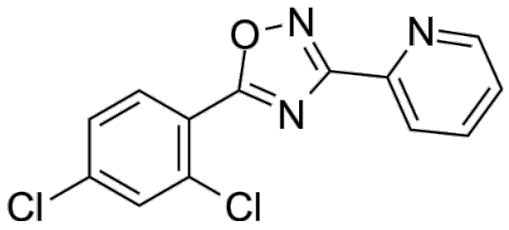
Product Data Sheet

Product Name: JY-2
Cat. No.: GD96632

Chemical Properties

Cas. No.	339103-05-8		
Formula	$C_{13}H_7Cl_2N_3O$	M.Wt	292.12
Solubility	80mg/mL in DMSO (ultrasonic and warming and heat to 60°C)	Storage	-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			



Protocol

Cell experiment [1]:

Cell lines HepG2 cells

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Preparation Method	Cells were cultured in DMEM supplemented with 1% penicillin/streptomycin and 10% FBS, and maintained at 37 °C in a humidified atmosphere of 5% CO_2. Cells were plated in cell culture flasks for at least 24h before treatment. Batches of cells were seeded in 24-well plates at a density of 2×10^5 cells/well and incubated with various concentrations (10, 50, or 100μM) of JY-2 for 1h, followed by PA (0.5mM) treatment for the indicated time.
Reaction Conditions	0.5mM; 24h
Applications	JY-2 reduces PA-induced lipotoxicity in HepG2 cells.

Animal experiment [1]:

Animal models	C57BL/6J mice
Preparation Method	JY-2 (50, 100, 200mg/kg) was orally administered to mice three times for two days (9:00 AM, 7:00 PM, 9:00 AM on the next day), and pyruvate tolerance challenge was carried out after overnight fasting.
Dosage form	50, 100, 200mg/kg; p.o; 3 times
Applications	JY-2 improves glucose intolerance *in vivo*.

References:

[1]. Choi HE, Kim Y, et,al. Novel FoxO1 inhibitor, JY-2, ameliorates palmitic acid-induced lipotoxicity and gluconeogenesis in a murine model. Eur J Pharmacol. 2021 May 15;899:174011. doi: 10.1016/j.ejphar.2021.174011. Epub 2021 Mar 9. PMID: 33705803.

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

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Background

JY-2 is a moderately selective FoxO1 inhibitor with IC_{50} of 22μM, JY-2 has moderate inhibitory effect on FoxO3a and FoxO4 too [1].

JY-2(0.5mM; 24h) reduced the palmitic acid (PA)-stimulated mRNA expression of glucose-6-phosphatase (G6Pase) and phosphoenolpyruvate carboxykinase (PEPCK), two key enzymes involved in gluconeogenesis in HepG2 cells[1]. FoxO3 inhibitor JY-2 can antagonize cell iron death induced by Genistein via FoxO3/SLC7A11/GPX4 signaling pathway[2].

JY-2(50, 100, 200mg/kg; p.o; 3 times) improved glucose tolerance, in parallel with a reduced mRNA expression of gluconeogenic genes in high fat-diet induced obese and diabetic (DIO) mice models[1].

References:
[1]. Choi HE, Kim Y, et,al. Novel FoxO1 inhibitor, JY-2, ameliorates palmitic acid-induced lipotoxicity and gluconeogenesis in a murine model. Eur J Pharmacol. 2021 May 15;899:174011. doi: 10.1016/j.ejphar.2021.174011. Epub 2021 Mar 9. PMID: 33705803.
[2]. Liu L, Qiu Y, et,al. Genistein Induces Ferroptosis in Colorectal Cancer Cells via FoxO3/SLC7A11/GPX4 Signaling Pathway. J Cancer. 2024 Nov 4;15(20):6741-6753. doi: 10.7150/jca.95775. PMID: 39668836; PMCID: PMC11632993.

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