bio-techne
TOCRIS

Print Date: Apr 4th 2024

Certificate of Analysis

www.tocris.com

Product Name: **Tetrodotoxin** **Catalog No.: 1078** **Batch No.: 52**

CAS Number: 4368-28-9 EC Number: 224-458-8

IUPAC Name: (4*R*,4a*R*,5*R*,7*S*,9*S*,10*S*,10a*R*,11*S*,12*S*)-Octahydro-12-(hydroxymethyl)-2-imino-5,9:7,10a-dimethano-10a*H*-[1,3]dioxocino[6,5-*d*]pyrimidine-4,7,10,11,12-pentol

1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: $C_{11}H_{17}N_3O_8$

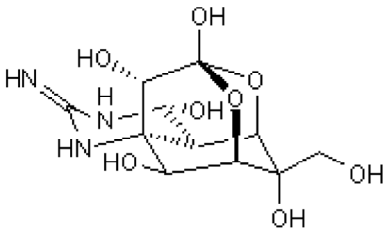
Batch Molecular Weight: 319.27

Physical Appearance: White crystalline solid

Solubility: acidic buffer (pH 4.8) to 3 mM

Storage: Store at -20°C

Batch Molecular Structure:



2. ANALYTICAL DATA

HPLC: Shows 99.5% purity

bio-techne.com
info@bio-techne.com
techsupport@bio-techne.com

North America
Tel: (800) 343 7475

China
info.cn@bio-techne.com
Tel: +86 (21) 52380373

Europe Middle East Africa
Tel: +44 (0)1235 529449

Rest of World
www.tocris.com/distributors
Tel:+1 612 379 2956

Product Name: **Tetrodotoxin** **Catalog No.: 1078** **52**

CAS Number: 4368-28-9 EC Number: 224-458-8

IUPAC Name: (4*R*,4a*R*,5*R*,7*S*,9*S*,10*S*,10a*R*,11*S*,12*S*)-Octahydro-12-(hydroxymethyl)-2-imino-5,9:7,10a-dimethano-10a*H*-[1,3]dioxocino[6,5-*d*]pyrimidine-4,7,10,11,12-pentol

Description:

Tetrodotoxin is a reversible, potent, selective and high affinity inhibitor of voltage gated sodium channels Na_v 1.6, 1.1, 1.3, 1.4, 1.2 and 1.7 (IC_{50} values are 2.3 nM, 4.1 nM, 5.3 nM, 7.6 nM, 14 nM and 36 nM, respectively). Binding is reversible and high affinity (K_d = 1-10 nM). Tetrodotoxin shows antagonism of aconitine-induced cardiac toxicity, analgesic effects in mouse models of neuropathy and prolonged duration of local anesthesia in animals when combined with capsaicin. Tetrodotoxin also shows pH-dependent blockade of canine cardiac L-type Ca^{2+} (Ca_v1.x) channels, blocks primary reward in an animal study of drug-seeking lever pressing.... Please see product specific page on www.tocris.com for full description.

Physical and Chemical Properties:

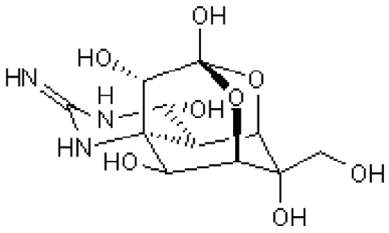
Batch Molecular Formula: $C_{11}H_{17}N_3O_8$

Batch Molecular Weight: 319.27

Physical Appearance: White crystalline solid

Minimum Purity: ≥98%

Batch Molecular Structure:



Storage: Store at -20°C

Solubility & Usage Info:

acidic buffer (pH 4.8) to 3 mM

Tetrodotoxin is soluble to 3mM in 0.1M citrate or acetate buffer at pH 4.8. To make the buffer solution either sodium citrate or sodium acetate should be dissolved in water to a final concentration of 0.1M. The pH of the buffer solution can then be adjusted to pH 4.8 with the addition of citric acid, acetic acid or sodium hydroxide. This product is supplied as a lyophilized solid and may be very hard to visualize. Solutions should be made by adding solvent directly to the vial. The vial should then be vortexed vigorously to ensure the product has completely dissolved.

Stability and Solubility Advice:

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. *Unless contradicted by product-specific protocols or instructions, our standard recommendations apply:

SOLIDS: Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

SOLUTIONS: We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

Other Information:

This is a dual-use item with associated conditions of supply; the relevant licence/documentation from the appropriate governing body will be required.

References:

Shomorony *et al* (2019) Prolonged duration local anesthesia by combined delivery of capsaicin- and tetrodotoxin-loaded liposomes. Anesth.Analg. ***129*** 709. PMID: 31425210.

Tsukamoto *et al* (2017) Differential binding of tetrodotoxin and its derivatives to voltage-sensitive sodium channel subtypes (Nav1.1 to Nav1.7). Br.J.Pharmacol. ***174*** 3881. PMID: 28832970.

Hegyi *et al* (2013) Tetrodotoxin blockade on canine cardiac L-type Ca^{2+} channels depends on pH and redox potential. Mar.Drugs ***11*** 2140. PMID: 23771047.

bio-techne.com
info@bio-techne.com
techsupport@bio-techne.com

North America
Tel: (800) 343 7475

China
info.cn@bio-techne.com
Tel: +86 (21) 52380373

Europe Middle East Africa
Tel: +44 (0)1235 529449

Rest of World
www.tocris.com/distributors
Tel:+1 612 379 2956