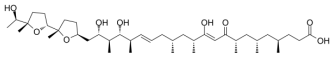
Ionomycin

Cat. No.:	HY-13434
CAS No.:	56092-81-0
Molecular Formula:	$C_{41}H_{72}O_9$
Molecular Weight:	709.01
Target:	Calcium Channel; PKC; Bacterial; Apoptosis; Antibiotic
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; Epigenetics; TGF-beta/Smad; Anti-infection; Apoptosis
Storage:	Solution, -20°C, 2 years



SOLVENT & SOLUBILITY

In Vitro	DMSO : 100 mg/mL (141.04 mM; Need ultrasonic)
In Vivo	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 2.5 mg/mL (3.53 mM); Clear solution 2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 2.5 mg/mL (3.53 mM); Clear solution 3. Add each solvent one by one: 10% DMSO >> 90% corn oil Solubility: ≥ 2.5 mg/mL (3.53 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	Ionomycin (SQ23377) is a potent, selective calcium ionophore and an antibiotic produced by Streptomyces conglobatus. Ionomycin (SQ23377) is highly specific for divalent cations (Ca>Mg>Sr=Ba). Ionomycin (SQ23377) promotes apoptosis. Ionomycin also induces the activation of protein kinase C (PKC)[1][2][3].
IC_{50} & Target	Calcium ionophore[1]
In Vitro	Ionomycin is a Calcium ionophore and an antibiotic produced by Streptomyces conglobatus[1]. Addition of 2 μM Ionomycin to LCLC 103H cells causes an instantaneous increase in intracellular Ca^{2+} concentration from 50 to 180 nM. DNA and protein analysis in Ionomycin-treated cultures revealed DNA fragmentation and PARP cleavage to an 85-kDa fragment typical of caspase-mediated apoptosis. Necrosis could be detected in ~1-5% of the Ionomycin treated cells. Caspase activation in whole cells was followed by monitoring the increase in activity against Ac-DEVD-amc following Ionomycin treatment[2]. Ionomycin-mediated cleavage and exosome release. Following Ionomycin exposure, medium conditioned by SKOV3ip cells had increased amounts of exosomes containing the L1-32 cleavage fragment[4]. Ionomycin also phosphorylate p38 MAPK by Ca^{2+} influx through SOCE, leading to suppression of TNF-α-induced NF-κB phosphorylation[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Sci Transl Med. 2020 Nov 25;12(571):eaaz6667.
- Mol Cell. 2022 May 5;S1097-2765(22)00327-6.
- Protein Cell. 2021 Oct 22;1-21.
- Proc Natl Acad Sci U S A. 2022 Feb 22;119(8):e2114851119.
- Cell Mol Immunol. 2022 Feb 22.

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REFERENCES

[1]. Junsuke Uwada, et al. Store-operated calcium entry (SOCE) contributes to phosphorylation of p38 MAPK and suppression of TNF-α signalling in the intestinal epithelial cells. Cell Signal. 2019 Nov;63:109358.

[2]. Liu C,et al. Characterization of ionomycin as a calcium ionophore. J Biol Chem. 1978 Sep 10;253(17):5892-4.

[3]. Chatila T, et al. Mechanisms of T cell activation by the calcium ionophore ionomycin. J Immunol. 1989 Aug 15;143(4):1283-9.

[4]. Gil-Parrado S, et al. Ionomycin-activated calpain triggers apoptosis. A probable role for Bcl-2 family members. J Biol Chem. 2002 Jul 26;277(30):27217-26.

[5]. Stoeck A, et al A role for exosomes in the constitutive and stimulus-induced ectodomain cleavage of L1 and CD44. Biochem J. 2006 Feb 1;393(Pt 3):609-18.

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