

PRODUCT INFORMATION

N-3-oxo-tetradec-7(Z)-enoyl-L-Homoserine lactone

Item No. 13213

CAS Registry No.: 482598-46-9

Formal Name: 3-oxo-N-[(3S)-tetrahydro-2-oxo-3-furanyl]-7-tetradecenamide

Synonyms: 3-oxo-C14:1- Δ^7 cis-(L)-HSL, N-3-oxo-tetradec-7(Z)-enoyl-L-HSL

MF: $C_{18}H_{29}NO_4$

FW: 323.4

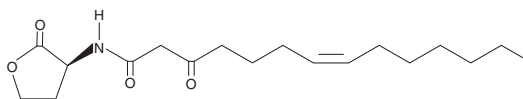
Purity: $\geq 98\%$

UV/Vis.: λ_{max} : 248 nm

Supplied as: A 10 mg/ml solution in acetonitrile

Storage: -20°C

Stability: ≥ 4 years



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

Laboratory Procedures

N-3-oxo-tetradec-7(Z)-enoyl-L-homoserine lactone (3-oxo-C14:1- Δ^7 cis-(L)-HSL) is supplied as a solution in acetonitrile. To change the solvent, simply evaporate the acetonitrile under a gentle stream of nitrogen and immediately add the solvent of choice. Solvents such as DMSO and dimethyl formamide purged with an inert gas can be used. The solubility of 3-oxo-C14:1- Δ^7 cis-(L)-HSL in these solvents is approximately 30 mg/ml. While 3-oxo-C14:1- Δ^7 cis-(L)-HSL is also soluble in ethanol and other primary alcohols, their use is not recommended as they have been shown to open the lactone ring.

If aqueous stock solutions are required for biological experiments, they can best be prepared by diluting the organic solvent into aqueous buffers or isotonic saline. Ensure that 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.

Description

Quorum sensing is a regulatory system used by bacteria for controlling gene expression in response to increasing cell density.¹ This regulatory process manifests itself with a variety of phenotypes including biofilm formation and virulence factor production.² Coordinated gene expression is achieved by the production, release, and detection of small diffusible signal molecules called autoinducers. The N-acylated homoserine lactones (AHLs) comprise one such class of autoinducers, each of which generally consists of a fatty acid coupled with HSL. Regulation of bacterial quorum sensing signaling systems to inhibit pathogenesis represents a new approach to antimicrobial therapy in the treatment of infectious diseases.³ AHLs vary in acyl group length (C4-C18), in the substitution of C3 (hydrogen, hydroxyl, or oxo group), and in the presence or absence of one or more carbon-carbon double bonds in the fatty acid chain. These differences confer signal specificity through the affinity of transcriptional regulators of the LuxR family.⁴ 3-oxo-C₁₄:1- Δ^7 cis-(L)-HSL is a bacterial quorum sensing compound that possesses antimicrobial activity, the ability to inhibit biofilm formation, and exhibits immune suppressive activity.^{5,6} This compound is structurally related to other 3-oxo-monounsaturated AHLs such as 3-oxo-C16:1- Δ^{11} cis-(L)-HSL (Item No. 10011238).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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References

1. González, J.E. and Keshavan, N.D. *Microbiology and Molecular Biology Reviews* **70**(4), 859-875 (2006).
2. Gould, T.A., Herman, J., Krank, J., et al. *J. Bacteriol.* **188**(2), 773-783 (2006).
3. Cegelski, L., Marshall, G.R., Eldridge, G.R., et al. *Nature Reviews Microbiology* **6**(1), 17-27 (2008).
4. Penalver, C.G.N., Morin, D., Cantet, F., et al. *FEBS Lett.* **580**, 561-567 (2006).
5. Woodard, B. and Saleh, M.A. *Journal of Environmental Science and Health, Part B* **43**(4), 281-287 (2008).
6. Chhabra, S.R., Harty, C., Hooi, D.S.W., et al. *J. Med. Chem.* **46**, 97-104 (2003).

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