Table S2 Strains and plasmids used in this study

Strains or plasmids	Relevant characteristics	Sources
Bacterial strains		
S. spinosa ATCC49460	Wide-type strain	CGMCC
Streptomyces		
S. avermitilis ATCC31267	Wide-type strain	CGMCC
S. coelicolor M145	Wide-type strain	CGMCC
S. coelicolor M1154	*Δact,Δred,Δcpk,Δcda,rpoB[C1298T],rpsL[A262G]*	[1]
S. albus ATCC39012	Wide-type strain	CGMCC
S. lividans TK24	*Rps*L(Smr) *Act+Red+*	John Innes Centre, Norwich, UK
S. venezuelae ATCC 15439	Wide-type strain	CGMCC
S. avermitilis ATCC 31267 BAC-*spn*-152-*rha*	*S. avermitilis* ATCC 31267 containing BAC-*spn*-152-*rha*	Present study
S. coelicolor M145 BAC-*spn*-152-*rha*	*S. coelicolor* M145 containing BAC-*spn*-152-*rha*	Present study
S. lividans TK24 BAC-*spn*-152-*rha*	*S. lividans* TK24 containing BAC-*spn*-152-*rha*	Present study
S. venezuelae ATCC 15439 BAC-*spn*-152-*rha*	*S. venezuelae* ATCC 15439 containing BAC-*spn*-152-*rha*	Present study
S. albus ATCC39012 BAC-*spn*-152-*rha*	*S. albus* ATCC39012 containing BAC-*spn*-152-*rha*	Present study
S. coelicolor M1154 BAC-*spn*-152-*rha*	*S. coelicolor* M1154 containing BAC-*spn*-152-*rha*	Present study
E. coli		
DH5α	*rec*A1, *end*A1, *hsd*R17, g*yr*A96, *rel*A1,	Stratagene
ET12567 (pUZ8002)	Nonmethylation strain (*dam*$^-$ *dcm*$^-$ *hsdM*$^-$), TetR, CmR	[2]
BW25113	K-12 BD792 derivative: *lacI*q, *rrnB*T14, Δ*lacZ*WJ16, *hsdR514*, Δ*araBAD*AH33,*ΔrhaBAD*LD78	[3]
Plasmids		
pJL117	pIJ2925 derivative *carrying the ermE*P* from pIJ4090	[4]
pKD10	Derived from pKD20, Amp^r	[5]
pCC1BAC BamHI	BAC cloning vector	Epicentre
pSET152	Integrative vector	[3]

BAC-*spn*	pCC1BAC with ~100 kb DNA insert containing the whole *spn* gene cluster	Present study
BAC-*spn*-152	BAC-*spn* derivative containing the 4.3 kb fragment of pSET152 containing *aac3*(IV), *oriT*, *attP-int*	Present study
BAC-*spn*-152-*rha*	BAC-*spn*-152 derivative integrated with *gtt, gdh, kre, epi*	Present study

[#]CGMCC: China General Microbiological Culture Collection Center.

References

[1]Gomez-Escribano JP, Bibb MJ: **Engineering *Streptomyces coelicolor* for heterologous expression of secondary metabolite gene clusters.** *Microb Biotechnol* 2011, 4(2): 207-215.

[2]MacNeil DJ, Gewain KM, Ruby CL, Dezeny G, Gibbons PH, MacNeil T: **Analysis of *Streptomyces avermitilis* genes required for avermectin biosynthesis utilizing a novel integration vector.** *Gene* 1992, 111(1):61-68.

[3]Datsenko KA, Wanner BL. **One-step inactivation of chromosomal genes in *Escherichia coli* K-12 using PCR products.** *Proc Natl Acad Sci USA* 2000, 97(12): 6640-6645.

[4]Zhao JL: **Regulation mechanism of avermectin biosynthesis.** *PhD thesis.* China Agricultural University, Microbiology and Immunology Department; 2006.

[5]Bierman M, Logan R, O'Brien K, Seno ET, Rao RN, Schoner BE: **Plasmid cloning vectors for the conjugal transfer of DNA from *Escherichia coli* to *Streptomyces* spp**. *Gene* 1992, 116(1):43-49.