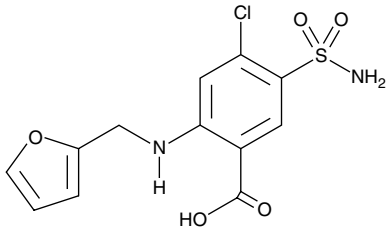
Product Information

Furosemide

Item No. 17273

CAS Registry No.: 54-31-9
Formal Name: 5-(aminosulfonyl)-4-chloro-2-[(2-furanylmethyl)amino]-benzoic acid
Synonym: Frusemide
MF: $C_{12}H_{11}ClN_2O_5S$
FW: 330.7
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid
UV/Vis.: λ_{max}: 234, 273, 343 nm



Laboratory Procedures

For long term storage, we suggest that furosemide be stored as supplied at -20°C. It should be stable for at least two years.

Furosemide is supplied as a crystalline solid. A stock solution may be made by dissolving the furosemide in the solvent of choice. Furosemide is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of furosemide in ethanol is approximately 10 mg/ml and approximately 30 mg/ml in DMSO and DMF.

Furosemide is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, furosemide should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Furosemide has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Furosemide is an inhibitor of the $Na^+/K^+/2Cl^-$ (NKCC) cotransporters, NKCC1 and NKCC2 (K_i = ~10 µM for each).[1,2] It is commonly used as a loop diuretic, blocking NKCC2 action on the apical membrane of the thick ascending limb of Henle epithelial cells.[2] Furosemide also acts as an antagonist of $GABA_A$ receptors and as an inhibitor of carbonic anhydrase and organic anion transporter 1.[3-5]

References

1. Gillen, C.M., Brill, S., Payne, J.A., *et al.* Molecular cloning and functional expression of the K-Cl cotransporter from rabbit, rat, and human. A new member of the cation-chloride cotransporter family. *J. Biol. Chem.* **271(27)**, 16237-16244 (1996).
2. Markadieu, N. and Delpire, E. Physiology and pathophysiology of SLC12A1/2 transporters. *Pflugers. Arch.* **466(1)**, 91-105 (2014).
3. Korpi, E.R. and Lüddens, H. Furosemide interactions with brain $GABA_A$ receptors. *Br. J. Pharmacol.* **120(5)**, 741-748 (1997).
4. Temperini, C., Cecchi, A., Scozzafava, A., *et al.* Carbonic anhydrase inhibitors. Interaction of indapamide and related diuretics with 12 mammalian isozymes and X-ray crystallographic studies for the indapamide-isozyme II adduct. *Bioorg. Med. Chem. Lett.* **18(8)**, 2567-2573 (2008).
5. Uwai, Y., Saito, H., Hashimoto, Y., *et al.* Interaction and transport of thiazide diuretics, loop diuretics, and acetazolamide via rat renal organic anion transporter rOAT1. *J. Pharmacol. Exp. Ther.* **295(1)**, 261-265 (2000).

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