H, et al. Treatment of obesity-associated overactive bladder by the phosphodiesterase type-4 inhibitor roflumilast. Int Urol Nephrol. 2017 Jul 29.

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