Silvestrol

Cat. No.: HY-13251
CAS No.: 697235-38-4
Molecular Formula: C₃₄H₃₈O₁₃
Molecular Weight: 654.66
Target: Eukaryotic Initiation Factor (eIF); Apoptosis; Autophagy
Pathway: Cell Cycle/DNA Damage; Apoptosis; Autophagy
Storage: Powder -20°C 3 years
        4°C 2 years
        In solvent -80°C 6 months
        -20°C 1 month

**SOLVENT & SOLUBILITY**

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Vitro</td>
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<tr>
<td>DMSO</td>
<td>≥ 6.6 mg/mL (10.08 mM)</td>
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<tr>
<td>H₂O</td>
<td>&lt; 0.1 mg/mL (insoluble)</td>
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<td>* “≥” means soluble, but saturation unknown.</td>
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</table>

In Vivo

1. Silvestrol is dissolved in 20%(w/v) 2-hydroxyproply beta-cyclodextrin vehicle at a concentration of 125 μg/mL and injected into mice i.p.[7].
2. Silvestrol is formulated in 30% 2-hydroxypropyl-β-cyclodextrin[8].
3. Silvestrol is prepared in 5.2% Tween 80 5.2% PEG 400[6].

**BIOLOGICAL ACTIVITY**

Description
Silvestrol is a eukaryotic translation initiation factor 4A (eIF4A) inhibitor isolated from the fruits and twigs of Aglaia foveolata. Silvestrol induces autophagy and caspase-mediated apoptosis[1][2][3].

IC₅₀ & Target
eIF4A[1]

In Vitro
Silvestrol is a specific eIF4A-targeting translation inhibitor. Silvestrol exhibits significant cytotoxic activity against many human cancer cell lines, such as lung, prostate, and breast cancer with IC₅₀ values ranging from 1 to 7 nM[1].
Silvestrol significantly reduces the number of LNCaP cell colonies. Silvestrol (30 nM, 120 nM) induces apoptosis in LNCaP cells, through the mitochondrial pathway. Apaf-1, Caspase-2, caspase-9, and caspase-10 are involved in Silvestrol-induced apoptosis but caspase-3 and 7 are not\(^2\).

Silvestrol induces caspase-3 activation and apoptotic cell death in a time- and dose-dependent manner. Silvestrol-mediated cell death is attenuated in ATG7-null mouse embryonic fibroblasts (MEFs) lacking a functional autophagy protein\(^3\). Silvestrol (50 nM) exerts an immediate inhibitory effect and causes near-static cell index compared with the control cells. Silvestrol (6.25 nM) enhances proliferation more than the vehicle control-treated cells, whereas a higher concentration of Silvestrol (50 nM) can inhibit cell proliferation. Silvestrol and episilvestrol display synergistic effects in combination with CDDP\(^4\).

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### In Vivo
Silvestrol (1.5 mg/kg, i.p.) does not adversely affect production of human IgG by xenografted B-lymphocytes in mice. Silvestrol significantly prolongs survival compared to vehicle. There is no such lymphocyte infiltration detected in the spleens of any of the Silvestrol-treated mice, and nor do these animals exhibit any other obvious signs of lymphoma upon necropsy\(^5\).

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### PROTOCOL

**Cell Assay** \(^2\)

The cells are seeded at a density of \(7\times10^4\) cells/mL in 100-mm culture dishes and are treated with 30 nM or 120 nM concentrations of Silvestrol for 24 h\(^2\). MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**Animal Administration** \(^5\)

Mice\(^5\) Peripheral blood mononuclear cells (PBMC) are injected intraperitoneally (IP) into SCID mice depleted of murine natural killer (NK) cells by pretreatment (plus weekly re-treatment) with anti-asialo (GM1). Engraftment is confirmed by hu-IgG ELISA. Treatments with vehicle (30% hydroxypropyl-β-cyclodextrin) or Silvestrol (1.5 mg/kg every 48 hr IP) begin 2 weeks post-engraftment\(^5\).

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### REFERENCES


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