Revision 1

Store at -20C

#5934

Okadaic Acid

25 µg

Cell Signaling TECHNOLOGY®

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Background

Okadaic acid is an inhibitor of the serine/theorine protein phosphatases PP1 (IC_{50} = 15-20 nM) and PP2A (IC_{50} = 0.1 nM), exhibiting much greater activity towards the latter. PP2A is completely inhibited at 1-2 nM, compared to greater than 1 µM for PP1 (1). This is unlike the protein phosphatase inhibitor Calyculin A, which potently inhibits both PP1 (IC_{50} = 2 nM) and PP2A (IC_{50} = 0.5-1 nM) (2). Okadaic acid does not effectively inhibit PP2C (3), acid and alkaline phosphatases, nor phosphotyrosine protein phosphatases (2,3). It has shown to inhibit PP2B, but at much higher concentrations than with PP1 and PP2A (3). Okadaic acid has also been described as a non-TPA type potent tumor promoter (4). These tumor-promoting properties and its ability to significantly increase protein phosphorylation make okadaic acid a very useful tool for studying cellular processes that are regulated by reversible phosphorylation of proteins (5).

Molecular Formula

$C_{44}H_{68}O_{13}$

Molecular Weight

805 g/mol

Purity

>98%

CAS

78111-17-8

Solubility

Soluble in DMSO at 40mg/ml and EtOH at 5mg/ml.

Storage

Store lyophilized or in solution at -20°C, desiccated. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 1 week to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

Directions for Use

Okadaic Acid is supplied as a lyophilized powder. For a 1 mM stock, reconstitute the 25 µg in 31.1 µl DMSO. Working concentrations and length of treatments vary depending on the desired effect, but it is typically used at 10-1000 nM for 15-60 min. Soluble in DMSO or ethanol.

Background References

1. Cohen, P. et al. (1989) *FEBS Lett* 250, 596-600.
2. Ishihara, H. et al. (1989) *Biochem Biophys Res Commun* 159, 871-7.
3. Bialojan, C. and Takai, A. (1988) *Biochem J* 256, 283-90.
4. Suganuma, M. et al. (1988) *Proc Natl Acad Sci U S A* 85, 1768-71.
5. Fernández, J.J. et al. (2002) *Curr Med Chem* 9, 229-62.

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