Small Molecules

Ionomycin

Calcium ionophore

Catalog # 73722 1 mg
73724 5 mg

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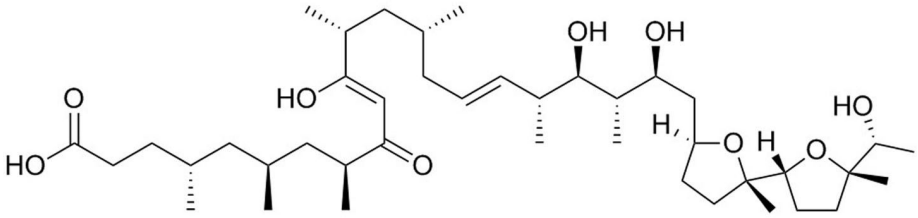
Product Description

Ionomycin is a potent and selective calcium ionophore derived from Streptomyces conglobatus (Liu et al.). It is used as a research tool to rapidly raise the intracellular level of calcium, and to study calcium transport across biological membranes by inducing the release of cytosolic calcium stores (Morgan & Jacob; Yoshida & Plant). Ionomycin is a more effective Ca++ ionophore than A23187, but less effective at binding and carrying Mg++ (Liu & Hermann). Ionomycin is able to activate and prime the polymorphonuclear neutrophil (PMN) oxidase (Elzi et al.), and is used in conjunction with Phorbol 12-myristate 13-acetate (PMA; Catalog #74042) for the activation of T cells (IC_{50} = 5.8 nM; Caraher et al.; Zhang et al.). This product is supplied as a 10 mg/mL solution in ethanol.

Molecular Name:	Ionomycin
Alternative Names:	SQ 23377
CAS Number:	56092-81-0; 64-17-5
Chemical Formula:	$C_{41}H_{72}O_9$
Molecular Weight:	709 g/mol
Purity:	≥ 98%
Chemical Name:	Ionomycin free acid
Structure:	

Properties

Physical Appearance:	A solution in ethanol
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. Stable as supplied for 12 months from date of receipt.
Solubility:	Not applicable.

Published Applications

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· Activates T cells from human, mouse, or rat sources, in combination with PMA, to express cytokines including IL-17, IL-4, IL-10, and IL-2 (Caraher et al.; Harrington et al.; Parrish-Novak et al.).

References

Caraher EM et al. (2000) Flow cytometric analysis of intracellular IFN-gamma, IL-4 and IL-10 in CD3(+)4(+) T-cells from rat spleen. J Immunol Methods 244(1-2): 29–40.
Elzi DJ et al. (2001) Ionomycin causes activation of p38 and p42/44 mitogen-activated protein kinases in human neutrophils. Am J Physiol Cell Physiol 281(1): C350–60.
Harrington LE et al. (2005) Interleukin 17-producing CD4+ effector T cells develop via a lineage distinct from the T helper type 1 and 2 lineages. Nature Immunol 6(11): 1123–32.
Liu C & Hermann TE. (1978) Characterization of ionomycin as a calcium ionophore. J Biol Chem 253(17): 5892–4.
Liu WC et al. (1978) Ionomycin, a new polyether antibiotic. J Antibiot (Tokyo) 31(9): 815–9.
Morgan AJ & Jacob R. (1994) Ionomycin enhances Ca2+ influx by stimulating store-regulated cation entry and not by a direct action at the plasma membrane. Biochem J 300(Pt 3): 665–72.
Parrish-Novak J et al. (2000) Interleukin 21 and its receptor are involved in NK cell expansion and regulation of lymphocyte function. Nature 408: 57–63.
Yoshida S & Plant S. (1992) Mechanism of release of Ca2+ from intracellular stores in response to ionomycin in oocytes of the frog Xenopus laevis. J Physiol 458: 307–18.
Zhang LH et al. (1997) Antiproliferative and immunosuppressive properties of microcolin A, a marine-derived lipopeptide. Life Sci 60(10): 751–62.

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