

## Small Molecules

### Valproic Acid

Epigenetic modifier; Inhibits histone deacetylase (HDAC)1

Catalog # 72292

500 mg



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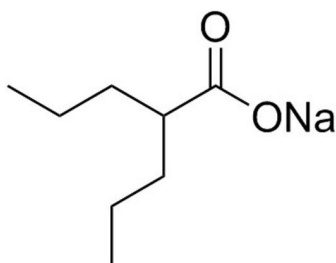
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## Product Description

Valproic Acid (VPA) is a short-chain fatty acid that acts as an epigenetic modifier by inhibiting histone deacetylases (HDACs) with  $IC_{50}$  values ranging from about 0.4 - 3 mM. VPA can also increase  $\gamma$ -aminobutyric acid (GABA) levels via inhibition of succinic semialdehyde dehydrogenase and other enzymes involved in GABA metabolism. Additional effects include depletion of cellular inositol by inhibiting myo-inositol-1-phosphate synthase (Gottlicher et al.; Khan et al.; Phiel et al.; Rosenberg). This product is supplied as a sodium salt of the molecule.

|                    |                                             |
|--------------------|---------------------------------------------|
| Molecular Name:    | Valproic Acid (Sodium Salt)                 |
| Alternative Names: | 2-Propylvaleric acid; Sodium valproate; VPA |
| CAS Number:        | 1069-66-5                                   |
| Chemical Formula:  | $C_8H_{15}O_2 \cdot Na$                     |
| Molecular Weight:  | 166.2 g/mol                                 |
| Purity:            | $\geq 95\%$                                 |
| Chemical Name:     | 2-propyl-pentanoic acid, monosodium salt    |
| Structure:         |                                             |



## Properties

|                      |                                                                                                                                                                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical Appearance: | A crystalline solid                                                                                                                                                                                                                                                                   |
| Storage:             | Product stable at $-20^{\circ}C$ as supplied. Protect from prolonged exposure to light. For product expiry date, please contact <a href="mailto:techsupport@stemcell.com">techsupport@stemcell.com</a> .                                                                              |
| Solubility:          | <ul style="list-style-type: none"><li>· PBS (pH 7.2) <math>\leq 60</math> mM</li><li>· DMSO <math>\leq 30</math> mM</li><li>· Absolute ethanol <math>\leq 180</math> mM</li></ul> For example, to prepare a 10 mM stock solution in PBS, resuspend 100 mg in 60.2 mL of PBS (pH 7.2). |

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at  $-20^{\circ}C$ . Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

## Published Applications

### MAINTENANCE AND SELF-RENEWAL

- Mediates ex vivo expansion of cord blood CD34+ hematopoietic stem and progenitor cells (Chaurasia et al.).
- Promotes the proliferation and self-renewal of human and mouse hematopoietic progenitor cells (Bug et al.; De Felice et al.).

### REPROGRAMMING

- Enables chemical reprogramming (without genetic factors) of mouse embryonic fibroblasts to induced pluripotent stem (iPS) cells, in combination with CHIR99021, Forskolin, Tranylcypromine, 3-Deazaneplanocin A, and RepSox (Hou et al.).
- Increases the reprogramming efficiency of mouse embryonic fibroblasts to iPS cells (Huangfu et al. 2008a).
- Promotes reprogramming of human fibroblasts to iPS cells using only 2 factors, OCT4 and SOX2 (Huangfu et al. 2008b).
- Direct lineage reprogramming of fibroblasts to mature neurons, in combination with CHIR99021, RepSox, Forskolin, SP600125, Gö6983 and Y-27632 (Hu et al.).

### DIFFERENTIATION

- Promotes differentiation of neurons and suppresses differentiation of astrocytes and oligodendrocytes from rat neural progenitor cells (Hsieh et al.; Jung et al.).
- Promotes osteogenic differentiation of human mesenchymal stem cells (Cho et al.).

## References

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