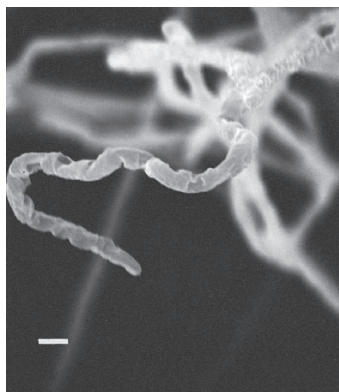


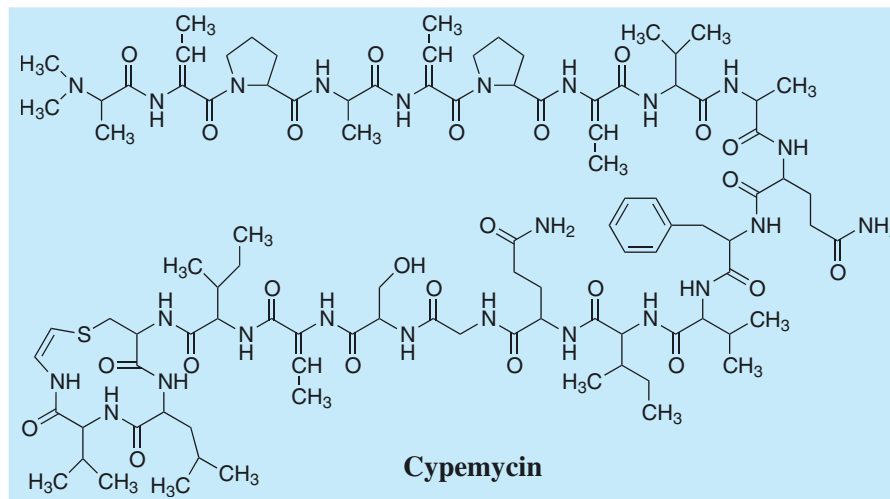
# Cypemycin

## 1. Discovery, producing organism and structure<sup>1,2)</sup>

Cypemycin was isolated from the culture broth of the actinomycete strain OH-4156<sup>1)</sup> and found to possess cytotoxic activity against P388 leukemia cells *in vitro*. Its structure was determined by means of FAB-MS, NMR and amino acid analysis<sup>2)</sup>.



*Streptomyces* sp. OH-4156



## 2. Physical data

White powder. C<sub>99</sub>H<sub>154</sub>N<sub>24</sub>O<sub>24</sub>S; mol wt; 2096.52. Sol. in MeOH, EtOH, benzene, CHCl<sub>3</sub>. Insol. in H<sub>2</sub>O, acetone, EtOAc, hexane.

## 3. Biological activity<sup>1)</sup>

1) Cytotoxicity of cypemycin against mammalian cells

Cell line	Origin	IC <sub>50</sub> (μg/ml)
HeLa S3	Human cervix carcinoma	>25
B16 melanoma	Mouse melanoma	>25
P388 leukemia	Mouse leukemia	1.3
L929	Mouse fibroblast	>25
HCC-1	Human liver tumor	>25
HCC-M	Human liver tumor	>25
Alex	Human liver tumor	>25

2) Cypemycin showed antimicrobial activity only against *Micrococcus luteus* (MIC = 0.2 μg/ml) and no activity against other Gram-positive and -negative bacteria, fungi, or yeast.

## 4. Biosynthesis<sup>3-5)</sup>

The biosynthetic gene cluster for cypemycin was identified and the biosynthetic pathway was proposed. The precursor peptide is synthesized ribosomally and the unique residues, such as aminovinyl cysteine, L-allo-isoleucine and *N,N*-dimethylalanine, are formed by posttranslationally modifications.

## 5. References

1. [522] K. Komiyama *et al.*, *J. Antibiot.* **46**, 1666-1671 (1993)
2. [556] Y. Minami *et al.*, *Tetrahedron Lett.* **35**, 8001-8004 (1994)
3. J. Claesen *et al.*, *Proc. Natl. Acad. Sci. USA* **107**, 16297-16302 (2010)
4. C. S. Sit *et al.*, *Acc. Chem. Res.* **44**, 261-268 (2011)
5. Q. Zhang *et al.*, *FEBS Lett.* **586**, 3391-3397 (2012)