

Product Data Sheet

Product Name: Pioglitazone D4

Cat. No.: GC61187

Chemical Properties

Cas. No. 1134163-29-3

SMILES O=C(N1)SC(CC2=C([2H])C([2H])=C(OCCC3=NC=C(CC)C=C3)C([2H])=C2[2H])C1=O

Formula $C_{19}H_{16}D_4N_2O_3S$

M.Wt 360.46

Solubility DMF: 2.5 mg/ml, DMSO: 2.5 mg/ml

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

Pioglitazone-d₄ is intended for use as an internal standard for the quantification of pioglitazone by GC- or LC-MS. Pioglitazone is an agonist of the peroxisome proliferator-activated receptor γ (PPAR γ ; EC₅₀ = ~500-600 nM for both human and murine PPAR γ).^{1,2} It is selective for PPAR γ over PPAR α , exhibiting low level activation of PPAR α at 1 μ M and 5.4-fold activation at a concentration of 10 μ M.¹ Pioglitazone inhibits pyruvate oxidation and glucose production in hepatocytes when used at a concentration of 10 μ M.³ *In vivo*, pioglitazone (0.3-3 mg/kg per day) reduces hyperglycemia, hyperlipidemia, and hyperinsulinemia in a dose-dependent manner in male Wistar fatty rats.⁴ It reduces the number of lesions in a transgenic rat adenocarcinoma of prostate (TRAP) model.⁵ Pioglitazone (2.5 mg/kg) also decreases production of neuroinflammatory cytokines and reduces immobility in the forced swim and tail suspension tests in a mouse model of chronic mild stress, indicating antidepressant-like activity that can be reversed by the PPAR γ antagonist GW 9662.⁶

1. Sakamoto, J., Kimura, H., Moriyama, S., et al. Activation of human peroxisome proliferator-activated receptor (PPAR) subtypes by pioglitazone. *Biochem. Biophys. Res. Commun.* 278(3):704-711 (2000)
 2. Willson, T.M., Brown, P.J., Sternbach, D.D., et al. The PPARs: From orphan receptors to drug discovery. *J. Med. Chem.* 43(4):527-550 (2000)
 3. Shannon, C.E., Daniele, G., Galindo, C., et al. Pioglitazone inhibits mitochondrial pyruvate metabolism and

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

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glucose production in hepatocytesFEBS J.284(3)451-465(2017) 4.Sugiyama, Y., Taketomi, S., Shimura, Y., et al.Effects of pioglitazone on glucose and lipid metabolism in Wistar fatty ratsArzneimittelforschung.40(3)263-267(1990) 5.Suzuki, S., Mori, Y., Nagano, A., et al.Pioglitazone, a peroxisome proliferator-activated receptor γ agonist, suppresses rat prostate carcinogenesisInt. J. Mol. Sci.17(12)pii: E2071(2016) 6.Zhao, Q., Wu, X., Yan, S., et al.The antidepressant-like effects of pioglitazone in a chronic mild stress mouse model are associated with PPAR γ -mediated alteration of microglial activation phenotypesJ. Neuroinflammation13(1)259(2016)

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