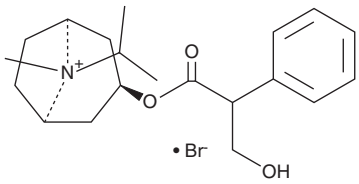
PRODUCT INFORMATION

Ipratropium (bromide)

Item No. 29423

CAS Registry No.: 22254-24-6
Formal Name: (3-*endo*,8-*syn*)-3-(3-hydroxy-1-oxo-2-phenylpropoxy)-8-methyl-8-(1-methylethyl)-8-azoniabicyclo[3.2.1]octane, monobromide
MF: $C_{20}H_{30}NO_3 \bullet Br$
FW: 412.4
Purity: ≥95%
Supplied as: A crystalline 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

Ipratropium (bromide) is supplied as a crystalline solid. A stock solution may be made by dissolving the ipratropium (bromide) in the solvent of choice, which should be purged with an inert gas. Ipratropium (bromide) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of ipratropium (bromide) in ethanol is approximately 1 mg/ml and approximately 5 mg/ml in DMSO and DMF.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of ipratropium (bromide) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of ipratropium (bromide) in PBS, pH 7.2, is approximately 5 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Ipratropium is a muscarinic receptor antagonist (IC_{50}s = 2.9, 2, and 1.7 nM for M_1, M_2, and M_3 receptors, respectively).[1] It inhibits acetylcholine-induced bronchospasm in anesthetized guinea pigs (EC_{50} = 68 µg/ml). Aerosolized ipratropium (0.2 mg/20 ml) prevents increases in airway resistance in a rat model of cadmium inhalation-induced chronic pulmonary inflammation with airspace enlargement and reduces neutrophil counts and total cell numbers in bronchoalveolar lavage fluid (BALF) and airspace enlargement in lungs when administered in combination with formoterol (Item No. 15584).[2] Formulations containing ipratropium have been used in the treatment of bronchospasm associated with chronic obstructive pulmonary disease.

References

1. Prat, M., Buil, M.A., Fernández, M.D., *et al.* Discovery of novel quaternary ammonium derivatives of (3R)-quinuclidinyl amides as potent and long acting muscarinic antagonists. *Bioorg. Med. Chem. Lett.* **25(8),** 1736-1741 (2015).
2. Zhang, W., Fievez, L., Zhang, F., *et al.* Effects of formoterol and ipratropium bromide on repeated cadmium inhalation-induced pulmonary inflammation and emphysema in rats. *Eur. J. Pharmacol.* **647(1-3)**, 178-187 (2010).

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