**Coumestrol**

**Cat. No.:** HY-N2335  
**CAS No.:** 479-13-0  
**Molecular Formula:** C₁₅H₈O₅  
**Molecular Weight:** 268.22  
**Target:** Estrogen Receptor/ERR  
**Pathway:** Others  
**Storage:** Powder  
-20°C: 3 years  
4°C: 2 years  
**Storage:** In solvent  
-80°C: 6 months  
-20°C: 1 month  

### SOLVENT & SOLUBILITY

**In Vitro**  
DMSO: 50 mg/mL (186.41 mM; Need ultrasonic)  

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mM</td>
<td></td>
<td>3.7283 mL</td>
<td>18.6414 mL</td>
<td>37.2828 mL</td>
</tr>
<tr>
<td>5 mM</td>
<td></td>
<td>0.7457 mL</td>
<td>3.7283 mL</td>
<td>7.4566 mL</td>
</tr>
<tr>
<td>10 mM</td>
<td></td>
<td>0.3728 mL</td>
<td>1.8641 mL</td>
<td>3.7283 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 >> 90% (20% SBE-β-CD in saline)  
Solubility: ≥ 2.5 mg/mL (9.32 mM); Clear solution

### BIOLOGICAL ACTIVITY

**Description**  
Coumestrol, a phytoestrogen present in soybean products, exhibits activities against cancers, neurological disorders, and autoimmune diseases. It suppresses proliferation of ES2 cells with an IC₅₀ of 50 μM.

**IC₅₀ & Target**  
IC₅₀: 50 μM[1]

**In Vitro**  
Coumestrol exerts chemotherapeutic effects via PI3K and ERK1/2 MAPK pathways. Coumestrol inhibits viability and invasion, and induces apoptosis of ES2 (clear cell-/serous carcinoma origin) cells. In addition, immunoreactive PCNA and ERBB2, markers of proliferation of ovarian carcinoma, are attenuated in their expression in coumestrol-induced death of ES2 cells. Phosphorylation of AKT, p70S6K, ERK1/2, JNK1/2 and p90RSK is inactivated by coumestrol treatment in a dose- and time-dependent manner[1]. Coumestrol inhibits proliferation and induces apoptosis in MCF-7 cells, which is prevented by copper chelator neocuproine and ROS scavengers. Coumestrol treatment induces ROS generation coupled to DNA fragmentation, up-regulation of p53/p21, cell cycle arrest at G1/S phase, mitochondrial membrane depolarization and...
caspases 9/3 activation[2].

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

PROTOCOL

Cell Assay[1][2]

To determine dose-dependent effects of coumestrol, ES2 cells are treated with different concentrations (0, 1, 10, 20, 50 or 100 μM) of coumestrol[1]. Coumestrol is dissolved in DMSO to prepare a 3 mM stock. Breast cancer MCF-7 cells are treated with increasing concentrations of coumestrol for 24, 48 and 72 h. Then, 20 μL of MTT (5 mg/mL) is added each well and re-incubated for additional 3 h. Formazan blue crystals formed are dissolved in 100 μL of DMSO. Absorbance is read at 570 nm using ELISA plate reader[2].

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

CUSTOMER VALIDATION

- Pharmacol Res. 2019 Sep;147:104366.

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REFERENCES
