**Product Data Sheet**

### Chemical Properties

**Product Name:** Valproic acid  
**Cas No.:** 99-66-1  
**M.Wt:** 144.21  
**Formula:** C₈H₁₆O₂  
**Synonyms:** N/A  
**Chemical Name:** 2-propylpentanoic acid  
**Canonical SMILES:** CCCCC(CCC)(=O)O  
**Solubility:** ≥36mg/mL in H₂O, ≥29mg/mL in EtOH, ≥12.35mg/mL in DMSO  
**Storage:** Store at -20°C; Colorless liquid  
**General tips:** For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.  
**Shopping Condition:** Evaluation sample solution: ship with blue ice  
All other available size: ship with RT, or blue ice upon request

### Biological Activity

**Targets:** DNA Damage/DNA Repair  
**Pathways:** HDAC  
**Description:**

Valproic acid is an inhibitor of HDAC1 with IC₅₀ value of 0.4mM [1]. Valproic acid (VPA) is a branched short-chain fatty acid. It is previously synthesized and used as an inert solvent of organic compounds. VPA is then found to have ability in preventing pentylenetetrazol-induced convulsions in rodents. It is used as an antiepileptic drug via inhibiting the activity of GABA. VPA is found to inhibit the degradation of GABA and increase GABA synthesis as well as inhibit GABA Transaminobutyratre. It also blocks Na⁺ channels, Ca²⁺ channels and voltage-gated K⁺ channels. Besides that, VPA is reported as an inhibitor of HDAC,
making it to be a potential therapeutic for cancers. VPA inhibits HDAC1 in vitro with IC50 value of 0.4mM. For nuclear extracts from HeLa cells, VPA inhibits HDACs with IC50 values from 0.5mM to 2mM [1, 2].

Reference:

Protocol

Cell experiment:

<table>
<thead>
<tr>
<th>Cell lines</th>
<th>Neuro2A cells, human ovarian cancer cell line SKOV3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation method</td>
<td>Soluble in DMSO. General tips for obtaining a higher concentration: Please warm the tube at 37°C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.</td>
</tr>
<tr>
<td>Reacting conditions</td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td>Valproic acid induced hyperacetylation of endogenous histones and inhibited nuclear HDAC activity in Neuro2A cells. Moreover, valproic acid inhibited cell proliferation, and induced apoptosis of SKOV3 cells in a dose- and time- dependent manner.</td>
</tr>
</tbody>
</table>

Animal experiment [3]:

<table>
<thead>
<tr>
<th>Animal models</th>
<th>human ovarian cancer model transplanted subcutaneously in nude mice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage form</td>
<td>500mg/kg/day, intraperitoneal injection, for 30 days</td>
</tr>
<tr>
<td>Applications</td>
<td>Valproic acid induced growth inhibition of human ovarian cancer transplanted subcutaneously in nude mice. Moreover, valproic acid (50 mg/kg, IV infusion) decreased pro-inflammatory cytokine gene expression in a canine endotoxemia model in vivo.</td>
</tr>
<tr>
<td>Other notes</td>
<td>Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.</td>
</tr>
</tbody>
</table>
Reference:

Caution

FOR RESEARCH PURPOSES ONLY.

NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.