Carboplatin

Cat. No.: HY-17393
CAS No.: 41575-94-4
Molecular Formula: \( \text{C}_6\text{H}_{12}\text{N}_2\text{O}_4\text{Pt} \)
Molecular Weight: 371.25
Target: DNA Alkylator/Crosslinker; Autophagy; DNA/RNA Synthesis
Pathway: Cell Cycle/DNA Damage; Autophagy
Storage: 4°C, protect from light

* The compound is unstable in solutions, freshly prepared is recommended.

SOLVENT & SOLUBILITY

In Vitro

\( \text{H}_2\text{O} : 4.9 \text{ mg/mL (13.20 mM; Need ultrasonic and warming; DMSO can inactivate Carboplatin's activity)} \)

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 mM</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2.6936 mL</td>
<td>13.4680 mL</td>
<td>26.9360 mL</td>
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<td></td>
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<td>5 mM</td>
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<tr>
<td></td>
<td></td>
<td>0.5387 mL</td>
<td>2.6936 mL</td>
<td>5.3872 mL</td>
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<tr>
<td></td>
<td></td>
<td>10 mM</td>
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<tr>
<td></td>
<td></td>
<td>0.2694 mL</td>
<td>1.3468 mL</td>
<td>2.6936 mL</td>
</tr>
</tbody>
</table>

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

In Vivo

1. Carboplatin is resuspended in N-Methyl-2-pyrrolidone (NMP) to create a stock solution and diluted in PTD buffer (30 % PEG-400; 5 % Tween 80; 65 % Dextrose water, D5W)[4].

BIOLOGICAL ACTIVITY

Description
Carboplatin (NSC 241240) is a DNA synthesis inhibitor which binds to DNA, inhibits replication and transcription and induces cell death. Carboplatin (NSC 241240) is a derivative of CDDP and a potent anti-cancer agent.

IC\(_{50}\) & Target
DNA Alkylator\(^{[1]}\)

In Vitro
Carboplatin is an antitumor agent, with an increased DNA-binding activity in the presence of nucleophiles and human breast cancer MCF-7 cell cytoplasmic extracts\(^{[1]}\). Carboplatin is less cytotoxic to human ovarian cells such as A2780, SKOV3, IGROV1 and HX62 than 17-AAG, with IC\(_{50}\)s of 6.177, 12.442, 2.233 and 116.068 \(\mu\)M, respectively. Moreover, Carboplatin does not affect HSP90 or change the activity of 17-AAG to inhibit HSP90\(^{[2]}\). Carboplatin reduces the viability of Brca1 (IC\(_{50}\), 3.4 \(\mu\)M) and Brca2 cells (IC\(_{50}\), 1.9 \(\mu\)M). Carboplatin (25 \(\mu\)M) combined with ABT-888 also shows an apoptotic effect in BRCA1 cells\(^{[3]}\).

In Vivo
Carboplatin (60 mg/kg, i.p.) shows a modest effect on the tumor, but significantly inhibits tumor growth in
combination with 17-AAG in mice bearing A2780 human ovarian cancer xenografts\[2\]. Carboplatin (25 mg/kg, p.o.) combined with ABT-888 delays tumor growth in Brca2 xenografts\[3\].

### PROTOCOL

**Cell Assay**\[2\]

Exponentially growing A2780 cells are plated in 96 well microtitre plates. For experiments studying the effect of sequence of exposure to 17-AAG or Carboplatin, cells are exposed to increasing concentrations of 17-AAG or Carboplatin for 24 h. A period of 24-h exposure to the first agent is chosen so that the A2780 cells will be exposed to the first drug for at least one doubling time (18-24 h). The cells are then washed with sterile phosphate buffered saline and the medium is replenished. Following this, the second drug (to which the cells are not exposed to in the first 24 h) or medium is added for 96 h. SRB assays are carried out. All experiments are carried out in triplicate\[2\]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**Animal Administration**\[2\]

Mice\[2\]

The A2780 human ovarian cancer cell line is grown as a subcutaneous xenograft in female athymic NCr nude mice (nu/nu) by injecting $4 \times 10^6$ cells in each flank. Mice with established tumors corresponding to a mean volume of 0.69 mm$^3$ are randomized into groups (six animals each) for treatment with either control vehicle (43% ethanol, 33% polypropylene glycol and 24% cremaphor diluted 1:7 with sterile water) days 1-4, 17-AAG (80 mg/kg intraperitonially, days 1-4), Carboplatin (60 mg/kg IP day 0) or a combination of 17-AAG (80 mg/kg IP days 1-4) and Carboplatin (60 mg/kg IP day 0). Tumor growth is assessed three times weekly and tumor volumes are calculated according to a validated formula: $\text{volume} = 4.19 \times (a/4 + b/4)^3$, where $a$ is the longer and $b$ the shorter diameter. Tumor volumes are then expressed as a proportion of the volume at the start of treatment (relative tumor volume)\[2\]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

### CUSTOMER VALIDATION

- **Cancer Discov.** 2017 Sep;7(9):984-998.
- **Cancer Lett.** 2018 Aug 16;436:75-86.

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### REFERENCES


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