PRODUCT INFORMATION



Benserazide-d₃ (hydrochloride)

Item No. 29643

Formal Name:	2-amino-3-hydroxy-N'-(2,3,4- trihydroxybenzyllpronanehydrazide-	
	2,3,3-d ₃ , monohydrochloride	OH H – NH-
MF:	$C_{10}H_{12}D_3N_3O_5 \bullet HCI$	
FW:	296.7	HO N OH
Chemical Purity:	≥90% (Benserazide)	\downarrow \downarrow \downarrow N \downarrow χ
Deuterium		
Incorporation:	≥99% deuterated forms (d ₁ -d ₃); ≤1% d ₀	HO • HCI
Supplied as:	A solid	
Storage:	-20°C	
Stability:	≥4 years	

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

Laboratory Procedures

Benserazide-d₃ (hydrochloride) is intended for use as an internal standard for the quantification of benserazide (Item No. 20298) 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).

Description

Benserazide is a peripherally restricted inhibitor of aromatic L-amino acid decarboxylase (AADC; IC₅₀ = 0.53 μ M).¹ It also inhibits tryptophan oxygenase and kynureninase (K_is = 41.8 and 26.4 μ M, respectively, in rat liver homogenates), as well as hexokinase 2 (HK2), HK1, and HK4 (IC₅₀s = 5.5, 25.1, and 40.5 μ M, respectively, for the recombinant human enzymes).^{2,3} Benserazide (50-400 μ M) is cytotoxic to SW480 colorectal cancer cells, an effect that can be reversed by HK2 siRNA knockdown, and inhibits proliferation of SW480, LoVo, HCT116, MCF-7, and SMMC-7721 cancer cells with IC₅₀ values of 143, 151, 181.4, 186, and 210.4 nM, respectively.³ It reduces tumor growth in an SW480 mouse xenograft model when administered at doses of 300 and 600 mg/kg per day for 16 days. Benserazide (10 and 50 mg/kg) inhibits striatal AADC and enhances L-DOPA-induced increases in striatal dopamine levels in a mouse model of Parkinson's disease induced by 6-OHDA (Item No. 25330).⁴

References

- 1. Schultz, E. L-dopa as substrate for human duodenal catechol-O-methyltransferase and aromatic L-amino acid decarboxylase. Biomed. Chromatogr. 4(6), 242-244 (1990).
- 2. Bender, D.A. Inhibition in vitro of the enzymes of the oxidative pathway of tryptophan metabolism and of nicotinamide nucleotide synthesis by benserazide, carbidopa and isoniazid. Biochem. Pharmacol. 29(5), 707-712 (1980).
- 3. Li, W., Zheng, M., Wu, S., et al. Benserazide, a dopadecarboxylase inhibitor, suppresses tumor growth by targeting hexokinase 2. J. Exp. Clin. Cancer Res. 36:58, (2017).
- Shen, H., Kannari, K., Yamato, H., et al. Effects of benserazide on L-DOPA-derived extracellular dopamine 4. levels and aromatic L-amino acid decarboxylase activity in the striatum of 6-hydroxydopamine-lesioned rats. Tohoku J.Exp.Med. 199(3), 149-159 (2003).

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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