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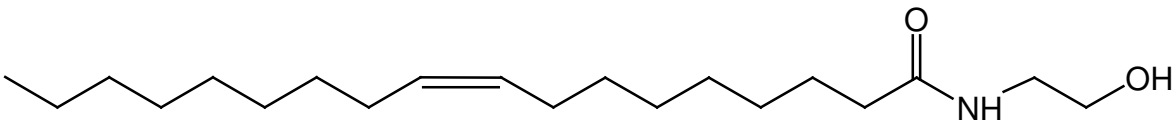
PRODUCT DATA SHEET

N-Oleoylethanolamine

Catalog number: 1751
Common Name: NOE
Source: synthetic
Solubility: chloroform, ethanol, methanol, ethyl ether, DMSO
CAS number: 111-58-0

Molecular Formula: $C_{20}H_{39}NO_2$
Molecular Weight: 326
Storage: -20°C
Purity: TLC >98%, GC >98%; identity confirmed by MS
TLC System: chloroform/methanol (90:10)
Appearance: solid



Application Notes:

N-Oleoylethanolamine is a naturally occurring acylethanolamide that has been shown to have many biological functions. N-Oleoylethanolamine has been shown to be an efficacious inhibitor of acid ceramidase as well as an inhibitor of glucosylation of natural ceramides.[1] It is specifically an inhibitor of the acid ceramidase found in human kidney and cerebellum with an IC_{50} of approximately 500μM. Farber's disease is characterized by a lack of acid ceramidase activity and N-oleoylethanolamine can be used to study aspects of this disease. Whereas the inhibitor D-MAPP potently inhibits alkaline ceramidase (IC_{50} approximately 5μM) N-oleoylethanolamine shows only slight inhibitory characteristics towards this ceramidase.[2] N-Oleoylethanolamine is chemically related to the endocannabinoid anandamide, although it is not a cannabinoid itself. It is produced, during feeding, in the small-intestinal enterocytes from oleic acid and phosphatidylethanolamine and acts as a satiety signal (by engaging peroxisome proliferator-activated receptors-α) and alters gastrointestinal motility. The levels of N-oleoylethanolamine are low during food deprivation (which activates a hunger signal) and normalize with food intake (which activates a satiety, but not a satiation, signal through sensory afferent neurons). It has been shown to reduce weight gain in rats and mice and has been suggested as a tool to combat obesity, diabetes, and eating disorders.[3] N-Oleoylethanolamine is also released during sleep deprivation and it is thought that it may act as an endogenous neuroprotective signal.[4] Other functions of N-oleoylethanolamine include altering peripheral lipid metabolism, inhibiting gastric emptying, inhibiting insulin metabolic and mitogenic signaling, enhancing memory consolidation, and altering stress responses.

Selected References:

1. A. Spinedi et al. "N-Oleoylethanolamine inhibits glucosylation of natural ceramides in CHP-100 neuroepithelioma cells: possible implications for apoptosis" *Biochem Biophys Res Commun*, vol. 255 pp. 456-459, *1999*
2. A. Bielawska et al. "(1*S*,2*R*)-D-*erythro*-2-(*N*-Myristoylamino)-1-phenyl-1-propanol as an Inhibitor of Ceramidase" *Journal of Biological Chemistry*, vol. 271 pp. 12646-12654, *1996*
3. R. Capasso and A. Izzo "Gastrointestinal Regulation of Food Intake: General Aspects and Focus on Anandamide and Oleoylethanolamide" *Journal of Neuroendocrinology*, vol. 20 pp. 39-46, *2008*
4. D. Koethe et al. "Sleep deprivation increases oleoylethanolamide in human cerebrospinal fluid" *J Neural Transm*, vol. 116 pp. 301-305, *2009*

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