Propylthiouracil

Cat. No.: HY-B0346
CAS No.: 51-52-5
Molecular Formula: C₇H₁₀N₂OS
Molecular Weight: 170.23
Target: Others
Pathway: Others
Storage: Powder -20°C 3 years
         4°C  2 years
         In solvent -80°C 6 months
         -20°C  1 month

SOLVENT & SOLUBILITY

In Vitro
DMSO: ≥ 100 mg/mL (587.44 mM)
H₂O: < 0.1 mg/mL (insoluble)
* "≥" means soluble, but saturation unknown.

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass</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>5.8744 mL</td>
<td>29.3720 mL</td>
<td>58.7441 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 mM</td>
<td>1.1749 mL</td>
<td>5.8744 mL</td>
<td>11.7488 mL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mM</td>
<td>0.5874 mL</td>
<td>2.9372 mL</td>
<td>5.8744 mL</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 (14.69 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (14.69 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (14.69 mM); Clear solution

BIOLOGICAL ACTIVITY

Description
Propylthiouracil (6-Propyl-2-thiouracil) is a thyroperoxidase and 5'-deiodinase inhibitor. Target: Thyroperoxidase (TPO)
Propylthiouracil (PTU) is a thiouracil-derived drug used to treat hyperthyroidism (including Graves’ disease) by decreasing the amount of thyroid hormone produced by the thyroid gland [1]. The antithyroid drug 6-
propylthiouracil (PTU) was shown to have an unexpectedly prolonged inhibitory effect on iodination in the thyroid.
glands of rats. Eighteen hours after injection of a relatively small dose, iodination in the thyroid remained inhibited by more than 90% [2]. PTU inhibits the enzyme thyroperoxidase, which normally acts in thyroid hormone synthesis by oxidizing the anion iodide (I-) to iodine (I0), facilitating iodine’s addition to tyrosine residues on the hormone precursor thyroglobulin. This is one of the essential steps in the formation of thyroxine (T4). PTU does not inhibit the action of the sodium-dependent iodide transporter located on follicular cells’ basolateral membranes. Inhibition of this step requires competitive inhibitors, such as perchlorate and thiocyanate. From Wikipedia.

REFERENCES
