Furosemide sodium

Cat. No.: HY-B0135A

CAS No.: 41733-55-5

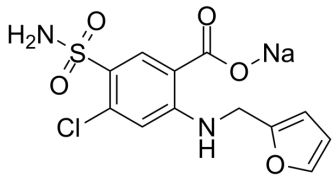
Molecular Formula: $C_{12}H_{10}ClN_2NaO_5S$

Molecular Weight: 352.73

Target: NKCC; GABA Receptor

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

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

DMSO : ≥ 150 mg/mL (425.25 mM)

H_2O : 100 mg/mL (283.50 mM; Need ultrasonic)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	2.8350 mL	14.1751 mL	28.3503 mL
	5 mM	0.5670 mL	2.8350 mL	5.6701 mL
	10 mM	0.2835 mL	1.4175 mL	2.8350 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (283.50 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (7.09 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (7.09 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (7.09 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Furosemide sodium is a potent and orally active inhibitor of $Na^+/K^+/2Cl^-$ (NKCC) cotransporter, NKCC1 and NKCC2[1]. Furosemide sodium is also a $GABA_A$ receptors antagonist and displays 100-fold selectivity for α6-containing receptors than α1-containing receptors. Furosemide sodium acts as a loop diuretic and used for the study of congestive heart failure, hypertension and edema[2].

IC_{50} & Target	IC50: NKCC1 and NKCC2[1] IC50: $GABA_A$ receptors[2]
In Vitro	Furosemide sodium (500 μM; 72-96 hours) significantly changes the proliferation rates in MKN45 cells (the poorly differentiated human gastric adenocarcinoma cell line). however, it has no effects on MKN28 cells (the moderately differentiated human gastric adenocarcinoma cell line). The growth rate of MKN45 cells is larger than that of MKN28 cells[4]. Furosemide sodium (10 μM, 30 μM, 100 μM; 45 min exposure)significantly decreases cation channel activity and [Ca(2+)](i) in human erythrocytes drawn from healthy individuals. Tert-butylhydroperoxide similarly enhances the non-selective cation channels activity, increases [Ca(2+)](i) and triggered cell membrane scrambling, however, the effects is significantly blunted by Furosemide sodium again[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Furosemide sodium (intraperitoneal injection; 100 mg/kg; single dose) is injected after kanamycin (KM) (1000 mg/kg) to creat a deaf mouse model in C57BL/6 mouse. After injection, hearing loss and cochlear hair cell damage are evaluated on day 1, day 2 and day 3, respectively. The hearing is markedly deteriorated even from the next day (Day-1 group), OHCs (outer hair cell) morphology of apical, middle and basal turns are disorganized in mice on day3[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Pharmaceut Biomed. 2020, 113870.

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REFERENCES

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[5]. Yuliya V Kucherenko, et al.Inhibitory effect of Furosemide sodium on non-selective voltage-independent cation channels in human erythrocytes.Cell Physiol Biochem. 2012;30(4):863-75.

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