

Product Information

Auresine™, recombinant

Catalog Number **SAE0083**
 Storage Temperature 2–8 °C

Product Description

Molecular mass: ~14.4 kDa
 Isoelectric point (pI): 8.15
 pH optimum: 7–9

Auresine™ is a lytic enzyme that is a portion of the LytM zinc metalloproteinase protein (residues 185-316) from *Staphylococcus aureus* NCTC 8325.¹⁻³ The *LytM* gene was originally noted in an autolysis-defective mutant of *Staphylococcus aureus*.^{4,5}

Auresine has glycyl-glycine endopeptidase activity,⁶ and specifically cleaves polyglycine crosslinks in the cellular wall of various *Staphylococcus* species. This leads to cell lysis. In particular, auresine is highly effective at lysis of various strains of methicillin-resistant *Staphylococcus aureus* (MRSA).⁷

Auresine is active at 100 nM (1.4 µg/mL) in low conductivity buffers (≤2 mS/cm, e.g., 50 mM glycine, pH 8.0 and 20 mM Trizma-HCl, pH 8.0) over a temperature range of 0–40 °C. Auresine is uniquely active in non-physiological conditions, such as low conductivity and low temperatures. This allows isolation of nucleic acids and proteins under conditions that minimize risk of their degradation by released cellular enzymes.

Applications of auresine include:

- Isolation of protoplasts, nucleic acids, proteins, lipids, and other components of Gram-positive (staphylococcal) bacterial cells.
- Surface disinfection, as an active substance in bacteriostatic and bactericidal formulations against staphylococcal strains
- Lytic tests for identification of *Staphylococci*

Inhibitors of auresine include EDTA, o-phenanthroline, and glycine hydroxyamate.³

Table 1 gives qualitative information on the effectiveness of auresine against various bacterial strains. To obtain these data, auresine activity was measured with a turbidity reduction assay. Bacterial cells were suspended to an apparent OD₆₀₀ of 1.0 in 50 mM glycine, pH 8.0. Tests were performed at room temperature with 100 nM auresine and 1 hour incubation times.

The qualitative results in the second column are indicated as follows:

- 0%-25% –
- 25%-50% +
- 50%-75% ++
- 75%-100% +++

Table 1.
 Auresine specificity against bacteria

<i>Staphylococcus aureus</i> NCTC 8325-4	+++
<i>Staphylococcus aureus</i> NCTC 4163	++
<i>Staphylococcus aureus</i> ATCC 25923	++
<i>Staphylococcus aureus</i> MRSA, 394	++
<i>Staphylococcus aureus</i> MRSA, 514	+
<i>Staphylococcus aureus</i> MRSA, 522	++
<i>Staphylococcus aureus</i> MRSA, 570	+++
<i>Staphylococcus aureus</i> MRSA, 571	+++
<i>Staphylococcus aureus</i> MRSA, 572	+++
<i>Staphylococcus aureus</i> MRSA, 573	+++
<i>Staphylococcus aureus</i> MRSA, 580	+++
<i>Staphylococcus aureus</i> MRSA, 585	+++
<i>Staphylococcus aureus</i> MRSA, 586	+++
<i>Staphylococcus agneti</i>	++
<i>Staphylococcus capitis</i>	++
<i>Staphylococcus carnosus</i>	+++
<i>Staphylococcus epidermidis</i> ATCC 12228	+++
<i>Staphylococcus epidermidis</i> ATCC 35984	++
<i>Staphylococcus haemolyticus</i>	++
<i>Staphylococcus hyicus</i>	+
<i>Staphylococcus lentus</i>	+
<i>Staphylococcus lugdunensis</i>	+
<i>Staphylococcus pasteurii</i>	-
<i>Staphylococcus pettenkoferi</i>	+
<i>Staphylococcus saprophyticus</i>	+++
<i>Staphylococcus simulans</i>	+++
<i>Staphylococcus warneri</i>	+++
<i>Staphylococcus xylosum</i>	++
<i>Salinicoccus roseus</i>	++
<i>Pseudomonas aeruginosa</i>	-
<i>Bordetella bronchiseptica</i>	-
<i>Salmonella enterica</i> subsp. <i>Enteric</i>	-
<i>Klebsiella pneumonia</i>	-
<i>Escherichia coli</i>	-
<i>Proteus vulgaris</i>	-
<i>Bacillus subtilis</i>	-

This product is a recombinant protein, expressed in either *Pichia pastoris* or *E. coli*.

Unit definition: One unit will reduce the turbidity (A_{600}) of a suspension of *S. aureus* cells from 0.250 to 0.125 in 10 minutes, in 50 mM glycine buffer, pH 8.0, at 25 °C (in a 6.0 mL reaction mixture).

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Auresine may be dissolved in water or aqueous buffer at concentrations up to 20 mg/mL. For long-term solution storage, one possible buffer formulation contains 20 mM Trizma[®] HCl, pH 7.0, 200 mM NaCl, and 10% glycerol.

Storage/Stability

Store the product at 2–8 °C. Aqueous aliquots stored at –20 °C are expected to be stable for several months.

References

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3. Odintsov, S.G. *et al.*, *J. Mol. Biol.*, **335(3)**, 775-785 (2004).
4. Ramadurai, L. *et al.*, *Microbiology*, **145(Pt 4)**, 801-808 (1999).
5. Ramadurai, L., and Jayaswal, R.K., *J. Bacteriol.*, **179(11)**, 3625-3631 (1997).
6. Grabowska, M. *et al.*, *Sci Rep.*, **5**, 14833 (2015).
7. Jagielska, E. *et al.*, *Microb. Drug Resist. Sep.*, **22(6)**, 461-469 (2016).

Auresine is a trademark of the International Institute of Molecular and Cell Biology (IIMCB), Warsaw.

Auresine is covered by the following patents:

- European Patent No. 2699254
- Australian Patent No. 2012246763

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