Buformin hydrochloride

Cat. No.: HY-B2099A

CAS No.: 1190-53-0

Molecular Formula: $C_6H_{16}ClN_5$

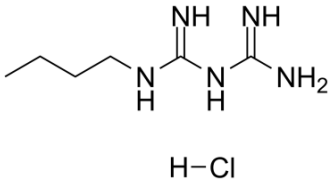
Molecular Weight: 193.68

Target: AMPK

Pathway: Epigenetics; PI3K/Akt/mTOR

Storage: 4°C, stored under nitrogen

* In solvent : -80°C, 6 months; -20°C, 1 month (stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 125 mg/mL (645.39 mM; Need ultrasonic)

Preparing Stock Solutions	Concentration / Solvent / Mass	1 mg	5 mg	10 mg
	1 mM	5.1632 mL	25.8158 mL	51.6316 mL
	5 mM	1.0326 mL	5.1632 mL	10.3263 mL
	10 mM	0.5163 mL	2.5816 mL	5.1632 mL

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

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.08 mg/mL (10.74 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.08 mg/mL (10.74 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (10.74 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Buformin hydrochloride (1-Butylbiguanide hydrochloride), a potent AMPK activator, acts as an orally active biguanide antidiabetic agent. Buformin hydrochloride decreases hepatic gluconeogenesis and lowers blood glucose production in vivo. Buformin hydrochloride also has anti-cancer activities and is applied in cancer study (such as, cervical cancer and breast cancer, et al)[1].

In Vitro

Buformin hydrochloride (0-10 mM; 5 days) inhibits SKBR3 and BT474 cells growth as a concentration-dependent manner, exhibits IC_{50} values of 246.7 μM and 98.6 μM for erbB-2-overexpressing SKBR3 and BT474 cells, respectively[1].
Buformin hydrochloride (0-3 mM; 48 hours) increases the percentage of cells in G0/G1 phase and reduced the percentage of cells in S phase, especially in the SKBR3 cells[1].

Buformin hydrochloride (0-3 mM; 24 hours) suppresses RTK activation, including erbB-2 and IGF1R signaling downstream, and Akt activation/phosphorylation is inhibited in both SKBR3 and BT474 cells[1].

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

Cell Viability Assay[1]

Cell Line:	ErbB-2-overexpressing SKBR3 and BT474 cells
Concentration:	0 μM, 1 μM, 3 μM, 10 μM, 30 μM, 100 μM, 300 μM, 1, 3, or 10 mM
Incubation Time:	5 days
Result:	Reduced cell viability in erbB-2-overexpressing breast cells.

Cell Cycle Analysis[1]

Cell Line:	ErbB-2-overexpressing SKBR3 and BT474 cells
Concentration:	0.5 mM; 1 mM; 3 mM
Incubation Time:	48 hours
Result:	Increased cells arresting in G0/G1 phase.

Western Blot Analysis[1]

Cell Line:	ErbB-2-overexpressing SKBR3 and BT474 cells
Concentration:	0 mM, 0.1 mM, 0.3 mM, 1 mM, or 3 mM
Incubation Time:	24 hours
Result:	Decreased p-AMPK, p-p706S, p-ERK1/2 expression in a concentration-dependent manner.

In Vivo

Buformin hydrochloride (oral administation; 7.6 mmol/kg of chow; 7 days) exhibits significantly reduced tumor volumes and weights, and hinders mammary morphogenesis and proliferation in MMTV-erbB-2 transgenic mice[1].

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

Animal Model:	Female MMTV-erbB-2 transgenic mice[1]
Dosage:	7.6 mmol/kg
Administration:	Oral administation; 7 days
Result:	Inhibited mammary syngeneic tumor growth in MMTV-erbB-2 transgenic mice.

REFERENCES

[1]. Amanda B Parris, et al. Buformin hydrochloride Inhibits the Stemness of erbB-2-overexpressing Breast Cancer Cells and Premalignant Mammary Tissues of MMTV-erbB-2 Transgenic Mice. J Exp Clin Cancer Res

[2]. Jing Li, et al. Buformin hydrochloride Suppresses Proliferation and Invasion via AMPK/S6 Pathway in Cervical Cancer and Synergizes With Paclitaxel. Cancer Biol Ther. 2018 Jun 3;19(6):507-517.

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

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