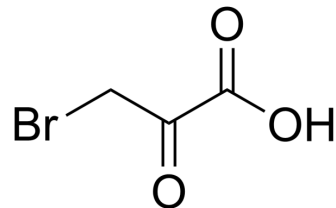


## 3-Bromopyruvic acid

<b>Cat. No.:</b>	HY-19992
<b>CAS No.:</b>	1113-59-3
<b>Molecular Formula:</b>	C <sub>3</sub> H <sub>3</sub> BrO <sub>3</sub>
<b>Molecular Weight:</b>	166.96
<b>Target:</b>	Hexokinase; Apoptosis; Autophagy
<b>Pathway:</b>	Metabolic Enzyme/Protease; Apoptosis; Autophagy
<b>Storage:</b>	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<sub>2</sub>O : 233.33 mg/mL (1397.52 mM; Need ultrasonic)  
DMSO : 100 mg/mL (598.95 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	5.9895 mL	29.9473 mL	59.8946 mL
	5 mM	1.1979 mL	5.9895 mL	11.9789 mL
	10 mM	0.5989 mL	2.9947 mL	5.9895 mL

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

#### In Vivo

- Add each solvent one by one: PBS  
Solubility: 100 mg/mL (598.95 mM); Clear solution; Need ultrasonic
- Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
Solubility: ≥ 2.5 mg/mL (14.97 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (14.97 mM); Clear solution
- Add each solvent one by one: 10% DMSO >> 90% corn oil  
Solubility: ≥ 2.5 mg/mL (14.97 mM); Clear solution

### BIOLOGICAL ACTIVITY

#### Description

3-Bromopyruvate (Bromopyruvic acid) is an analogue of pyruvate and a potent hexokinase (HK)-II inhibitor with high tumor selectivity. 3-Bromopyruvate inhibits cell growth and induces apoptosis through interfering with glycolysis. 3-Bromopyruvate induces autophagy by stimulating ROS formation in breast cancer cells. Antimicrobial activities<sup>[1][2][3]</sup>.

#### In Vitro

3-Bromopyruvate enhances TRAIL-induced apoptosis in breast cancer cells<sup>[2]</sup>.  
3-Bromopyruvate (Bromopyruvic acid), a hexokinase II inhibitor, can induce apoptosis in hepatocellular carcinoma cells by

inducing endoplasmic reticulum (ER) stress<sup>[2]</sup>.

3-Bromopyruvate inhibits ATP generation and upregulates the expression of DR5. 3-Bromopyruvate upregulates CHOP, GRP78 and the phosphorylation of AMPK and augments TRAIL-induced Bax and caspase-3 levels<sup>[2]</sup>.

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

Cell Viability Assay<sup>[2]</sup>

Cell Line:	MCF-7 and MDA-MB-231 cells
Concentration:	40, 80, 160 or 320 $\mu$ M
Incubation Time:	24 hours
Result:	3-Bromopyruvate (80 and 160 $\mu$ mol/l) and TRAIL (400 ng/ml) significantly inhibited cell viability.

#### In Vivo

3-Bromopyruvate (8 mg/kg; i.p.; every 4 days for 28 days) shows a synergistic antitumor effect in MCF-7 cell xenografts in nude mice<sup>[2]</sup>.

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

Animal Model:	Female nude mice (BALB/c; 4-5-weeks old and 18-20 g) <sup>[2]</sup>
Dosage:	8 mg/kg
Administration:	I.p.; every 4 days for 28 days
Result:	Showed antitumor efficacy in tumor xenografts.

## CUSTOMER VALIDATION

- Cell Stem Cell. 2023 Apr 6;30(4):450-459.e9.
- Chem Eng J. 2025 Mar 1.
- Bone Res. 2024 Aug 28;12(1):49.
- Cell Death Dis. 2025 Mar 17;16(1):182.
- Cell Death Dis. 2022 Sep 20;13(9):803.

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## REFERENCES

[1]. Gan L, et al. Synergistic Effect of 3-Bromopyruvate in Combination with Rapamycin Impacted Neuroblastoma Metabolism by Inhibiting Autophagy. *Onco Targets Ther.* 2020;13:11125-11137. Published 2020 Oct 29.

[2]. Chen Y, et al. 3 Bromopyruvate sensitizes human breast cancer cells to TRAIL induced apoptosis via the phosphorylated AMPK mediated upregulation of DR5. *Oncol Rep.* 2018;40(5):2435-2444.

[3]. Zhang Q, et al. Hexokinase II inhibitor, 3-BrPA induced autophagy by stimulating ROS formation in human breast cancer cells. *Genes Cancer.* 2014;5(3-4):100-112.

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

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