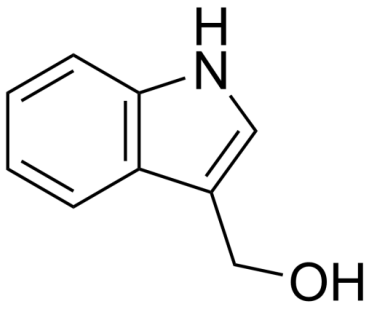
Data Sheet

Product Name:	Indole-3-carbinol
Cat. No.:	CS-7780
CAS No.:	700-06-1
Molecular Formula:	C_9H_9NO
Molecular Weight:	147.18
Target:	Aryl Hydrocarbon Receptor; E1/E2/E3 Enzyme; Endogenous Metabolite; NF-κB
Pathway:	Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB
Solubility:	DMSO : 100 mg/mL (ultrasonic)



BIOLOGICAL ACTIVITY:

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). IC50 & Target: Aryl hydrocarbon receptor (AhR)[2], NF-κB[2], WWP1[3] ***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].

PROTOCOL (Extracted from published papers and Only for reference)

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].

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.

CAIndexNames:

1H-Indole-3-methanol

SMILES:

OCC1=CNC2=C1C=CC=C2

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