Palytoxin
from Palythoa tuberculosa

Product Number P 5183
Storage Temperature 2-8 °C

Product Description
Molecular Formula: $\text{C}_{129}\text{H}_{223}\text{N}_{3}\text{O}_{54}$
Molecular Weight: 2,680
CAS Number: 77734-91-9
Specific Rotation: $+26^\circ$ (25 °C, H$_2$O)$^1$
Synonym: PTX

Palytoxin is a natural product derived from the zoanthid coral Palythoa toxica that is the most toxic non-proteinaceous chemical known to occur in nature.$^1$ This ionophore compound acts as a hemolysin and alters the functioning of excitable cells. Palytoxin induces activity of a small conductance cationic channel that then produces secondary activations of voltage-dependent Ca$^{2+}$ channels and of Na$^+$/Ca$^{2+}$ exchange. This results in neurotransmitter release by nerve terminals and contractions of striated and smooth muscle cells. In addition, palytoxin opens a membrane conductive pathway for H$^+$ that drives H$^+$ inside the cells and activates Na$^+$/H$^+$ exchange activity.$^2$

Palytoxin has been utilized to investigate the induction of Na$^+$ and K$^+$ flux by the (Na$^+$, K$^+$)-driven pump protein, and to probe the modulation of the gating of Na$^+$ and Ca$^{2+}$ pumps.$^3,4$ Palytoxin has been used in a study of Na$^+$ and Ca$^{2+}$ homeostasis in human osteoblast-like Saos-2 cells.$^5$ In cultured Rat-1 cells, palytoxin has been shown to activate the stress-activated protein kinase/c-Jun NH$_2$-terminal kinase 1 (SAPK/JNK1) and to potentiate the p38/HOG1 mitogen-activated protein kinase and the upstream activator of SAPK/JNK1, SEK1/MKK4.$^6$

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
This product is soluble in water, acidic aqueous solutions, and aqueous alcohol solutions. Stock solutions of this product (0.1 mM in water) have been prepared and stored frozen.$^4$

References
1. The Merck Index, 12th ed., Entry# 7132.