Pyrrolidinedithiocarbamate ammonium

Cat. No.: HY-18738

CAS No.: 5108-96-3

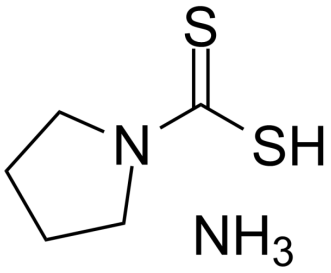
Molecular Formula: $C_5H_{12}N_2S_2$

Molecular Weight: 164.29

Target: NF-κB

Pathway: NF-κB

Storage: 4°C, sealed storage, away from moisture
* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 50 mg/mL (304.34 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	6.0868 mL	30.4340 mL	60.8680 mL
	5 mM	1.2174 mL	6.0868 mL	12.1736 mL
	10 mM	0.6087 mL	3.0434 mL	6.0868 mL

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

In Vivo

1. Add each solvent one by one: PBS
Solubility: 24 mg/mL (146.08 mM); Clear solution; Need ultrasonic

BIOLOGICAL ACTIVITY

Description

Pyrrolidinedithiocarbamate ammonium (Ammonium pyrrolidinedithiocarbamate) is a selective and blood-brain barrier (BBB) permeable NF-κB inhibitor.

IC_{50} & Target

NF-κB

In Vitro

Pretreatment of cells with Pyrrolidinedithiocarbamate ammonium (Ammonium pyrrolidinedithiocarbamate; 3-1000 μM) dose-dependently attenuate IL-8 production[1].
Furthermore, pyrrolidinedithiocarbamate ammonium (100 μM) suppresses the accumulation of IL-8 mRNA[1].
Pyrrolidinedithiocarbamate ammonium inhibits the activation of NF-κB, because it suppresses both NF-κB DNA binding and NF-κB-dependent transcriptional activity. NF-κB inhibition with pyrrolidinedithiocarbamate ammonium decrease IL-8 production by intestinal epithelial cells[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

The DSS+pyrrolidinedithiocarbamate ammonium-treated groupII exhibits suppression of shortening of intestinal length and

	reduction of DAI score. Activated NF-κB level and IL-1β and TNF-α levels are significantly lower in DSS+pyrrolidinedithiocarbamate ammonium-treated groupII. These findings suggest that suppression of NF-κB activity by pyrrolidinedithiocarbamate ammonium can delay the healing of mucosal tissue defects (erosions or ulcers) arising from inflammation, but that it can strongly suppress the expression of inf-lammatory cytokines (IL-1β and TNF-α), resulting in significant alleviation of colitis. pyrrolidinedithiocarbamate ammonium is useful for the treatment of ulcerative colitis[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	The human colon cancer cell line HT-29 is obtained and cells are grown in modified McCoy's 5A medium supplemented with 10% fetal bovine serum. To study the effect of pyrrolidinedithiocarbamate ammonium on IL-8 production, HT-29 cells in 96-well plates are induced with 20 ng/mL of IL-1β for 18 h. Various concentrations (3-1000 μM) of pyrrolidinedithiocarbamate or its vehicle (culture medium) are added to the cells 30 min prior to IL-1β stimulation. The concentration of IL-8 in the supernatant is determined using solid-phase enzyme-linked immunosorbent assay[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration	Animal Administration: [2]Pyrrolidinedithiocarbamate is administered intraperitoneally to mice at dose levels of 100 and 50 mg/kg. Mice are divided into a DSS-untreated group (normal group), DSS-treated control group, DSS+pyrrolidinedithiocarbamate-treated groupI (low-dose group), and DSS+pyrrolidinedithiocarbamate-treated groupII (high-dose group). In each group, the disease activity index score (DAI score), intestinal length, histological score, and the levels of activated NF-κB and inflammatory cytokines (IL-1β and TNF-α) in tissue are measured[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Signal Transduct Target Ther. 2023 Mar 15;8(1):107.
- Mil Med Res. 2023 Nov 25;10(1):56.
- Nat Commun. 2024 Jan 10;15(1):449.
- Microbiome. 2023 Jan 31;11(1):17.
- J Exp Med. 2020 Jul 6;217(7):e20192083.

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REFERENCES

[1]. Németh ZH, et al. Pyrrolidinedithiocarbamate inhibits NF-kappaB activation and IL-8 production in intestinal epithelial cells. Immunol Lett. 2003 Jan 2;85(1):41-6.

[2]. Qin JD, et al. Effect of ammonium pyrrolidine dithiocarbamate (PDTC) on NF-κB activation and CYP2E1 content of rats with immunological liver injury. Pharm Biol. 2014 Nov;52(11):1460-1466.

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