Elesclomol

**Cat. No.:** HY-12040  
**CAS No.:** 488832-69-5  
**Molecular Formula:** \( \text{C}_{19}\text{H}_{20}\text{N}_{4}\text{O}_{2}\text{S}_{2} \)  
**Molecular Weight:** 400.52  
**Target:** Apoptosis; Reactive Oxygen Species  
**Pathway:** Apoptosis; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB  
**Storage:**  
- **Powder:** -20°C 3 years, 4°C 2 years  
- **In solvent:** -80°C 1 year, -20°C 6 months

**SOLVENT & SOLUBILITY**

**In Vitro**  
DMSO: 100 mg/mL (249.68 mM; Need ultrasonic)

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>2.4968 mL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 mM</td>
<td>0.4994 mL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 mM</td>
<td>0.2497 mL</td>
<td></td>
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</tr>
</tbody>
</table>

Please refer to the solubility information to select the appropriate solvent.

**In Vivo**  
1. Add each solvent one by one: 50% PEG300 >> 50% saline  
   Solubility: 5 mg/mL (12.48 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline  
   Solubility: ≥ 2.5 mg/mL (6.24 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)  
   Solubility: ≥ 2.5 mg/mL (6.24 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**  
Elesclomol (STA-4783) is a potent copper ionophore and promotes copper-dependent cell death (cuproptosis). Elesclomol specifically binds ferredoxin 1 (FDX1) α2/α3 helices and β5 strand. Elesclomol inhibits FDX1-mediated Fe-S cluster biosynthesis. Elesclomol is an oxidative stress inducer that induces cancer cell apoptosis. Elesclomol is a reactive oxygen species (ROS) inducer. Elesclomol can be used for Menkes and associated disorders of hereditary copper deficiency research [1][2][3][4].

**In Vitro**  
Elesclomol (STA-4783) binds the FDX1 α2/α3 helices and β5 strand, but does not bind the paralog protein FDX2. Elesclomol-
Cu(II) is an FDX1 neo-substrate. FDX1 protein binds and reduces the elesclomol-Cu(II) complex\[^1\]. Elesclomol-Cu (1:1 ratio) (40 nM) for only 2 hours results in a 15- to 60-fold increase in intracellular copper levels that triggered cell death more than 24 hours later in ABC1 cells\[^1\].

The addition of copper to elesclomol at a 1:1 molar ratio prior to treatment significantly reduces cell viability when cells are grown in glycolytic (glucose media) conditions\[^2\].

Elesclomol (200 nM; 18 hours) treatment increases the number of early and late apoptotic cells in HSB2 cells. Elesclomol induces apoptosis in cancer cells through the induction of oxidative stress\[^3\].

Elesclomol significantly inhibits the cell viability of SK-MEL-5, MCF-7, and HL-60 cells with IC\(_{50}\) values of 110 nM, 24 nM and 9 nM, respectively\[^5\].

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

**Apoptosis Analysis\[^3\]**

<table>
<thead>
<tr>
<th>Cell Line:</th>
<th>HSB2 cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration:</td>
<td>200 nM</td>
</tr>
<tr>
<td>Incubation Time:</td>
<td>18 hours</td>
</tr>
<tr>
<td>Result:</td>
<td>Increased the number of early and late apoptotic cells.</td>
</tr>
</tbody>
</table>

**In Vivo**

Elesclomol (10 mg/kg; subcutaneous injection; every three days from post-natal day 5 to 26 and once weekly until post-natal day 54) treatment ameliorates severe cardiac pathology with a partial reduction in hypertrophy. Cardiac [Cu] increased with Elesclomol treatment from a vehicle knockout level of 34 to 55\(^\%\)\[^4\].

Elesclomol escorted copper to the mitochondria and increased cytochrome c oxidase levels in the brain. Elesclomol prevents detrimental neurodegenerative changes and improved the survival of the mottled-brindled mouse\[^4\].

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

<table>
<thead>
<tr>
<th>Animal Model:</th>
<th>Cardiac Ctr1 knockout mice[^4]</th>
</tr>
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<td>Dosage:</td>
<td>10 mg/kg</td>
</tr>
<tr>
<td>Administration:</td>
<td>Subcutaneous injection; every three days from post-natal day 5 to 26 and once weekly until post-natal day 54</td>
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<td>Result:</td>
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</tbody>
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**CUSTOMER VALIDATION**

- Cell Rep Med. 2022 Nov 3;100802.
- Biomed Pharmacother. 2023 Jan 25;159:114301.

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**REFERENCES**


Caution: Product has not been fully validated for medical applications. For research use only.

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