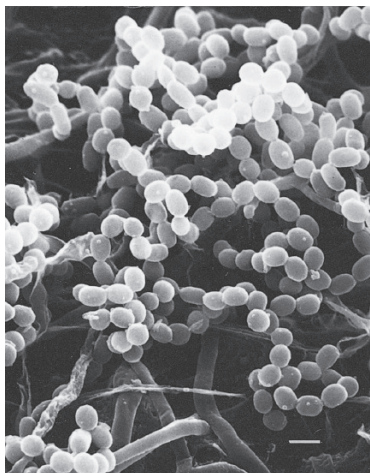


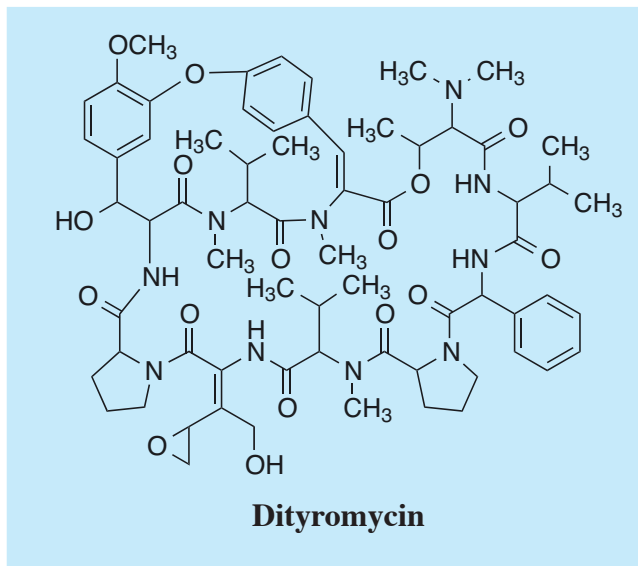
Dityromycin

1. Discovery, producing organism and structure¹⁻³⁾

During screening for new microbial alkaloids, dityromycin was isolated as a Dragendorff positive compound from the culture broth of the actinomycete strain AM-2504. The structure was elucidated by FAB-MS and chemical hydrolysis^{2,3)}.



Streptomyces sp. AM-2504



2. Physical data¹⁾

Pale yellow powder, C₆₇H₈₈N₁₀O₁₆; mol wt 1288.64. Sol. in MeOH, EtOH, EtOAc, acetone, CHCl₃. Slightly sol. in benzene. Sparingly sol. in H₂O, hexane, petroleum ether.

3. Biological activity^{1,2)}

Antimicrobial activity

Test organism	MIC (μg/ml)
<i>Staphylococcus aureus</i> FDA209P	>100
<i>Bacillus subtilis</i> PCI219	6.25
<i>Bacillus cereus</i> IFO3001	1.56
<i>Bacillus cereus</i> var. <i>mycoides</i>	1.56
<i>Bacillus agri</i>	6.25
<i>Bacillus anthracis</i>	100
<i>Bacillus megaterium</i> IFO12108	25
<i>Bacillus pumilis</i> IFO12092	50
<i>Micrococcus luteus</i> PCI1001	>100
<i>Mycobacterium avium</i>	25
<i>Corynebacterium paurometabolum</i>	0.39
<i>Escherichia coli</i> NIHJ	>100
<i>Pseudomonas aeruginosa</i> P-3	>100
<i>Clostridium perfringens</i> ATCC3624	6.25
<i>Clostridium acetobutyricum</i> IFO3346	3.12
<i>Clostridium botulinum</i> IFO3733	3.12
<i>Clostridium kainantoi</i> IFO3353	1.56
<i>Clostridium kluyveri</i> IFO12016	3.12

4. Mode of action^{4,5)}

Bulkley *et al.* and Brandi *et al.* reported the antibacterial activity of dityromycin and revealed the molecular basis underlying it. Especially, dityromycin inhibits EF-G-catalyzed translocation to bind the shoulder of the 30S subunit and interacts exclusively with ribosomal protein S12 on the small subunit in Bulkley group report.

5. References

1. [135] S. Ōmura *et al.*, *Agricult. Biol. Chem.* **41**, 1827-1828 (1977)
2. [368] T. Teshima *et al.*, In "Peptide Chemistry 1986" pp.169-174, Protein Research Foundation (1987)
3. [392] T. Teshima *et al.*, *Tetrahedron Lett.* **29**, 1963-1966 (1988)
4. D. Bulkley *et al.*, *Cell Rep.* **6**, 357-365 (2014)
5. L. Brandi *et al.*, *FEBS Lett.* **586**, 3373-3378 (2012)