Carmustine

Cat. No.: HY-13585
CAS No.: 154-93-8
Molecular Formula: C₅H₉Cl₂N₃O₂
Molecular Weight: 214.05
Target: DNA Alkylator/Crosslinker
Pathway: Cell Cycle/DNA Damage
Storage: -20°C, protect from light
* In solvent: -80°C, 6 months; -20°C, 1 month (protect from light)

**SOLVENT & SOLUBILITY**

**In Vitro**
DMSO: ≥ 35 mg/mL (163.51 mM)
* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Mass</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>4.6718 mL</td>
<td>23.3590 mL</td>
<td>46.7181 mL</td>
<td></td>
</tr>
<tr>
<td>5 mM</td>
<td>0.9344 mL</td>
<td>4.6718 mL</td>
<td>9.3436 mL</td>
<td></td>
</tr>
<tr>
<td>10 mM</td>
<td>0.4672 mL</td>
<td>2.3359 mL</td>
<td>4.6718 mL</td>
<td></td>
</tr>
</tbody>
</table>

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

**In Vivo**
1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (11.68 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (11.68 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (11.68 mM); Clear solution

**BIOLOGICAL ACTIVITY**

**Description**
Carmustine is an antitumor chemotherapeutic agent, which works by alkylating DNA and RNA.

**IC₅₀ & Target**
DNA Alkylator[¹]

**In Vitro**
Carmustine is an antitumor chemotherapeutic agent. Carmustine (8, 80, and 800 µM) decreases N-acetyltransferase (NAT) activities for 2-aminofluorene (AF) and p-aminobenzoic acid (PABA) in rat glial tumor cytosol and intact cells. In rat glial tumor cells, the DNA-AF adduct increases, and carmustine decreases the formation of DNA-AF adduct[¹].

[¹] www.MedChemExpress.com
In Vivo

Carmustine (BCNU; 25 mg/kg, i.p.) causes higher levels of the rhe ratio of liver weight to body weight and plasma conjugated bilirubin, and lower biliary flow, oxidised glutation levels (GSSG) and reduced glutation (GSH)/GSSG values compared with control rats\textsuperscript{[2]}.

PROTOCOL

Kinase Assay \textsuperscript{[1]}

The determination of Acetyl-CoA dependent N-acetylation of 2-aminofluorene (AF) and p-aminobenzoic acid (PABA) are performed. Incubation mixtures in the assay system consists of a total volume of 90 $\mu$L: glial tumor cells cytosols, diluted as required, in 50 $\mu$L of lysis buffer (20 mM Tris/HCl, pH 7.5, 1 mM DTT and 1 mM EDTA), 20 $\mu$L of an Acetyl-CoA recycling mixture of 50 mM Tris-HCl (pH7.5), 0.2 mM EDTA, 2 mM DTT, 15 mM acetylcarnitine, 2U/mL carnitine acetyltransferase, and AF or PABA at specific concentrations. The reactions are started by addition of 20 $\mu$L of Acetyl-CoA. The control reactions have 20 $\mu$L distilled water in place of Acetyl-CoA. For the single point activity measurements, the final concentration of AF or PABA is 0.1 mM and AcCoA is 0.5 mM. The reaction mixtures with or without specific concentrations of Carmustine and lomustine are incubated at 37°C for 10 min and stopped with 50 $\mu$L of 20% trichloroacetic acid for the PABA reactions, and 100 $\mu$L of acetonitrile for the AF reactions. All of the reactions (experiments and controls) are run in triplicate\textsuperscript{[1]}.

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

Animal Administration \textsuperscript{[2]}

Rats\textsuperscript{[2]}

Individual rats are weighted prior to enter the study, their weights are recorded, and they are randomly assigned to four groups. Group I (saline group); This group consists of 12 rats. These rats are injected with 2 mL/kg of saline intraperitoneal (IP) 48 h before the study, being included by the study 48 h later. Group II (corn oil group) consists of 15 rats. These rats are injected with 2 mL/kg of corn oil (vehicle) IP 48 h before the study. Group III (Carmustine group) consists of 16 rats. These rats are injected with 1 mL per day of saline IP, administered at the same hour of the day as a single-dose for 3 days. Twelve hours after the first dose of saline, corn oil 2 mL/kg + Carmustine 25 mg/kg IP are injected, and the rats are included in the study 48 h after administration of corn oil + Carmustine. Group IV (trimetazidine group) consists of 12 rats. These rats are injected with 2.5 mg/kg per day of trimetazidine (TMZ) IP, administered at the same hour of the day as a single-dose for 3 days. 12 h after the first dose of TMZ, corn oil 2 mL/kg + Carmustine 25 mg/kg IP are injected, and the rats are included in the study 48 h after the administration of corn oil + Carmustine\textsuperscript{[2]}.

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REFERENCES

