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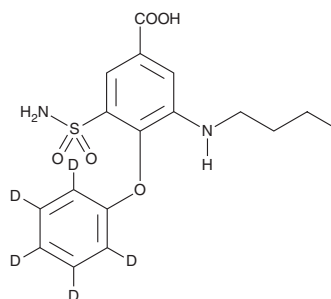
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PRODUCT INFORMATION



Bumetanide-d₅ Item No. 26773

CAS Registry No.: 1216739-35-3
Formal Name: 3-(aminosulfonyl)-5-(butylamino)-4-phenoxy-d₅-benzoic acid
MF: C₁₇H₁₅D₅N₂O₅S
FW: 369.4
Chemical Purity: ≥98% (Bumetanide)
Deuterium Incorporation: ≥99% deuterated forms (d₁-d₅); ≤1% d₀
Supplied as: A solid
Storage: -20°C
Stability: ≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Bumetanide-d₅ is intended for use as an internal standard for the quantification of bumetanide (Item No. 14630) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated versus unlabeled).

Bumetanide-d₅ is supplied as a solid. A stock solution may be made by dissolving the bumetanide-d₅ in the solvent of choice. Bumetanide-d₅ is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of bumetanide-d₅ in these solvents is approximately 14, 25, and 33 mg/ml, respectively.

Description

Bumetanide is an inhibitor of Na-K-2Cl cotransporter 1 (NKCC1; IC₅₀ = 0.68 μM).¹ It is selective for NKCC1 over NKCC2 (IC₅₀ = 4 μM). Bumetanide is an agonist of G protein-coupled receptor 35 (GPR35; EC₅₀ = 10 μM).² It also inhibits various carbonic anhydrases.³ Bumetanide (0.1 mg/kg) increases urine flow and sodium and potassium excretion, as well as decreases sodium reabsorption, in anesthetized dogs.⁴ It reduces brain edema and infarct size in a rat model of stroke induced by permanent middle cerebral artery occlusion (MCAO) when administered at doses ranging from 7.6 to 30.4 mg/kg.⁵ Formulations containing bumetanide have been used in the treatment of edema associated with congestive heart failure and hepatic and renal diseases.

References

1. Lykke, K., Töllner, K., Feit, P.W., *et al.* The search for NKCC1-selective drugs for the treatment of epilepsy: Structure-function relationship of bumetanide and various bumetanide derivatives in inhibiting the human cation-chloride cotransporter NKCC1A. *Epilepsy Behav.* **59**, 42-49 (2016).
2. Yang, Y., Fu, A., Wu, X., *et al.* GPR35 is a target of the loop diuretic drugs bumetanide and furosemide. *Pharmacology* **89(1-2)**, 13-17 (2012).
3. 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).
4. Cohen, M.R., Hinsch, E., Vergona, R., *et al.* A comparative diuretic and tissue distribution study of bumetanide and furosemide in the dog. *J. Pharmacol. Exp. Ther.* **197(3)**, 697-702 (1976).
5. O'Donnell, M.E., Tran, L., Lam, T.I., *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.* **24(9)**, 1046-1056 (2004).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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