Bumetanide sodium

Cat. No.: HY-17468A

CAS No.: 28434-74-4

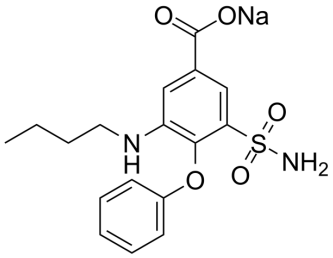
Molecular Formula: $C_{17}H_{19}N_2NaO_5S$

Molecular Weight: 386.4

Target: NKCC

Pathway: Membrane Transporter/Ion Channel

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description	Bumetanide sodium, a highly potent loop diuretic, is a Na^+-K^+-Cl^+ cotransporter (NKCC) blocker. Bumetanide sodium is a selective NKCC1 inhibitor, and also inhibits NKCC2, with IC_{50}s of 0.68 and 4.0 μM for hNKCC1A and hNKCC2A, respectively[1] [2].
In Vitro	Bumetanide sodium has inhibitory effects for the two major human splice variants of NKCCs, hNKCC1A and hNKCC2A [1]. Bumetanide sodium (0.03-100 μM; 5 minutes) inhibits the $^{86}Rb^+$ uptake in NKCC1A-expressing oocytes in a dose-dependent manner[1]. Bumetanide sodium inhibits NKCC2 isoform B in HEK-293 cells with an IC_{50} value of 0.54 μM[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Bumetanide sodium (7.6-30.4 mg/kg; i.v.) attenuates the decrease in apparent diffusion coefficients (ADC) ratios for both cortex and striatum (by 40-67%), indicating reduced edema formation[3]. Bumetanide sodium also reduces infarct size[3]. Bumetanide sodium shows different half-lives of 21.4 min, 53.8 min and 137 min following 2 mg/kg, 8 mg/kg and 20 mg/kg intravenous injection, respectively, in rats[4]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Neuroinflammation. 2022 Jun 21;19(1):163.
- J Pharmaceut Biomed. 2020, 113870.
- Research Square Preprint. 2020 Nov.

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REFERENCES

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[2]. Ciaran Richardson, et al. Regulation of the NKCC2 ion cotransporter by SPAK-OSR1-dependent and -independent pathways. J Cell Sci. 2011 Mar 1;124(Pt 5):789-800.

[3]. Martha E O'Donnell, et al. Bumetanide inhibition of the blood-brain barrier Na-K-Cl cotransporter reduces edema formation in the rat middle cerebral artery occlusion model of stroke. J Cereb Blood Flow Metab. 2004 Sep;24(9):1046-56.

[4]. S H Lee, et al. Pharmacokinetics and pharmacodynamics of bumetanide after intravenous and oral administration to rats: absorption from various GI segments. J Pharmacokinet Biopharm. 1994 Feb;22(1):1-17.6

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