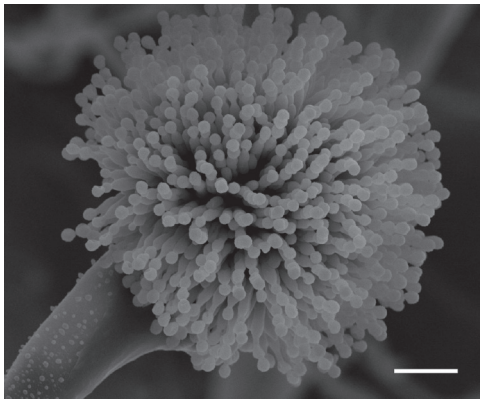
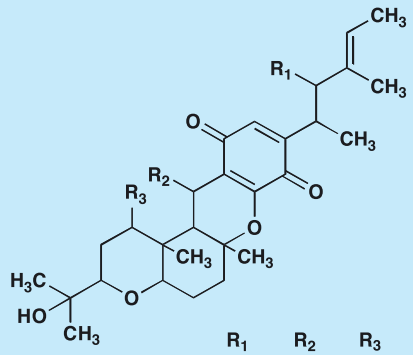
Stemphone

1. Discovery, producing organism and structures[1-3)]

Stemphones B and C were isolated along with a structurally related known compound, cochlioquinone D, from the culture broth of *Aspergillus* sp. FKI-2136 as potentiators of imipenem activity against methicillin-resistant *Staphylococcus aureus* (MRSA). These compounds have a tetracyclic quinone skeleton, as well as stemphone (stemphone A).



Aspergillus sp. FKI-2136
Bar: 10 μm



	R_1	R_2	R_3
Stemphone B	- OAc	- OH	- OH
Stemphone C	- OAc	- H	- H
Cochlioquinone D	= O	- H	- H
Stemphone A	- OAc	- OH	- H

2. Physical data (Stemphone B)

Yellow powder. $C_{30}H_{42}O_9$; mol wt 546.65. Sol. in DMSO, MeOH, $CHCl_3$, EtOAc. Insol. in H_2O.

3. Biological activity[1)]

The MIC value of imipenem against MRSA was reduced from 16 to 0.03 μg/ml in combination with stemphone. Study on anti-MRSA activity of other typical antibiotics in combination with stemphone showed that the potentiating activity was limited to β-lactam antibiotics.

β-Lactam		MIC (μg/ml)		Ratio
		Stemphone (-)	Stemphone (+)	(-/+)
Penam	Ampicilin	256	128	2
	Penicillin G	128	64	2
	Cloxacilin	512	1	512
	Cefazolin	64	4	16
Cephem	Cephalexin	1024	256	4
	Cefotaxime	1024	16	64
	Cefmetazole	128	2	64
	Imipenem	16	0.03	512
Carbapenem	Biapenem	16	0.25	64
	Panipenem	16	0.03	512
	Meropenem	16	0.5	32

The concentration of stemphone was set up at 4 μg/ml.

4. References

1. [898] N. Koyama *et al., J. Antibiot.* **58**, 695-703 (2005)
2. C. H. Lim *et al., Tennen Yuki Kagoubutsu Toronkai Koen Yoshishu* **37**, 325-330 (1995)
3. P. M. Scott *et al., Can. J. Microbiol.* **14**, 1015-1016 (1968)