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ProductInformation

Furosemide

Product Number **F 4381**
Store at Room Temperature

Product Description

Molecular Formula: $C_{12}H_{11}ClN_2O_5S$
Molecular Weight: 330.7
CAS Number: 54-31-9
Melting Point: 206 °C
Synonyms: Frusemide, Lasix

Furosemide is a potent diruetic with rapid action. It acts to inhibit electrolyte absorption in the kidney, increasing excretion of sodium, potassium, calcium, and chloride ions, and enhancing water excretion. Therapeutic uses include treatments for hypertension, severe hypercalcemia, and edema.[1]

Recent research has indicated a broader effect of furosemide on other tissues. It has been reported that thiamine uptake and utilization may be affected by chronic treatment of furosemide,[2] and that it may have anticonvulsant action in epileptics.[3] This claim has been supported by molecular studies of its binding to specific GABA receptors in the brain.[4] In studies using recombinant receptors expressed in *Xenopus* oocytes, furosemide was a potent antagonist of cerebellar granule cell-specific $\alpha 6\ \beta 2\ \gamma 2$ receptors (IC_{50} approx. 10 µM), but not $\alpha 1\ \beta 2\ \gamma 2$ receptors (IC_{50} >3 mM).[5]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in acetone (50 mg/ml), yielding a clear to slightly hazy yellow solution. It is also soluble in methanol (50 mg/ml), with heat as needed. It is slightly soluble in ethanol, soluble in methanol, DMSO, and alkali hydroxides. Furosemide is practically insoluble in water. Commercial solutions at 10 mg/ml are prepared using NaOH, giving a pH 8.0-9.3.

Storage/Stability

A 1 mg/ml solution in 0.9% NaCl was stable up to 48 hours when exposed to diffuse daylight or fluorescent room lighting, but decomposed rapidly when exposed to direct sunlight. Solutions can be sterilized by autoclaving.

References

1. Martindale The Extra Pharmacopoeia, 30th ed., Reynolds, J. E. F., ed., The Pharmaceutical Press (London, England: 1993), pp. 815-818.
2. Zangen, A., et al., Furosemide and digoxin inhibit thiamine uptake in cardiac cells. Eur. J. Pharmacol., **361(1)**, 151-155 (1998).
3. Gutschmidt, K. U., et al., Anticonvulsant actions of furosemide *in vitro*. Neuroscience, **91(4)**, 1471-1481 (1999).
4. Thompson, S. A., et al., Residue in transmembrane domains I and II determine gamma aminobutyric acid type AA receptor subtype-selective antagonism by furosemide. Mol. Pharmacol., **55(6)**, 993-999 (1999).
5. Korpi, E. R., et al., "Selective antagonist for the cerebellar granule cell-specific gamma-aminobutyric acid type A receptor.", Mol. Pharmacol., **47**, 283-289 (1995).

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