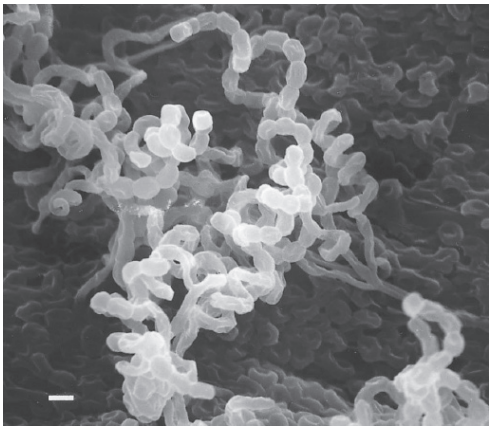
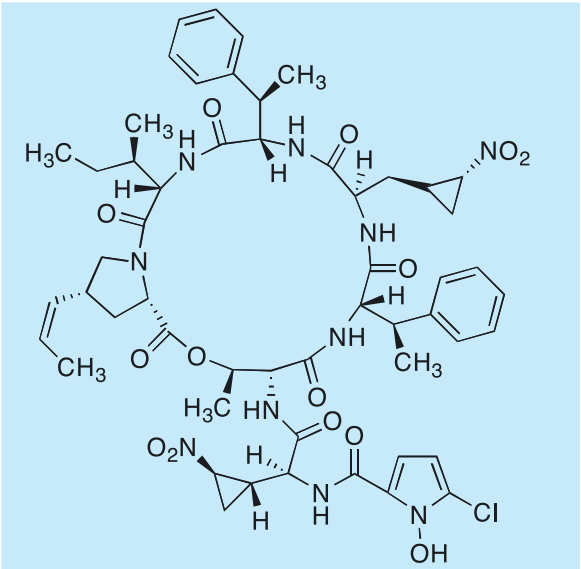
Takaokamycin

1. Discovery, producing organism and structure[1-5)]

Takaokamycin was isolated from the culture broth of *Streptomyces* strain AC-1978 while screening for new antibiotics. It exhibited antibacterial activity against some Gram-positive bacteria. Though takaokamycin has been suggested to be a peptide containing three amino acids, its total structure was not elucidated[1)]. After a few years, N. Andres *et al*. isolated a compound from the culture broth of *Streptomyces griseoflavus* W-384 and named it hormaomycin. Its structure was elucidated and the physico-chemical properties of hormaomycin were quite similar to those of takaokamycin, except high-field ^{1}H-NMR signals[2,3)]. Recently, ^{1}H- and ^{13}C-NMR spectra of takaokamycin were re-measured and data showed that takaokamycin was identical to hormaomycin[4)].



Streptomyces sp. AC-1978



Takaokamycin (Hormaomycin)

2. Physical data

White powder. $C_{55}H_{69}N_{10}O_{14}Cl$; mol wt 1129.67. Sol. in DMSO, MeOH, acetone, $CHCl_3$. Insol. in H_2O, hexane.

3. Biological activity

1) Antibacterial activity[1)]

Takaokamycin showed antibacterial activity against *Bacillus cereus* IFO3001 (MIC 12.5 μg/ml) and *Micrococcus luteus* ATCC 9341 (MIC 1.56 μg/ml).

2) Antimalarial activity against FCR3 and K1 strains of *Plasmodium falciparum*[4,6)]

	IC_{50} (μM)
FCR3 strain (chloroquine sensitive)	1.21
K1 strain (chloroquine resistant)	0.59
Cytotoxicity (MRC-5 cells)	53.9

3) Other biological activity[2)]

Takaokamycin (hormaomycin) initiated the development of aerial mycelia and stimulated antibiotic production in some *Streptomyces* strains.

4. Biosynthesis[7,8)]

The biosynthetic gene cluster for hormaomycin (takaokamycin) was identified from *Streptomyces griseoflavus* W-384 and it proposed to be synthesized by noribosomal peptide synthetase. The transcriptional regulators, hrmA and hrmB, are positive regulators in the biosynthesis.

5. References

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