

# PRODUCT INFORMATION

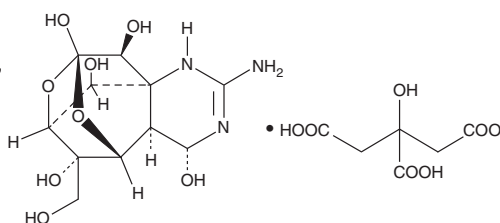


## Tetrodotoxin (citrate)

Item No. 14964

**CAS Registry No.:** 18660-81-6  
**Formal Name:** (4R,4aR,5R,7S,9S,10S,10aR,11S,12S)-2-amino-1,4,4a,5,9,10-hexahydro-12-(hydroxymethyl)-5,9:7,10a-dimethano-10aH-[1,3]dioxocino[6,5-d]pyrimidine-4,7,10,11,12-pentol, 2-hydroxy-1,2,3-propanetricarboxylate

**Synonym:** TTX citrate  
**MF:**  $C_{11}H_{17}N_3O_8 \cdot C_6H_8O_7$   
**FW:** 511.4  
**Purity:**  $\geq 98\%$   
**Supplied as:** A semi-solid  
**Storage:**  $-20^\circ\text{C}$   
**Stability:**  $\geq 4$  years



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

### Laboratory Procedures

Tetrodotoxin (TTX) (citrate) is supplied as a semi-solid. Aqueous solutions of TTX (citrate) can be prepared by directly dissolving the solid in aqueous buffers. The solubility of TTX (citrate) in citrate buffer (pH 4.8) is approximately 30 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

TTX is a potent marine-derived neurotoxin that reversibly inhibits the inward sodium current through voltage-activated sodium ( $\text{Na}_v$ ) channels, blocking nerve and muscle action potentials. It inhibits the  $\text{Na}_v$  current in frog muscle and squid axon with  $\text{IC}_{50}$  values of 4.1 and 5.2 nM, respectively, and binds to rat brain membranes with a  $K_d$  value of 1.8 nM.<sup>1</sup> TTX was used in Hodgkin and Huxley's classic experiments to elucidate the physical biology of nerve action potentials and remains an indispensable neuroscience tool to pharmacologically dissect the contribution of the  $\text{Na}_v$  current in excitable neurons and to rationally design compounds for the treatment of neuropathic pain.<sup>1</sup> This citrate-stabilized form of TTX is designed for improved solubility over pure TTX (Item No. 14963), which is insoluble in water and most organic solvents. This preparation of TTX citrate consists of TTX that has been dissolved in a citrate solution and then lyophilized.

### Reference

1. Moczydlowski, E.G. The molecular mystique of tetrodotoxin. *Toxicon* **63**, 165-183 (2013).

**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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