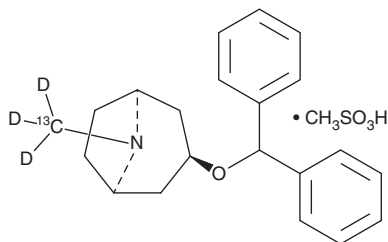


# PRODUCT INFORMATION

## Benztropine-<sup>13</sup>C-d<sub>3</sub> (mesylate)

Item No. 29644

**Formal Name:** (1R,3r,5S)-3-(benzhydryloxy)-8-(methyl-<sup>13</sup>C-d<sub>3</sub>)-8-azabicyclo[3.2.1]octane  
**MF:** C<sub>20</sub>[<sup>13</sup>C]H<sub>22</sub>D<sub>3</sub>NO • CH<sub>3</sub>SO<sub>3</sub>H  
**FW:** 407.6  
**Chemical Purity:** ≥98% (Benztropine)  
**Deuterium Incorporation:** ≥99% deuterated forms (d<sub>1</sub>-d<sub>3</sub>); ≤1% d<sub>0</sub>  
**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

Benztropine-<sup>13</sup>C-d<sub>3</sub> (mesylate) is intended for use as an internal standard for the quantification of benztropine (Item No. 16214) 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).

Benztropine-<sup>13</sup>C-d<sub>3</sub> (mesylate) is supplied as a solid. A stock solution may be made by dissolving the benztropine-<sup>13</sup>C-d<sub>3</sub> (mesylate) in the solvent of choice, which should be purged with an inert gas. Benztropine-<sup>13</sup>C-d<sub>3</sub> (mesylate) is soluble in organic solvents such as methanol and DMSO.

### Description

Benztropine is an antagonist of M<sub>1</sub> muscarinic acetylcholine receptors (K<sub>i</sub> = 0.59 nM in rat brain membranes).<sup>1</sup> It is selective for M<sub>1</sub> receptors over the serotonin transporter (K<sub>i</sub> = 5,150 nM), however, it also binds to the dopamine transporter and inhibits dopamine reuptake (K<sub>s</sub> = 237 and 130 nM, respectively).<sup>1-3</sup> Benztropine also inhibits acid sphingomyelinase by 87% when used at a concentration of 10 mM.<sup>4</sup> Formulations containing benztropine have been used in the management of Parkinson's disease symptoms such as involuntary tremor and dystonia.

### References

1. Zhang, Y., Joseph, D.B., Bowen, W.D., *et al.* Synthesis and biological evaluation of tropane-like 1-[2-[bis(4-fluorophenyl)methoxy]ethyl]-4-(3-phenylpropyl)piperazine (GBR 12909) analogues. *J. Med. Chem.* **44**(23), 3937-3945 (2001).
2. Schmitt, K.C., Zhen, J., Kharkar, P., *et al.* Interaction of cocaine-, benztropine-, and GBR12909-like compounds with wildtype and mutant human dopamine transporters: Molecular features that differentially determine antagonist binding properties. *J. Neurochem.* **107**(4), 928-940 (2008).
3. Ukairo, O.T., Bondi, C.D., Newman, A.H., *et al.* Recognition of benztropine by the dopamine transporter (DAT) differs from that of the classical dopamine uptake inhibitors cocaine, methylphenidate, and mazindol as a function of a DAT transmembrane 1 aspartic acid residue. *J. Pharmacol. Exp. Ther.* **314**(2), 575-583 (2005).
3. Kornhuber, J., Muehlbacher, M., Trapp, S., *et al.* Identification of novel functional inhibitors of acid sphingomyelinase. *PLoS One* **6**(8), 1-13 (2011).

#### 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.

#### WARRANTY AND LIMITATION OF REMEDY

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