Indole-3-carbinol

Cat. No.: HY-N0170

CAS No.: 700-06-1

Molecular Formula: C_9H_9NO

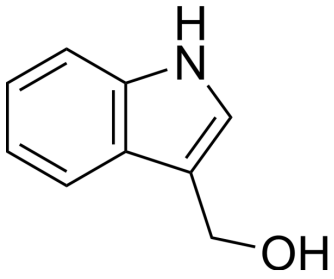
Molecular Weight: 147.17

Target: NF-κB; Aryl Hydrocarbon Receptor; E1/E2/E3 Enzyme; Endogenous Metabolite

Pathway: NF-κB; Immunology/Inflammation; Metabolic Enzyme/Protease

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	6 months
	-20°C	1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (679.49 mM; Need ultrasonic)

Preparing Stock Solutions

Mass / Solvent / Concentration	1 mg	5 mg	10 mg
1 mM	6.7949 mL	33.9743 mL	67.9486 mL
5 mM	1.3590 mL	6.7949 mL	13.5897 mL
10 mM	0.6795 mL	3.3974 mL	6.7949 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (16.99 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (16.99 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (16.99 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Indole-3-carbinol (I3C) inhibits NF-κB activity and also is an Aryl hydrocarbon receptor (AhR) agonist, and an inhibitor of WWP1 (WW domain-containing ubiquitin E3 ligase 1).

IC_{50} & Target			
	NF-κB	AhR	Human Endogenous Metabolite

In Vitro

It is found that Indole-3-carbinol (I3C) inhibits the proliferation of THP-1 cells in a dose- and time dependent manner with minimal toxicity over normal monocytes. The AhR target genes (CYP1A1, IL1β) are overexpressed upon Indole-3-carbinol

treatment ($p<0.05$ to $p<0.001$). The antiproliferative effects of Indole-3-carbinol are in association with programing cell death. Indole-3-carbinol downregulates BCL2 and upregulates FasR in THP-1 cells ($p<0.05$ to $p<0.001$). G1 cell cycle arrest is also observed using flow cytometry. G1-acting cell cycle genes (P21, P27 and P53) are overexpressed ($p<0.05$ to $p<0.001$), while CDK2 is downregulated upon Indole-3-carbinol treatment ($p<0.01$ to $p<0.001$)[1].Indole-3-carbinol suppresses NF-κB activity and stimulates the p53 pathway in pre-B acute lymphoblastic leukemia cells[2].

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

PROTOCOL

Cell Assay [1]

THP-1 cells are cultured in RPMI 1640 supplemented with 10% FBS, 100 U/mL penicillin, 100 mg/mL streptomycin and 2 mM Glutamax in a fully humidified atmosphere with 5% CO_2. Cells ($2\text{-}5\times10^5$ mL^{-1}) are seeded in six well plates followed by resuspension in complete growth media. THP-1 monocyte cells are then treated with 10 ng/mL phorbol 12-myristate 13-acetate as a tumor promoter to induce stable differentiation into attaching macrophage-like cells and overexpression of AhR. The cells are then treated with varying concentrations of Indole-3-carbinol (1, 10 and 100 μM, and 1 mM). THP-1 cells and enriching normal monocytes are seeded at 5×10^4 cells/well in 24-well plate with different concentrations of Indole-3-carbinol and observed for 24 and 48 h followed by MTT assay. The cells are incubated in triplicates in a final volume of 200 mL of Phenol Red free RPMI 1640 for 20 h . An aliquot of 20 mL of MTT solution (5 mg/mL) is added to each well and incubated for 4 h. Formazan crystals are formed. An amount of 300 mL DMSO is then added to each well as a cell lysis solution. Percentage of cell viability is assessed by spectrophotometry at 570 nm[1].

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

CUSTOMER VALIDATION

- Brain Behav Immun. 2020 Nov;90:108-137.
- Front Pharmacol. 06 June 2022.
- Fish Shellfish Immunol. 2023 Aug 26;109037.
- Molecules. 2018 Oct 11;23(10). pii: E2600.
- Dev Comp Immunol. 2021 Jun 12;123:104148.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Mohammadi S, et al. Indole-3-carbinol induces G1 cell cycle arrest and apoptosis through aryl hydrocarbon receptor in THP-1 monocytic cell line.J Recept Signal Transduct Res. 2017 Oct;37(5):506-514.

[2]. Safa M, et al. Indole-3-carbinol suppresses NF-κB activity and stimulates the p53 pathway in pre-B acute lymphoblastic leukemia cells. Tumour Biol. 2015 May;36(5):3919-30.

[3]. Lee YR, et al. Reactivation of PTEN tumor suppressor for cancer treatment through inhibition of a MYC-WWP1 inhibitory pathway. Science. 2019 May 17;364(6441). pii: eaau0159.

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA