**TAS-102**

**Cat. No.:** HY-16478  
**CAS No.:** 733030-01-8  
**Molecular Formula:** C₁₀H₁₁F₃N₂O₅ . ₁/₂C₉H₁₁ClN₄O₂ . ₁/₂HCl  
**Molecular Weight:** 435.76  
**Target:** Nucleoside Antimetabolite/Analog; Thymidylate Synthase  
**Pathway:** Cell Cycle/DNA Damage; Apoptosis

**Storage:**  
- Powder: -20°C 3 years, 4°C 2 years  
- In solvent: -80°C 6 months, -20°C 1 month

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**Solvent & Solubility**

<table>
<thead>
<tr>
<th>Solvent</th>
<th>DMSO: 2.34 mg/mL (5.37 mM; Need ultrasonic and warming)</th>
</tr>
</thead>
</table>

**Preparing Stock Solutions**

<table>
<thead>
<tr>
<th>Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td>2.2948 mL</td>
<td>11.4742 mL</td>
<td>22.9484 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td>0.4590 mL</td>
<td>2.2948 mL</td>
<td>4.5897 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td>0.2295 mL</td>
<td>1.1474 mL</td>
<td>2.2948 mL</td>
</tr>
</tbody>
</table>

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

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**BIOLOGICAL ACTIVITY**

**Description**  
TAS-102 is a novel oral combination drug that consists of an antineoplastic thymidine-based nucleoside analog, trifluorothymidine, and a potent thymidine phosphorylase inhibitor, tipiracil, in a 1:0.5 molar ratio.

**In Vitro**  
TAS-102, a novel antimitabolite combination chemotherapy agent, consists of a rediscovered antimitabolite agent, trifluorothymidine (trifluridine, FTD) combined with the metabolic inhibitor of thymidine phosphorylase, tipiracil (TPI), in a 1:0.5 molar ratio. FTD is the active antitumor component of TAS-102; its monophosphate form inhibits thymidylate synthase, and its triphosphate form is incorporated into DNA in tumor cells. The incorporation into DNA is known to have antitumor effects, since the inhibition of thymidylate synthase caused by oral FTD rapidly disappears after the drug's elimination. When FTD is administered orally, it is rapidly degraded to its inactive form by thymidine phosphorylase in the intestines and liver (first-pass effect). Consequently, TPI is synthesized to maintain adequate plasma concentrations of orally-administered FTD and to potentiate the antitumor activity of FTD.

**In Vivo**  
TAS-102 and CPT-11 is a promising treatment option for colorectal or gastric cancer. TAS-102 monotherapy has a significant antitumor activity against KM12C/S-FUObearing nude mice. The combination-treated (CPT-11-and TAS-
102) group is significantly superior to monotherapy\textsuperscript{[2]}, FTD systemic exposure in plasma increaseS dose-dependently. The tumor growth rate and body weight gain decreaseS dose-dependently, but FTD concentrations in the DNA of tumor tissues and white blood cells increases dose-dependently. FTD inhibits colony formation of bone marrow cells in a concentration-dependent manner\textsuperscript{[3]}.

**PROTOCOL**

**Animal Administration [2]**

Mice: TAS-102 is prepared by mixing FTD and TPI at a molar ratio of 1:0.5 in 0.5% HPMC. The dose of TAS-102 is expressed according to the amount of FTD. TAS-102 is administered orally from day 1 to 14, twice a day, with approximately a 6-hour interval at the reported effective dose (150 mg/kg/day) (7,11). For the control group, 0.5% HPMC alone is administered at 10 ml/kg according to a similar schedule. CPT-11 (40 mg/kg) is administered intravenously on days 1 and 8, once a day. The tumor diameters are measured twice a week, and the tumor volume is estimated\textsuperscript{[2]}. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

**REFERENCES**


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

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