

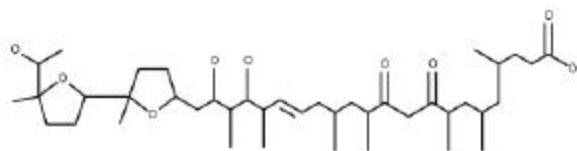
## Product Information

### Ionomycin from *Streptomyces globatus*

Catalog Number **I9657**

Storage Temperature -20 °C

CAS RN: 56092-81-0



Molecular formula: C<sub>41</sub>H<sub>72</sub>O<sub>9</sub>

Molecular weight: 709.00

#### Product Description

Ionomycin is a polyether antibiotic produced by *Streptomyces globatus*, ATCC 31005.<sup>1</sup> It is highly specific for divalent cations.

Ion selectivity is as follows: Ca<sup>2+</sup> > Mg<sup>2+</sup> >> Sr<sup>2+</sup> = Ba<sup>2+</sup>. Binding of Sr<sup>2+</sup> and Ba<sup>2+</sup> is insignificant and binding to monovalent cations or rubidium is negligible. La<sup>2+</sup> is also bound to some extent. Complexation with a cation is always in a 1:1 stoichiometry and pH-dependent. Essentially no binding of Ca<sup>2+</sup> occurs below pH 7.0 and maximum binding takes place at pH 9.5.<sup>2</sup>

Ionomycin has significant advantages for use in studies of Ca<sup>2+</sup> transport across biological membranes.<sup>3</sup> It is also used to equilibrate intracellular and extracellular calcium ion levels for *in situ* calibrations of fluorescent indicators.<sup>4</sup> The resultant calcium flux leads to several downstream effects, such as up-regulation of CD7 in T cells (signal of activation)<sup>5</sup>, or the hydrolysis of phosphoinositides and activation of Protein Kinase C in T cells.<sup>6</sup> It was found to have antiproliferative effects on the human bladder cancer cell line both *in vitro* and *in vivo*.<sup>7</sup> Ionomycin can serve as an inducer of apoptosis<sup>8</sup> which was suggested to act by activation of a latent, calcium-responsive endonuclease<sup>9</sup>.

Purity: ≥98% (HPLC)

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices

#### Preparation Instructions

The product, a lyophilized semi-solid, is soluble in methanol and in DMSO. It is routinely tested in acetonitrile at 10 mg/ml, yielding a clear solution.

#### Storage/Stability

Store desiccated and protected from light at -20 °C. Under these conditions the product is stable for 2 years. Stock solutions in DMSO, stored at -20 °C, and protected from light, are stable for several months.

#### References

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7. Miyake, H., et al., Calcium ionophore, ionomycin inhibits growth of human bladder cancer cells both *in vitro* and *in vivo* with alteration of Bcl-2 and Bax expression levels., *J. Urol.*, **162**, 916-21 (1999)
8. Miyake, H., et al., Stress protein GRP78 prevents apoptosis induced by calcium ionophore, ionomycin, but not by glycosylation inhibitor, tunicamycin, in human prostate cancer cells., *J. Cell Biochem.*, **77**, 396-408 (2000).
9. Aagaard-Tillery, K.M. and Jelinek, D.F., Differential activation of a calcium-dependent endonuclease in human B lymphocytes. Role in ionomycin-induced apoptosis., *J. Immunol.*, **155**, 3297-307 (1995).

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