

## Product Information

## Streptolysin O from *Streptococcus pyogenes*

≥ 1,000,000 units/mg protein, recombinant, lyophilized powder, expressed in *E. coli*

**SAE0089**

CAS Registry Number: 98072-47-0

Synonyms: SLO

Molecular mass (calculated): 60,144 Da

### Product Description

Streptolysin O (SLO) is an immunogenic, oxygen-labile hemolytic exotoxin. SLO is released extracellularly along with other toxins, including streptolysin S, during the growth of most strains of group A and many strains of groups C and G *Streptococci*, particularly those causing human infections. SLO is the major streptococcal toxin responsible for cardiomyocyte dysfunction and cardiotoxic and neurotoxic effects.<sup>1,2</sup> SLO and Streptolysin S differ from each other in that SLO is immunogenic and oxygen-labile, while Streptolysin S is oxygen-stable and nonimmunogenic, and only active when associated with a carrier protein.<sup>3</sup> The hemolytic activity of SLO is mediated by formation of multimeric nanopores in cholesterol-containing lipid membranes. Dithiothreitol reversibly activates SLO.<sup>1</sup>

SLO may be used for cell permeabilization or hemolysis. The susceptibility of hemolysis by SLO varies significantly for erythrocytes from different animal species.<sup>1</sup> Permeabilization of cells using SLO has been performed on multiple cell types and for various applications, such as introducing antisense oligonucleotides into cultured eukaryotic cells,<sup>3</sup> investigating the effect of guanine nucleotide analogues on phosphatidylinositol metabolism, and protein kinase C (PKC) activation in live human T lymphocytes,<sup>4</sup> monitoring cholesterol oxidation within a membrane lipid bilayer,<sup>5</sup> and labeling proteins inside living cells using external fluorophores.<sup>6</sup>

Several research publications<sup>8-11</sup> and theses<sup>12</sup> have cited use of SAE0089 in their protocols.

### Precautions and Disclaimer

This product is 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.

### Product

This product is produced by recombinant expression in *E. coli* and contains the complete native protein sequence of SLO (UniProt ID P0DF96, aa 34-571) without added purification tags. This product is lyophilized from a solution containing 20 mM sodium HEPES (pH 7.5), with 150 mM NaCl and 2 mM EDTA.

Specific activity: ≥ 1,000,000 units/mg protein

Unit Definition: One unit will cause 50% lysis of 50 µL of a 2% human red blood cell suspension in phosphate buffered saline (pH 7.4) at 37 °C for 30 minutes.

### Storage/Stability

The lyophilized product should be stored at 2-8 °C.

### Preparation Instructions

Reconstitute by adding water or buffer of neutral pH into the vial. Gently rotate the vial. It is recommended to reconstitute the vial contents to a concentration of 0.2-1 million units/mL (0.1-0.5 mL for a 100 KU vial).

After reconstitution, the product can be stored at 2-8 °C for up to 1 month. Solutions of SLO may be stored longer-term in aliquots at -20 °C. Addition of reducing agents, such as 20 mM cysteine<sup>2</sup> or 10 mM DTT,<sup>7</sup> can preserve SLO activity in solution.

## References

1. Alouf, J. E., *Pharmacol. Ther.*, 11(3), 661-717 (1980).
2. Alouf, J. E., and Geoffroy, C., *Methods Enzymol.*, 165, 52-59 (1988).
3. Barry, E. L. *et al.*, *BioTechniques*, 15(6), 1016-1020 (1993).
4. Graves, J. D. *et al.*, *Biochem. J.*, 265(2), 407-413 (1990).
5. Shoji, A. *et al.*, *J. Pharm. Biomed. Anal.*, 128, 455-461 (2016).
6. Teng, K. W. *et al.*, *eLIFE*, **5**, e20378 (2016) and **6**, e25460 (correction notice; 2017).
7. Bhakdhi, S. *et al.*, *Infect. Immun.*, 46(2), 394-400 (1984).
8. Nair, S. V. *et al.*, *J. Cell Sci.*, 133(11), jcs239335 (doi: 10.1242/jcs.239335.) (2020).
9. Tabata, K. *et al.*, *Nat. Commun.*, 12(1), 7276 (2021).
10. Claude-Taupin, A. *et al.*, *Nat. Cell Biol.*, 23(8), 846-858 (2021).
11. Yang, Y. *et al.*, *iScience*, 24(9), 102980 (2021).
12. Carneiro, Renata Garcia, "Estudo do exportoma de *Plasmodium falciparum* nos estágios eritrocitários tardios" ("Study of the exportome of *Plasmodium falciparum* in late erythrocyte stages"). Universidade de Brasília, M.Sc. thesis, p. 40 (2019).

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