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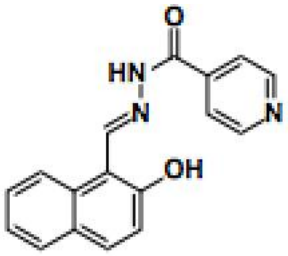
Microtubule Inhibitor / CRISPR Editing Enhancer – Nocodazole

Chemical Name: methyl (5-(thiophene-2-carbonyl)-1H-benzo[d]imidazol-2-yl)carbamate



Molecular Weight:	301.32
Formula:	$C_{14}H_{11}N_3O_3S$
Purity:	≥98%
CAS#:	31430-18-9
Solubility:	DMSO up to 50 mM
Storage	Powder: 4 °C 1 year DMSO: 4 °C 3 months -20 °C 1 year

Biological Activity:

Nocodazole is a potent microtubule inhibitor to inhibit mitosis. It disrupts microtubules by binding to β−tubulin and preventing formation of one of the two interchain disulfide linkages, thus inhibiting microtubule dynamics, disruption of mitotic spindle function, and fragmentation of the Golgi complex. Nocodazole arrests the cell cycle at G2/M phase and also prevents phosphorylation of the T cell antigen receptor and inhibits its activity. Nocodazole stimulates the intrinsic GTPase activity of tubulin and activates the JNK/SAPK signaling pathway and induces apoptosis in several normal and tumor cell lines. Nocodazole enhances homology-directed repair (HDR) efficiency 9 to 31% (depending on cell cycle phase) and increases Cas9-mediated gene editing frequencies.

How to Use:

In vitro: Nocodazole was used at 200 ng/ml in vitro and cellular assays.

In vivo: n/a

Reference:

1. Vasquez RJ, et al. Nanomolar concentrations of nocodazole alter microtubule dynamic instability in vivo and in vitro. (1997) Mol Biol Cell. 8(6):973-85.
2. Webb JL, et al. Microtubule disruption inhibits autophagosome-lysosome fusion: implications for studying the roles of aggresomes in polyglutamine diseases. (2004) Int J Biochem Cell Biol. 36(12):2541-50.
3. Mizushima N, et al. Methods in mammalian autophagy research. (2010) Cell. 140(3):313-26.
4. Lin S, et al. Enhanced homology-directed human genome engineering by controlled timing of CRISPR/Cas9 delivery. (2014) Elife. 3:e04766.