

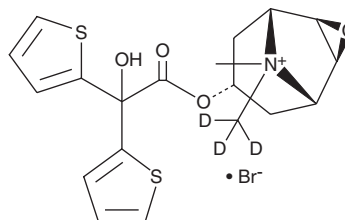
# PRODUCT INFORMATION



## Tiotropium-d<sub>3</sub> (bromide)

Item No. 25285

**CAS Registry No.:** 1127226-56-5  
**Formal Name:** (1 $\alpha$ ,2 $\beta$ ,4 $\beta$ ,5 $\alpha$ ,7 $\beta$ )-7-[(2-hydroxy-2,2-di-2-thienylacetyl)oxy]-9-methyl-9-(methyl-d<sub>3</sub>)-3-oxa-9-azoniatricyclo[3.3.1.0<sup>2,4</sup>]nonane, monobromide  
**MF:** C<sub>19</sub>H<sub>19</sub>D<sub>3</sub>NO<sub>4</sub>S<sub>2</sub> • Br  
**FW:** 475.4  
**Chemical Purity:** ≥95% (Tiotropium)  
**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

Tiotropium-d<sub>3</sub> (bromide) is intended for use as an internal standard for the quantification of tiotropium (Item No. 15773) 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).

Tiotropium-d<sub>3</sub> (bromide) is supplied as a solid. A stock solution may be made by dissolving the tiotropium-d<sub>3</sub> (bromide) in the solvent of choice, which should be purged with an inert gas. Tiotropium-d<sub>3</sub> (bromide) is slightly soluble in methanol.

### Description

Tiotropium is an antagonist that binds to M<sub>1</sub>, M<sub>2</sub>, and M<sub>3</sub> muscarinic acetylcholine receptors (K<sub>d</sub>s = 0.43, 0.54, and 0.69 nM, respectively, for human receptors).<sup>1</sup> It decreases acetylcholine-induced contraction of isolated guinea pig trachea in a concentration-dependent manner. *In vivo*, tiotropium (1 g/L inhaled aerosol) confers complete protection against acetylcholine-induced bronchospasms in anesthetized dogs. Formulations containing tiotropium have been used in the treatment of chronic obstructive pulmonary disease (COPD).

### Reference

- Disse, B., Reichl, R., Speck, G., *et al.* Ba 679 BR, a novel long-acting anticholinergic bronchodilator. *Life Sci.* **52**(5-6), 537-544 (1993).

#### 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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