



## Product Information

### Sparsomycin from *Streptomyces sparsogenes*

Product Number **S 1667**  
Storage Temperature 2-8 °C

#### Product Description

Molecular Formula: C<sub>13</sub>H<sub>19</sub>N<sub>3</sub>O<sub>5</sub>S<sub>2</sub>  
Molecular Weight: 361.4  
CAS Number: 1404-64-4  
Melting Point: 208-209 °C (with decomposition)<sup>1</sup>  
pK<sub>a</sub>: 8.67 (in water), 9.05 (in 40% ethanol)<sup>1</sup>  
λ<sub>max</sub>: 302 nm (water or 0.1 N aqueous H<sub>2</sub>SO<sub>4</sub>),  
328 nm (0.1 N aqueous NaOH)<sup>1</sup>  
Synonyms: [R,<sup>\*</sup>[R<sup>\*</sup>,S<sup>\*</sup>-(E)]]-N-[1-(hydroxymethyl)-  
2-[[[(methylthio)methyl]sulfinyl]ethyl]-  
3-(1,2,3,4-tetrahydro-6-methyl-2,4-dioxo-  
5-pyrimidinyl)-2-propenamide; (E)-(1S)-  
1,2,3,4-tetrahydro-N-[1-(hydroxymethyl)-  
2-[[[(methylthio)methylsulfinyl]ethyl]-6-methyl-  
2,4-dioxo-5-pyrimidine-acrylamide; NCS-59729;  
U-19183

Sparsomycin is a metabolite from the fermentation of *Streptomyces sparsogenes* var. *sparsogenes* or *Streptomyces cuspidosporus*. It is an inhibitor of protein synthesis with antibiotic and antitumor activity.<sup>1-3</sup> The structural elucidation of sparsomycin has been described.<sup>4</sup> Different syntheses of sparsomycin have been reported.<sup>5,6</sup>

The role of sparsomycin in tRNA translocation in the ribosome, in the absence of elongation factor G and guanosine triphosphate, has been investigated.<sup>7</sup> The structure of sparsomycin bound to the large ribosomal subunit of *Haloarcula marismortui* at 3.0 Å resolution has been reported.<sup>8</sup> Sparsomycin has been used in studies of mutant 23 S ribosomes to study the structural basis of catalysis and antibiotic resistance to oxazolidinones.<sup>9</sup>

A study of CD2F1 mice inoculated with L1210 cells has studied the antitumor activity of sparsomycin in conjunction with cis-platin.<sup>10</sup> The morphological reversion activity of sparsomycin on *src*<sup>ts</sup>NRK cells has been examined.<sup>6</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

This product is soluble in water (2 mg/ml), yielding a clear, colorless solution.

#### References

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5. Ottenheijm, H. C. J., Total synthesis of the antibiotic sparsomycin, a modified uracil amino acid monoxodithioacetal. *J. Org. Chem.*, **46(16)**, 3273-3283 (1981).
6. Nakajima, N., et al., Synthesis and morphological reversion activity on *src*<sup>ts</sup>NRK cells of pyrimidinylpropanamide antibiotics, sparsomycin, sparoxomycin A1, A2, and their analogues. *Bioorg. Med. Chem. Lett.*, **8(23)**, 3331-3334 (1998).
7. Fredrick, K., and Noller, H. F., Catalysis of ribosomal translocation by sparsomycin. *Science*, **300(5622)**, 1159-1162 (2003).
8. Hansen, J. L., et al., Structures of five antibiotics bound at the peptidyl transferase center of the large ribosomal subunit. *J. Mol. Biol.*, **330(5)**, 1061-1075 (2003).

9. Bobkova, E. V., et al., Catalytic properties of mutant 23 S ribosomes resistant to oxazolidinones. *J. Biol. Chem.*, **278(11)**, 9802-9807 (2003).
10. Zylicz, Z., et al., Potentiation of cisplatin antitumor activity on L1210 leukemia s.c. by sparsomycin and three of its analogues. *Cancer Lett.*, **46(2)**, 153-157 (1989).

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