#12758 Store at -20°C

Thapsigargin

☑ 1 mg

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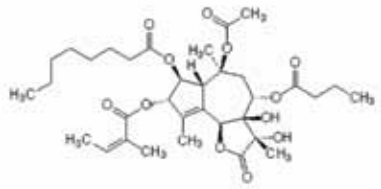
For Research Use Only. Not For Use In Diagnostic Procedures.

Background: Thapsigargin is a cell-permeable sesquiterpene lactone derived from the plant *Thapsia garganica* that acts as a tumor promoter in mammalian cells (1,2). Studies show that thapsagargin causes a rapid increase in cytosolic Ca^{2+} concentrations via discharge of intracellular Ca^{2+} stores. Research indicates that this increase in cytosolic calcium results from the specific inhibition of endoplasmic reticulum Ca^{2+}-ATPases (IC_{50} = ~30 nM), and does not involve the hydrolysis of inositol phospholipids or protein kinase C (1,2). This disruption of calcium homeostasis is widely used in research studies to induce ER stress. Conflicting information regarding the role of thapsigargin in autophagy has been reported, but recent evidence points to thapsigargin inhibiting autophagy by blocking autophagosome fusion with lysosomes (3-5).

Molecular Formula: $C_{34}H_{50}O_{12}$

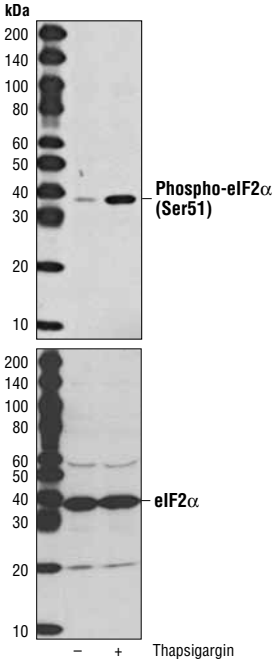


Molecular Weight: 650.8 g/mol

Solubility: Soluble in DMSO or ethanol.

Purity: >97%

Directions for Use: Thapsigargin is supplied as a lyophilized powder. For a 1.25 mM stock, reconstitute the 1 mg in 1.23 ml DMSO. Working concentrations and length of treatments vary depending on the desired effect, but it is typically used at 2-2000 nM for 0.5-24 hours.



Western blot analysis of extracts from C2C12 cells, untreated (-) or treated with Thapsigargin (300 nM, 30 min; +), using Phospho-eIF2α (Ser51) (D9G8) XP® Rabbit mAb #3398 (upper) and eIF2α Antibody #9722 (lower).

Storage: Store lyophilized or in solution at -20°C, desiccated. Protect from light. In lyophilized form, the chemical is stable for 24 months. Once in solution, use within 3 months to prevent loss of potency. Aliquot to avoid multiple freeze/thaw cycles.

Background References:

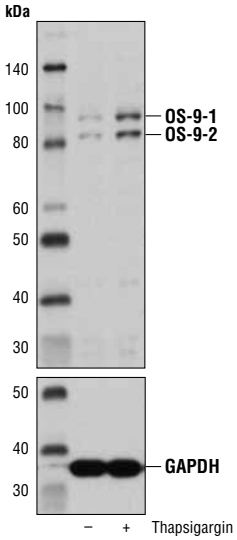
(1) Jackson, T.R. et al. (1988) *Biochem J* 253, 81-6.

(2) Thastrup, O. et al. (1990) *Proc Natl Acad Sci U S A* 87, 2466-70.

(3) Ding, W.X. et al. (2007) *J Biol Chem* 282, 4702-10.

(4) Grotemeier, A. et al. (2010) *Cell Signal* 22, 914-25.

(5) Ganley, I.G. et al. (2011) *Mol Cell* 42, 731-43.



Western blot analysis of extracts from HeLa cells, untreated (-) or treated with Thapsigargin (2 nM, 16 hr; +), using OS-9 (D8P4G) Rabbit mAb #12497 (upper) and GAPDH (D16H11) XP® Rabbit mAb #5174 (lower).

Applications Key: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide
Species Cross-Reactivity Key: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.