

Product Name:	Thimerosal
Product Number:	T006
CAS Number:	54-64-8
Molecular Formula:	$C_9H_9HgNaO_2S$
Molecular Weight:	404.81
Form:	Powder
Appearance:	White or off-white powder
Solubility:	(1g/1.5ml in H ₂ O): Clear or slightly hazy and light yellow solution
Source:	Synthetic
Storage Conditions:	2-8 °C
Description:	<p>Thimerosal or Thiomersal is an organomercury compound with antibacterial and antifungal properties. Thimerosal was first patented by Morris Kharasch from the University of Maryland in 1927, and later given the trade name Merthiolate by Eli Lilly and Company. Thimerosal is used as a preservative for many pharmaceutical and research applications, as well as a topical antiseptic on skin and mucous membranes.</p> <p>Thimerosal is an enzyme inhibitor that is capable of inhibiting a wide range of sulfhydryl-dependent enzymes and proteins. Thimerosal causes a release of calcium from intracellular stores in many cell types and may induce or inhibit cellular functions dependent on calcium signaling. Thimerosal may have toxic effects to many cell types and has been shown to induce apoptosis <i>in vitro</i>.</p> <p>Thimerosal is sparingly soluble in aqueous solution (4.6 mg/mL).</p> <p>This product is considered a dangerous good. Quantities above 1 g may be subject to additional shipping fees. Please contact us for specific questions.</p>
Mechanism of Action:	<p>Thimerosal inhibits sulfhydryl-containing active site of various enzymes and binds to sulfhydryl compounds, such as glutathione, cysteine, and SH groups of proteins. In addition, thimerosal activates the InsP₃ calcium channel on endoplasmic reticular membrane, thereby triggering the release of calcium from intracellular stores resulting in a calcium-induced calcium-influx of extracellular calcium. Consequently, thimerosal may induce or inhibit cellular functions dependent on calcium signaling.</p>
Spectrum:	Thimerosal is a broad-spectrum antimicrobial agent, that is effective against gram-positive bacteria, gram-negative bacteria, fungi, protozoa and viruses.
Plant Biology Applications	Thimerosal has demonstrated antifungal properties against pathogenic fungi including <i>Aspergillus</i> and <i>Fusarium</i> species and has demonstrated greater potency than amphotericin B and natamycin.

References:

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- Disulfide linkage of biotin identifies a 106-kDa Ca²⁺ release channel in sarcoplasmic reticulum:* N.F. Zaidi, et al.; *J. Biol. Chem.* **264**, 21737 (1989)
- Thimerosal induces DNA breaks, caspase-3 activation, membrane damage, and cell death in cultured human neurons and fibroblasts:* D. S. Baskin, et al.; *Toxicol. Sci.* **74**, 361 (2003)
- Antibody to the inositol trisphosphate receptor blocks thimerosal- enhanced Ca(2+)-induced Ca²⁺ release and Ca²⁺ oscillations in hamster eggs:* S. Miyazaki, et al.; *FEBS Lett.* **309**, 180 (1992)
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- Thimerosal stimulates Ca²⁺ flux through inositol 1,4,5-trisphosphate receptor type 1, but not type 3, via modulation of an isoform-specific Ca²⁺-dependent intramolecular interaction:* G. Bultynck, et al.; *Biochem. J.* **381**, 87 (2004)
- Thimerosal causes calcium oscillations and sensitizes calcium-induced calcium release in unfertilized hamster eggs:* K. Swann; *FEBS Lett.* **278**, 175 (1991),
- Thimerosal: a versatile sulfhydryl reagent, calcium mobilizer, and cell function-modulating agent::* J.G. Elferink; *Gen. Pharmacol.* **33**, 1 (1999), (Review),