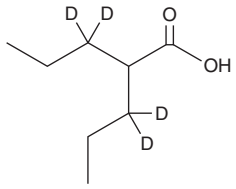
PRODUCT INFORMATION

Valproic Acid-d_4

Item No. 39966

CAS Registry No.: 87745-17-3
Formal Name: 2-(propyl-1,1-d_2)-pentanoic-3,3-d_2 acid
Synonyms: 2-Propylvaleric Acid-d_4, Valproate-d_4, VPA-d_4
MF: $C_8H_{12}D_4O_2$
FW: 148.2
Chemical Purity: ≥98% (Valproic Acid)
Deuterium Incorporation: ≥99% deuterated forms (d_1-d_4); ≤1% d_0
Supplied as: A solution in methyl acetate
Storage: -20°C
Stability: ≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Valproic acid-d_4 is intended for use as an internal standard for the quantification of valproic acid (Item Nos. 35739 | 13033) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Valproic acid-d_4 s supplied as a solution in methyl acetate. To change the solvent, simply evaporate the methyl acetate under a gentle stream of nitrogen and immediately add the solvent of choice. Valproic acid-d_4 is soluble in methanol.

Description

Valproic acid is an analog of the natural fatty acid valeric acid that inhibits class I histone deacetylases (HDACs) with IC_{50} values of approximately 2 mM.[1] It decreases the number of axon branches in sensory neurons isolated from newborn rat dorsal root ganglia, an effect that is reversed by inositol-1,4,5-trisphosphate (1,4,5-IP_3).[2] *In vivo*, valproic acid inhibits amyloid-β deposition and neuritic plaque formation and decreases escape latency in Morris water maze, indicating improved memory performance, in the APP23 transgenic mouse model of Alzheimer's disease.[3] Valproic acid has anticonvulsant activity in the pentylenetetrazole seizure threshold test in mice (ED_{50} = 0.71 mmol/kg) but induces neurotoxicity when administered at doses greater than or equal to 1.2 mmol/kg.[4] Formulations containing valproic acid have been used in the treatment of bipolar disorder and various seizure disorders.

References

1. Göttlicher, M., Minucci, S., Zhu, P., *et al.* Valproic acid defines a novel class of HDAC inhibitors inducing differentiation of transformed cells. *EMBO J.* **20(24)**, 6969-6978 (2001).
2. Williams, R.S.B., Cheng, L., Mudge, A.W., *et al.* A common mechanism of action for three mood-stabilizing drugs. *Nature* **417(6886)**, 292-295 (2002).
3. Qing, H., He, G., Ly, P.T., *et al.* Valproic acid inhibits Aβ production, neuritic plaque formation, and behavioral deficits in Alzheimer's disease mouse models. *J. Exp. Med.* **205(12)**, 2781-2789 (2008).
4. Elmazar, M.M., Hauck, R.S., and Nau, H. Anticonvulsant and neurotoxic activities of twelve analogues of valproic acid. *J. Pharm. Sci.* **82(12)**, 1255-1258 (1993).

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