# PRODUCT INFORMATION



# **Decamethonium (bromide)**

Item No. 24907

CAS Registry No.: 541-22-0

 $N^{1}, N^{1}, N^{1}, N^{10}, N^{10}, N^{10}$ -hexamethyl-1,10-Formal Name:

decanediaminium, dibromide

MF:  $C_{16}H_{38}N_2 \bullet 2Br$ 

FW: 418.3 **Purity:** ≥98%

A crystalline solid Supplied as:

Storage: -20°C Stability: ≥4 years

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

### **Laboratory Procedures**

Decamethonium (bromide) is supplied as a crystalline solid. A stock solution may be made by dissolving the decamethonium (bromide) in the solvent of choice, which should be purged with an inert gas. Decamethonium (bromide) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of decamethonium (bromide) in these solvents is approximately 33, 16, and 2 mg/ml, respectively.

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 decamethonium (bromide) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of decamethonium (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

Decamethonium is a depolarizing neuromuscular blocking agent.<sup>1</sup> It is a partial agonist of muscle-type nicotinic acetylcholine receptors (nAChRs).<sup>2</sup> Decamethonium activates α1β1-containing adult mouse muscle-type nAChRs expressed in X. laevis oocytes with an  $EC_{50}$  value of 40  $\mu M$  using voltage clamp electrophysiology. It is also a nondepolarizing antagonist of neuronal-type nAChRs, inhibiting mouse  $\alpha$ 7-,  $\alpha$ 3 $\beta$ 2-,  $\alpha$ 3 $\beta$ 4-, and  $\alpha$ 4 $\beta$ 2-containing receptors with IC $_{50}$  values of 7.4, 405, 28, and 59  $\mu$ M, respectively. Decamethonoium is a competitive antagonist of  $\alpha 4\beta 2$ -containing nAChRs expressed in SH-EP1 cells (IC<sub>50</sub> = 52  $\mu$ M for the human receptor).<sup>3</sup> It also inhibits electric eel acetylcholinesterase (AChE) and blocks electrically-evoked tibialis muscle twitches in anesthetized cats with  $ED_{95}$  values of 35 and 70  $\mu g/kg$  for cats under chloralose and ether anesthesia, respectively. 1,4 Formulations containing decamethonium have been used to induce paralysis during anesthesia.

#### References

- 1. Paton, W.D. and Zaimis, E.J. J. Physiol. 112(3-4), 311-331 (1951).
- 2. Papke, R.L., Wecker, L., and Stitzel, J.A. J. Pharmacol. Exp. Ther. 333(2), 501-518 (2010).
- Eaton, J.B., Peng, J.H., Schroeder, K.M., et al. Mol. Pharmacol. 64(6), 1283-1294 (2003).
- 4. Robaire, B. and Kato, G. Mol. Pharmacol. 11(6), 722-734 (1974).

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

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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• 2Br

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