3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

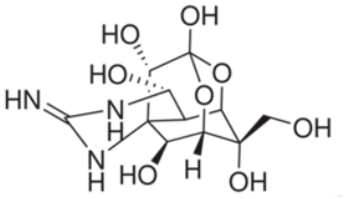
Product Information

Tetrodotoxin

Catalog Number **T8024**
Storage Temperature 2–8 °C

CAS RN 4368-28-9
Synonyms: Fugu poison, maculotoxin, tetradonic acid, TTX

Product Description



Molecular Formula: $C_{11}H_{17}N_3O_8$
Molecular Weight: 319.27

pK_a:[1] 8.76 (water)
Optical Rotation:[2] –8.64° (c = 8.55, dilute acetic acid)

Tetrodotoxin is among the most toxic substances known to man.[2] It has been isolated from widely differing animal species including newts, parrrotfish, frog, octopus, starfish, angelfish and xanthid crabs. The source of tetrodotoxin is uncertain although it may be bacterial.

Tetrodotoxin is very specific in acting on the sodium channels of excitable membranes, selectively blocking sodium influx, thus interfering with membrane depolarization and effectively inhibiting nerve conduction. It has been used to characterize sodium channels in excitable membranes and to study the role fo sodium channels in normal physiology and disease.[4-7]

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

It is soluble in a dilute citrate or acetate buffer at pH 4–5 (1 mg/ml).

Storage/Stability

Store the product at 2–8 °C.

Tetrodotoxin remains active in solution when stored frozen at pH 4–5. It is unstable in strong acid and alkaline solutions, and is rapidly destroyed by boiling at pH 2. In dilute hydrochloric or sulfuric acid, tetrodotoxin slowly changes into the less toxic anhydrotetrodotoxin, reaching an equilibrium. It is relatively stable to heat in neutral and organic acid solutions.[3]

References

1. Tetrahedron, **21**, 2081 (1965).
2. The Merck Index, 11th ed., Entry# 9175.
3. Data for Biochemical Research, 3rd ed., Dawson, R.M.C. et al., eds., Oxford University Press (New York, NY: 1986), p. 297.
4. Penzotti, J.L., Differences in saitoxin and tetrodotoxin binding revealed by mutagenesis of the Na^+ channel outer vestibule. Biophys. J., **75**, 2647 (1998).
5. Taylor, C.P., and Narasimhan, L.S., Sodium channels and therapy of central nervous system diseases. Adv. Pharmacol., **39**, 47-98 (1997).
6. Catteral, W.A., Neurotoxins that act on voltage-sensitive sodium channels in excitable membranes. Ann. Rev. Pharmacol. Toxicol., **20**, 15-43 (1980).
7. Yoshida, S., Tetrodotoxin-resistant sodium channels. Cell. Mol. Neurobiol., **14**, 227-244 (1994).

ALF,RXR,MAM 12/11-1