

Product Information

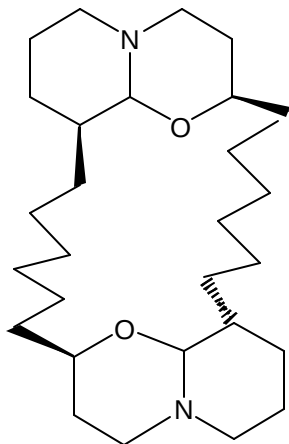
XESTOSPONGIN C

Product Number **X 2628**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS #: 88903-69-9

Synonyms: XeC; Araguspongine E



Product Description

Molecular Formula: $\text{C}_{28}\text{H}_{50}\text{N}_2\text{O}_2$

Molecular Weight: 446.71

Synthetic

Supplied as an off-white film

Purity >90% by TLC

Two related families of calcium channels, inositol 1,3,4-trisphosphate (IP_3) receptors and ryanodine receptors, mediate calcium release from intracellular stores in the endoplasmic or sarcoplasmic reticulum. In the cytoplasm, free calcium accumulates near open calcium channels to allow local communication with intracellular targets, such as mitochondria. Cytoplasmic free calcium mediates excitation/contraction coupling in striated muscle and modulates the activity of Ca^{2+} -calmodulin regulated enzymes and other calcium binding proteins. Both IP_3 and ryanodine receptors are composed of subunits, that are among the largest known proteins and the function channel of each receptor comprises a tetramer.^{1,2}

Xestospongine C is one of several macrocyclic bis-oxaquinolizidines originally isolated from the Australian sponge, *Xestospongia* species, that are potent blockers of IP_3 -induced Ca^{2+} release from the endoplasmic reticulum (IC_{50} is approximately 350 nM). Inhibition of the IP_3 receptor is independent of IP_3 concentration and does not involve binding to the IP_3 effector site.

Xestospongine C has essentially no effect on ryanodine receptor-mediated events.^{3,4}

Xestospongine C also blocks the endoplasmic-reticulum Ca^{2+} pump but has no effect on passive Ca^{2+} leak.⁵ As Ca^{2+} stores in the endoplasmic reticulum are depleted, store-operated calcium channels (SOCC, the mammalian equivalent of Trp channels) in the plasma membrane increase conductance to replenish the Ca^{2+} stores.^{6,7} This capacitative Ca^{2+} entry is blocked by xestospongine C, indicating that IP_3 receptors are involved in endoplasmic reticulum interactions with the plasma membrane and in the regulation of SOCC conductance.

Synthetic xestospongine C is a valuable tool for investigating the involvement of IP_3 receptors in Ca^{2+} signaling events in neuronal and non neuronal cells.⁹

Preparation Instructions

Xestospongine C is soluble in DMSO (1 mg/mL) and ethanol.

Storage/Stability

Store under nitrogen, tightly sealed at $-20\text{ }^{\circ}\text{C}$ for up to 12 months.

References

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6. Van Rossum, D. B., et al., Ca^{2+} entry mediated by store depletion, S-nitrosylation, and TRP3 channels. Comparison of coupling and function. J. Biol. Chem., **275**, 28562-28568 (2000).
7. Liu, X., and Ambudkar, I.S., Characteristics of a store-operated calcium-permeable channel: sarcoendoplasmic reticulum calcium pump function controls channel gating. J. Biol. Chem. **276**, 29891-29898 (2001).
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