

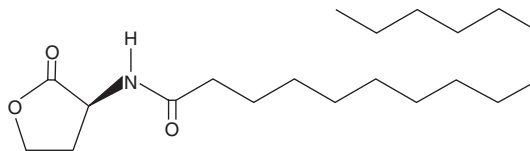
# PRODUCT INFORMATION



## N-hexadecanoyl-L-Homoserine lactone

Item No. 13064

**CAS Registry No.:** 87206-01-7  
**Formal Name:** N-[(3S)-tetrahydro-2-oxo-3-furanyl]-hexadecanamide  
**Synonyms:** C16-HSL, N-palmitoyl-L-Homoserine  
**MF:**  $C_{20}H_{37}NO_3$   
**FW:** 339.5  
**Purity:**  $\geq 95\%$   
**Supplied as:** A crystalline solid  
**Storage:**  $-20^{\circ}C$   
**Stability:**  $\geq 4$  years



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

### Laboratory Procedures

N-hexadecanoyl-L-Homoserine lactone is supplied as a crystalline solid. A stock solution may be made by dissolving the N-hexadecanoyl-L-homoserine lactone in the solvent of choice, which should be purged with an inert gas. N-hexadecanoyl-L-Homoserine lactone is soluble in the organic solvent chloroform at a concentration of approximately 1 mg/ml. While N-hexadecanoyl-L-homoserine lactone is also soluble in ethanol and other primary alcohols, their use is not recommended as they have been shown to open the lactone ring.

### Description

Quorum sensing is a regulatory system used by bacteria for controlling gene expression in response to increasing cell density.<sup>1</sup> This regulatory process manifests itself with a variety of phenotypes including biofilm formation and virulence factor production.<sup>2</sup> 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 homoserine lactone (HSL). Regulation of bacterial quorum sensing signaling systems to inhibit pathogenesis represents a new approach to antimicrobial therapy in the treatment of infectious diseases.<sup>3</sup> AHLs vary in acyl group length ( $C_4$ - $C_{18}$ ), 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.<sup>4</sup> C16-HSL is one of a number of lipophilic, long acyl side-chain bearing AHLs, including its monounsaturated analog C16:1-(L)-HSL, produced by the LuxI AHL synthase homolog SinI involved in quorum-sensing signaling in *S. meliloti*, a nitrogen-fixing bacterial symbiont of certain legumes.<sup>5,6</sup> C16-HSL is the most abundant AHL produced by the proteobacterium *R. capsulatus* and activates genetic exchange between *R. capsulatus* cells.<sup>7</sup> N-Hexadecanoyl-L-homoserine lactone and other hydrophobic AHLs tend to localize in relatively lipophilic cellular environments of bacteria and cannot diffuse freely through the cell membrane. The long-chain N-acylhomoserine lactones may be exported from cells by efflux pumps or may be transported between communicating cells by way of extracellular outer membrane vesicles.<sup>8,9</sup>

### References

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5. Gao, M., Chen, H., Eberhard, A., et al. *J. Bacteriol.* **187(23)**, 7931-7944 (2005).
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#### 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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