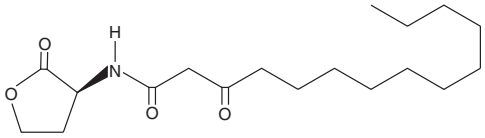
PRODUCT INFORMATION

N-3-oxo-tetradecanoyl-L-Homoserine lactone

Item No. 13063

CAS Registry No.: 177158-19-9
Formal Name: 3-oxo-N-[(3S)-tetrahydro-2-oxo-3-furanyl]-tetradecanamide
Synonyms: 3-oxo-C14-HSL, N-3-oxo-myristoyl-L-Homoserine lactone
MF: $C_{18}H_{31}NO_4$
FW: 325.4
Purity: ≥98%
UV/Vis.: λ_{max}: 204, 248 nm
Supplied as: A crystalline solid
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-tetradecanoyl-L-Homoserine lactone (3-oxo-C14-HSL) is supplied as a crystalline solid. A stock solution may be made by dissolving the 3-oxo-C14-HSL in the solvent of choice, which should be purged with an inert gas. 3-oxo-C14-HSL is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of 3-oxo-C14-HSL in these solvents is approximately 20 mg/ml.

Description

Quorum sensing is a regulatory system used by bacteria for controlling gene expression in response to increasing cell density. Controlling bacterial infections by quenching their quorum sensing systems is a promising field of study. The expression of specific target genes, such as transcriptional regulators belonging to the LuxIR family of proteins, is coordinated by the synthesis of diffusible acylhomoserine lactone (AHL) molecules. 3-oxo-C14-HSL is a small diffusible signaling molecule involved in quorum sensing, thereby controlling gene expression and affecting cellular metabolism in bacteria.[1-3] It appears later than shorter acyl chain AHLs in developing biofilms and, like other long chain 3-oxo-AHLs, stimulates the production of putisolvin, which in turn, inhibits biofilm formation.[4,5]

References

1. Kuo, A., Blough, N.V., and Dunlap, P.V. Multiple N-acyl-L-homoserine lactone autoinducers of luminescence in the marine symbiotic bacterium *Vibrio fischeri*. *J. Bacteriol.* **176(24)**, 7558-7565 (1994).
2. Lithgow, J.K., Wilkinson, A., Hardman, A., *et al.* The regulatory locus *cinRI* in *Rhizobium leguminosarum* controls a network of quorum-sensing loci. *Mol. Microbiol.* **37(1)**, 81-97 (2000).
3. McClean, K.H., Winson, M.K., Fish, L., *et al.* Quorum-sensing and *Chromobacterium violaceum*: Exploitation of violacein production and inhibition for the detection of N-acylhomoserine lactones. *Microbiology* **143**, 3703-3711 (1997).
4. Gomi, K., Kikuchi, T., Tokue, Y., *et al.* Mouse and human cell activation by N-dodecanoyl-DL-homoserine lactone, a *Chromobacterium violaceum* autoinducer. *Infect. Immun.* **74(12)**, 7029-7031 (2006).
5. Dubern, J.-F., Lugtenberg, B.J.J., and Bloemberg, G.V. The *ppul-rsaL-ppuR* quorum-sensing system regulates biofilm formation of *Pseudomonas putida* PCL1445 by controlling biosynthesis of the Cyclic Lipopeptides Putisolvins I and II. *J. Bacteriol.* **188(8)**, 2898-2906 (2006).

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