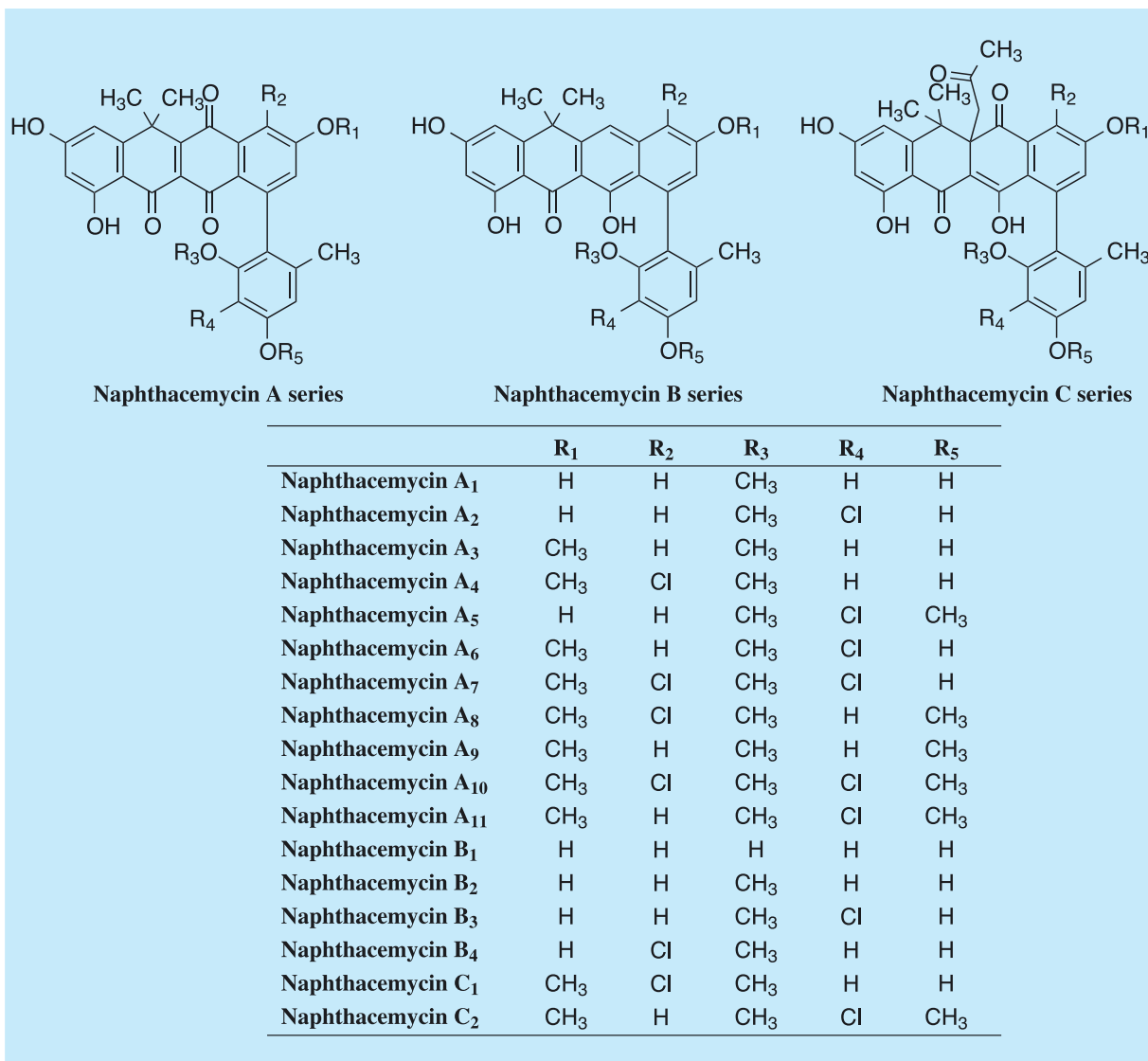


Naphthacemycin

1. Discovery, producing organism and structures¹⁾

Naphthacemycins A₁-A₁₁, B₁-B₄ and C₁-C₂, were isolated from a culture broth of *Streptomyces* sp. KB-3346-5 during screening for circumventors of β-lactam resistance in MRSA. Their structures were elucidated by spectroscopic studies, including NMR and X-ray crystallographic analysis. The naphthacemycin A series has a new skeleton displaying a 7-phenylnaphthacene-5,6,11(12*H*)-trione.

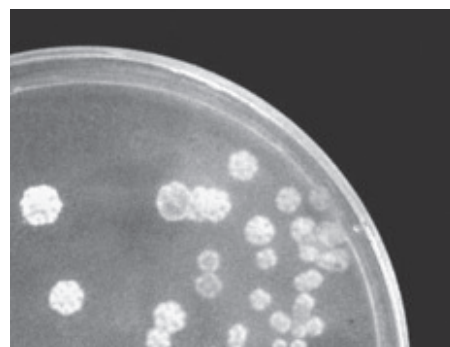


2. Physical data (Naphthacemycin A₁)

Red powder. C₃₀H₂₆O₈;

mol wt 514.12. Sol. in MeOH, CHCl₃, EtOAc.

Insol. in H₂O, *n*-hexane.



Streptomyces sp. KB-3346-5

3. Biological activity¹⁾

1) Naphthacemycins showed potentiating effect on imipenem in MRSA using the paper disc method.

Naphthacemycin ($\mu\text{g}/\text{disk}$)	Imipenem (10 $\mu\text{g}/\text{ml}$)					Imipenem (0 $\mu\text{g}/\text{ml}$)				
	0.01	0.03	0.1	0.3	1	0.01	0.03	0.1	0.3	1
A ₁	-	-	-	10	16	-	-	-	-	-
A ₂	-	10	16	17	22	-	-	-	-	-
A ₃	9	14	18	19	21	-	-	-	-	-
A ₄	-	10	11	13	19	-	-	-	-	-
A ₅	9	15	17	21	25	-	-	-	-	-
A ₆	11	15	19	21	23	-	-	-	-	-
A ₇	10	11	14	19	21	-	-	-	-	-
A ₈	9	12	13	15	16	-	-	-	-	-
A ₉	7	13	15	17	17	-	-	-	-	-
A ₁₀	11	12	12	14	15	-	-	-	-	-
A ₁₁	-	10	11	16	16	-	-	-	-	-
B ₁	-	-	-	10	14	-	-	-	-	-
B ₂	-	8	11	15	17	-	-	-	-	-
B ₃	-	13	14	14	16	-	-	-	-	-
B ₄	-	9	10	15	18	-	-	-	-	-
C ₁	-	9	11	15	17	-	-	-	-	-
C ₂	-	-	7	10	17	-	-	-	-	-

2) The MIC value of imipenem against MRSA was reduced from 32 to 0.25 $\mu\text{g}/\text{ml}$ (128-fold) when given in combination with naphthacemycin A₁.

3) Naphthacemycins showed potentiating effect only for β -lactams in MRSA test, but not for aminoglycosides, glycopeptides, tetracyclines and quinolones.

4. Reference

1. S. Ōmura *et al.*, JP 2007-211712 (2007)