Pioglitazone potassium

Cat. No.: HY-13956B

CAS No.: 1266523-09-4

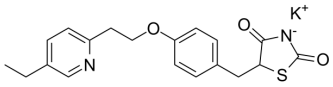
Molecular Formula: $C_{19}H_{19}KN_2O_3S$

Molecular Weight: 394.53

Target: PPAR; Ferroptosis

Pathway: Cell Cycle/DNA Damage; Apoptosis

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Pioglitazone (U 72107) potassium is an orally active and selective PPARγ (peroxisome proliferator-activated receptor) agonist with high affinity binding to the PPARγ ligand-binding domain with EC_{50} of 0.93 μM and 0.99 μM for human and mouse PPARγ, respectively. Pioglitazone potassium can be used in diabetes research[2][3][4].

IC_{50} & Target

mouse PPARγ	h-PPARγ	hPPARδ	hPPARα
0.99 μM (EC50)	0.93 μM (EC50)	43 μM (EC50)	100 μM (EC50)

mouse PPARα
100 μM (EC50)

In Vitro

Pioglitazone potassium (0.5 or 1 μM, 5 days) can completely prevent AGEs (advanced glycation end-products)-induced β-cell necrosis and the increase of caspase-3 thereby avoiding the impaired viability caused by AGEs in pancreatic beta cell line HIT-T15[2].

Pioglitazone potassium (1 μM, 1 h) can stimulate insulin secretion induced by low glucose concentration and attenuate the GSSG/GSH ratio in cells cultured with AGEs[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Pioglitazone potassium (oral gavage, 10 or 30 mg/kg, once daily, 14 days) can induce improvements in insulin resistance and diabetes that may be lipocalin-dependent in the liver but not in skeletal muscle[3].

Pioglitazone potassium (oral gavage, 10 mg/kg, once daily, 4 weeks) can significantly reduce body weight (BW), cardiac hypertrophy, elevated blood glucose levels and improve the associated dyslipidemia[4].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	ob/ob and adipo$^{-/-}$ ob/ob mice with a C57Bl/6 background[3]
Dosage:	10 or 30 mg/kg
Administration:	Oral gavage; once daily; 14 days
Result:	Showed no changes of serum-free fatty acid and triglyceride levels as well as adipocyte sizes in ob/ob and adipo$^{-/-}$ ob/ob C57BL/6 mice at 10 mg/kg but significantly reduced to a similar degree at 30 mg/kg. Also showed no changes of expressions of TNFα and resistin in adipose tissues of ob/ob

	and adipo$^{-/-}$ ob/ob mice at 10 mg/kg but decreased at 30 mg/kg.
Animal Model:	Male Wistar albino rats[4]
Dosage:	10 mg/kg
Administration:	Oral gavage; once daily; 4 weeks
Result:	Decreased the elevated serum levels of both creatinine and creatine kinase-MB (CK-MB), TGF-β1 gene expression and regulated the expression of MMP-2/TIMP-2 system.

CUSTOMER VALIDATION

- Cell Metab. 2021 Mar 2;33(3):581-597.e9.
- Cancer Res. 2022 Apr 15;82(8):1503-1517.
- Br J Pharmacol. 2021 Feb 16.
- Acta Pharmacol Sin. 2021 Jan;42(1):160-170.
- Food Chem Toxicol. 2021 Apr 6;112183.

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REFERENCES

[1]. Kenji Kuwabara, et al. A novel selective peroxisome proliferator-activated receptor alpha agonist,2-methyl-c-5-[4-[5-methyl-2-(4-methylphenyl)-4-oxazolyl]butyl]-1,3-dioxane-r-2-carboxylic acid (NS-220), potently decreases plasma triglyceride and glucose levels and modifies lipoprotein profiles in KK-Ay mice. J Pharmacol Exp Ther. 2004 Jun;309(3):970-7.

[2]. A Puddu, et al. Pioglitazone attenuates the detrimental effects of advanced glycation end-products in the pancreatic beta cell line HIT-T15. Regul Pept. 2012 Aug 20;177(1-3):79-84.

[3]. Naoto Kubota, et al. Pioglitazone ameliorates insulin resistance and diabetes by both adiponectin-dependent and -independent pathways. J Biol Chem. 2006 Mar 31;281(13):8748-55.

[4]. Rania A Elrashidy, et al. Pioglitazone attenuates cardiac fibrosis and hypertrophy in a rat model of diabetic nephropathy. J Cardiovasc Pharmacol Ther. 2012 Sep;17(3):324-33.

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