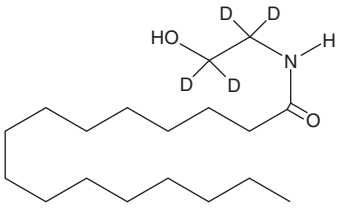
PRODUCT INFORMATION

Palmitoyl Ethanolamide-d_4

Item No. 9000551

CAS Registry No.:	946524-34-1
Formal Name:	N-(2-hydroxyethyl-1,1',2,2'-d_4)-hexadecanamide
Synonyms:	Palmidrol-d_4, Palmityl Ethanolamide-d_4, PEA-hydroxyethyl-1,1,2,2-d_4
MF:	$C_{18}H_{33}D_4NO_2$
FW:	303.5
Chemical Purity:	≥95% (Palmitoyl Ethanolamide)
Deuterium Incorporation:	≥99% deuterated forms (d_1-d_4); ≤1% d_0
Supplied as:	A solution in ethanol
Storage:	-20°C
Stability:	≥2 years



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

Laboratory Procedures

Palmitoyl ethanolamide-d_4 (PEA-d_4) is intended for use as an internal standard for the quantification of PEA (Item No. 90350) 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).

PEA-d_4 is supplied as a solution in ethanol. A stock solution may be made by dissolving the PEA-d_4 in the solvent of choice, which should be purged with an inert gas. PEA-d_4 is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of PEA-d_4 in these solvents is approximately 5 and 10 mg/ml, respectively.

Description

PEA is an endogenous fatty N-acyl ethanolamine and a derivative of the endocannabinoid arachidonoyl ethanolamide (AEA; Item No. 90050).[1,2] It selectively activates peroxisome proliferator-activated receptor α (PPARα; EC_{50} = 3.1 µM) over PPARβ/δ and PPARγ in HeLa cells expressing the human receptors.[3] PEA binds to RBL-2H3 basophil membranes (IC_{50} = 1 nM), which endogenously express cannabinoid 2 (CB_2), but not CB_1, receptors, and inhibits antigen-induced serotonin release from RBL-2H3 cells (EC_{50} = 0.27 µM).[2] It prevents decreases in paw withdrawal latency in a radiant heat hypersensitivity test, an effect that can be reversed by the CB_1 receptor antagonist SR141716 (rimonabant; Item No. 9000484), PPARγ antagonist GW 9662 (Item No. 70785), and transient receptor potential vanilloid 1 (TRPV1) antagonist capsazepine (Item No. 10007518), in a mouse model of neuropathic pain induced by chronic constriction injury of the sciatic nerve.[2] PEA (10 mg/kg) decreases carrageenan-induced paw edema in wild-type, but not *Ppara*$^{-/-}$, mice.[3] It inhibits tonic convulsions induced by pentylenetetrazole (PTZ; Item No. 18682) in rats when administered at a dose of 40 mg/kg.[5] Formulations containing palmitoyl ethanolamide have been used as dietary supplements.

References

1. Bachur, N.R., Masek, K., Melmon, K.L., *et al. J. Biol. Chem.* **240**, 1019-1024 (1965).
2. Facci, L., Dal Toso, R., Romanello, S., *et al. Proc. Natl. Acad. Sci. USA* **92**, 3376-3380 (1995).
3. Lo Verme, J., Fu, J., Astarita, G., *et al. Mol. Pharmacol.* **67(1)**, 15-19 (2005).
4. Costa, B., Comelli, F., Bettoni, I., *et al. Pain* **139(3)**, 541-550 (2008).
5. Sheerin, A.H., Zhang, X., Saucier, D.M., *et al. Epilepsia* **45(10)**, 1184-1188 (2004).

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