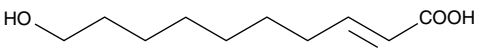
Product Information

10-HDA

Item No. 10976

CAS Registry No.: 14113-05-4
Formal Name: 10-hydroxy-2E-decenoic acid
MF: $C_{10}H_{18}O_3$
FW: 186.3
Purity: ≥98%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid
UV/Vis.: λ_{max}: 209 nm



Laboratory Procedures

For long term storage, we suggest that 10-HDA be stored as supplied at -20°C. It should be stable for at least two years.

10-HDA is supplied as a crystalline solid. A stock solution may be made by dissolving the 10-HDA in the solvent of choice. 10-HDA is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of 10-HDA in ethanol is approximately 20 mg/ml, and in DMSO and DMF it is approximately 30 mg/ml.

10-HDA is sparingly soluble in aqueous solutions. To enhance aqueous solubility, dilute the organic solvent solution into aqueous buffers or isotonic saline. If performing biological experiments, ensure the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. We do not recommend storing the aqueous solution for more than one day.

10-HDA is an unsaturated fatty acid found in royal jelly produced from the hypopharyngeal and mandibular gland secretions of honeybees.[1] 10-HDA has longevity-promoting effects in *C. elegans* at a concentration of 25 µM.[2] It down-regulates matrix metalloproteinases (MMPs) in rheumatoid arthritis synovial fibroblasts at a concentration of 1.25 nM and inhibits VEGF-induced angiogenesis in HUVECs at 500 µM.[3,4] 10-HDA also facilitates differentiation of neurons from neural stem/progenitor cells and promotes collagen production by skin fibroblasts at concentrations of 100 µM and 1.5 mM, respectively.[5,6]

References

1. Kodai, T., Umebayashi, K., Nakatani, T., *et al.* Compositions of royal jelly II. Organic acid glycosides and sterols of the royal jelly of honeybees (*Apis mellifera*). *Chem. Pharm. Bull.* **55(10)**, 1528-1531 (2007).
2. Honda, Y., Fujita, Y., Maruyama, H., *et al.* Lifespan-extending effects of royal jelly and its related substances on the nematode *Caenorhabditis elegans*. *PLoS One* **6(8)**, 1-10 (2011).
3. Wang, J., Ruan, J., Li, C.-Y., *et al.* Connective tissue growth factor, a regulator related with 10-hydroxy-2-decenoic acid down-regulate MMPs in rheumatoid arthritis. *Rheumatol. Int.* (2011).
4. Izuta, H., Chikaraishi, Y., Shimazawa, M., *et al.* 10-Hydroxy-2-decenoic acid, a major fatty acid from royal jelly, inhibits VEGF-induced angiogenesis in human umbilical vein endothelial cells. *Evid. Based Complement. Alternat. Med.* **6(4)**, 489-494 (2009).
5. Hattori, N., Nomoto, H., Fukumitsu, H., *et al.* Royal jelly and its unique fatty acid, 10-hydroxy-trans-2-decenoic acid, promote neurogenesis by neural stem/progenitor cells *in vitro*. *Biomed. Res.* **28(5)**, 261-266 (2007).
6. Koya-Miyata, S., Okamoto, I., Ushio, S., *et al.* Identification of a collagen production-promoting factor from an extract of royal jelly and its possible mechanism. *Biosci. Biotechnol. Biochem.* **68(4)**, 767-773 (2004).

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