

FICZ

Chemical Properties

CAS No. : 172922-91-7

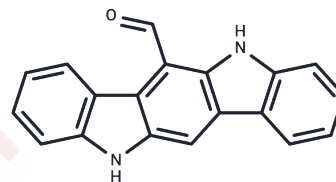
Formula: C₁₉H₁₂N₂O

Molecular Weight: 284.31

Keep away from direct sunlight

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Actual storage temperature shall be subject to the COA.



Biological Description

Description	FICZ (6-Formylindolo[3,2-b]carbazole) is a potent aryl agonist for the hydrocarbon receptor (AhR, Kd: 70 pM).
Targets(IC50)	Aryl Hydrocarbon Receptor
In vitro	FICZ (0.01 nM-1 μM) alone or in combination with 50 nM MNF induces sustained CYP1A1 activity and leads to oxidative stress and activation of apoptosis via a mitochondrial-dependent pathway. In HepG2 cells, FICZ stimulates cell growth at low concentrations but inhibits cell growth at high concentrations [1]. FICZ (10-30 μM) significantly decreases CEH viability with an estimated LC50 (95% confidence intervals) of 14 μM. FICZ shows concentration-dependent effects on EROD activity in CEH cultures, with the mean EC50 values at 3, 8, and 24 h of 0.016 nM, 0.80 nM, and 11 nM, respectively [2]. CYP1 inhibition in the presence of FICZ results in enhanced AHR activation, suggesting that FICZ accumulates in the cell when its metabolism is blocked. CYP1 enzymes play a role in regulating the biological effects of FICZ [3]. FICZ treatment increases transcript expression of CYP1A1 in a dose-dependent manner in both the parental iPSC line and the CYP1A1 targeted clone [4].
Cell Research	The cell viability of CEH treated with FICZ or TCDD is studied with the untreated cells (used as a live cell control) and sodium hypochlorite (5%)-treated cells (used as a dead cell control). This assay is based upon the bioluminescent measurement of adenosine triphosphate (ATP) that is present in all metabolically active cells. Luciferase is utilized in this method to catalyze the formation of light from ATP and luciferin. CEH is lysed 24 h after dosing and the luminescence emitted from the ATP-dependent oxidation of luciferin is measured with a LuminoSkan Ascent luminometer [2].

Solubility Information

Solubility	DMSO: 30 mg/mL (105.52 mM), Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
In vivo Formulation	10% DMSO+90% Corn Oil: 1 mg/mL (3.52 mM), Sonication is recommended. <i>Please add the solvents sequentially, clarifying the solution as much as possible before adding the next one. Dissolve by heating and/or sonication if necessary. Working solution is recommended to be prepared and used immediately. The formulation provided above is for reference purposes only. In vivo formulations may</i>

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In vivo Formulation	<i>vary and should be modified based on specific experimental conditions.</i>
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	3.5173 mL	17.5864 mL	35.1729 mL
5 mM	0.7035 mL	3.5173 mL	7.0346 mL
10 mM	0.3517 mL	1.7586 mL	3.5173 mL
50 mM	0.0703 mL	0.3517 mL	0.7035 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Note: The dilution table applies only to solid products. For liquid products, please calculate the stock solution based on the stated concentration and/or density.

Reference

- Mohammadi-Bardbori A, et al. The highly bioactive molecule and signal substance 6-formylindolo[3,2-b]carbazole (FICZ) plays bi-functional roles in cell growth and apoptosis in vitro. Arch Toxicol. 2017 Mar 13
- Farmahin R, et al. Time-dependent transcriptomic and biochemical responses of 6-formylindolo[3,2-b]carbazole (FICZ) and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) are explained by AHR activation time. Biochem Pharmacol. 2016 Sep 1;115:134-43
- Wincent E, et al. Biological effects of 6-formylindolo[3,2-b]carbazole (FICZ) in vivo are enhanced by loss of CYP1A function in an Ahr2-dependent manner. Biochem Pharmacol. 2016 Jun 15;110-111:117-29.
- Smith BW, et al. Genome Editing of the CYP1A1 Locus in iPSCs as a Platform to Map AHR Expression throughout Human Development. Stem Cells Int. 2016;2016:2574152.

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