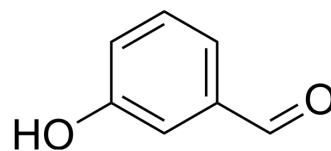


## 3-Hydroxybenzaldehyde

<b>Cat. No.:</b>	HY-76006
<b>CAS No.:</b>	100-83-4
<b>Molecular Formula:</b>	C <sub>7</sub> H <sub>6</sub> O <sub>2</sub>
<b>Molecular Weight:</b>	122.12
<b>Target:</b>	Aldehyde Dehydrogenase (ALDH); NF-κB; p38 MAPK
<b>Pathway:</b>	Metabolic Enzyme/Protease; NF-κB; MAPK/ERK Pathway
<b>Storage:</b>	4°C, stored under nitrogen * In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



### SOLVENT & SOLUBILITY

<b>In Vitro</b>	DMSO : 100 mg/mL (818.87 mM; Need ultrasonic)					
		Solvent Concentration	Mass	1 mg	5 mg	10 mg
	<b>Preparing Stock Solutions</b>	1 mM	8.1887 mL	40.9433 mL	81.8867 mL	
		5 mM	1.6377 mL	8.1887 mL	16.3773 mL	
		10 mM	0.8189 mL	4.0943 mL	8.1887 mL	
Please refer to the solubility information to select the appropriate solvent.						
<b>In Vivo</b>	<ol style="list-style-type: none"> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 40% PEG300 &gt;&gt; 5% Tween-80 &gt;&gt; 45% saline Solubility: ≥ 2.5 mg/mL (20.47 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (20.47 mM); Clear solution</li> <li>Add each solvent one by one: 10% DMSO &gt;&gt; 90% corn oil Solubility: ≥ 2.5 mg/mL (20.47 mM); Clear solution</li> </ol>					

### BIOLOGICAL ACTIVITY

<b>Description</b>	3-Hydroxybenzaldehyde (3-HBA) is a precursor compound for phenolic compounds like Protocatechuic aldehyde (PCA) (HY-N0295). 3-Hydroxybenzaldehyde, produced by 3-hydroxybenzyl-alcohol dehydrogenase, is a substrate of aldehyde dehydrogenase (ALDH) in rats and humans. 3-Hydroxybenzaldehyde has vasculoprotective effects in vitro and in vivo. 3-Hydroxybenzaldehyde is promising for research of atherosclerosis <sup>[1][2][3][4]</sup> .
<b>IC<sub>50</sub> &amp; Target</b>	ALDH2
<b>In Vitro</b>	3-Hydroxybenzaldehyde (0-100 μM, 24 h) inhibits vascular smooth muscle cells (VSMC) proliferation, cell cycle and cell migration <sup>[1]</sup> .

3-Hydroxybenzaldehyde (100  $\mu$ M, 25 h) inhibits production levels of p-NF- $\kappa$ B and p-p38 increased by TNF- $\alpha$  in human umbilical vein endothelial cells (HUVECs)<sup>[1]</sup>.

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

#### Cell Proliferation Assay<sup>[1]</sup>

Cell Line:	Rat vascular smooth muscle cells (VSMCs)
Concentration:	0, 25, 50, 100 $\mu$ M
Incubation Time:	48 h or 144 h
Result:	Showed low toxicity in VSMC for both 48 and 144 h.

#### Cell Cycle Analysis<sup>[1]</sup>

Cell Line:	Rat vascular smooth muscle cells (VSMCs)
Concentration:	100 $\mu$ M
Incubation Time:	24 h
Result:	Arrested the S phase and G0/G1 phase increased by PDGF and lowered the expression levels of cyclin D1 (CD1) and retinoblastoma (Rb1) mRNA in VSMCs.

#### In Vivo

3-Hydroxybenzaldehyde (100 mg/kg, i.p., daily for 1 week) inhibits angiogenesis and exhibits anti-thrombic effects ex vivo and in vivo<sup>[1]</sup>.

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

Animal Model:	6-week-old male SD rats <sup>[1]</sup>
Dosage:	100 mg/kg
Administration:	i.p., daily for 1 week
Result:	Exhibited anti-thrombic effects in vivo.

## REFERENCES

[1]. Paixão JA, et al. 3-Hydroxybenzaldehyde. Acta Crystallogr C. 2000 Nov;56 Pt 11:1348-50.

[2]. Chen KY, et al. Protective effect of benzaldehyde combined with albendazole against brain injury induced by *Angiostrongylus cantonensis* infection in mice[J]. International Journal of Antimicrobial Agents, 2023, 62(5): 106963.

[3]. Muthu S, et al. Quantum chemical studies, vibrational analysis, molecular structure, first order hyper polarizability, NBO and HOMO-LUMO analysis of 3-hydroxybenzaldehyde and its cation[J]. Spectrochim Acta A Mol Biomol Spectrosc. 2013 Nov;115:789-99.

[4]. Kong BS, et al. Vasculoprotective Effects of 3-Hydroxybenzaldehyde against VSMCs Proliferation and ECs Inflammation.PLoS One. 2016 Mar 22;11(3):e0149394.

**Caution: Product has not been fully validated for medical applications. For research use only.**

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