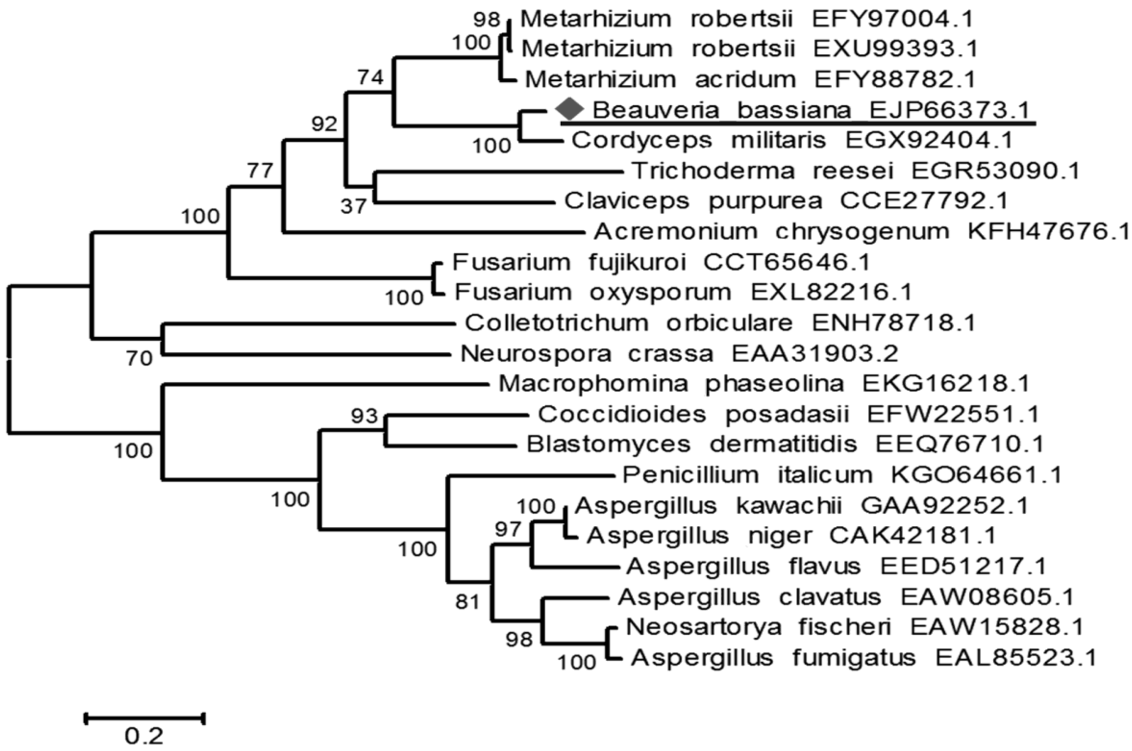

Fig. S1. Phylogenetic analysis of BbSmr1.

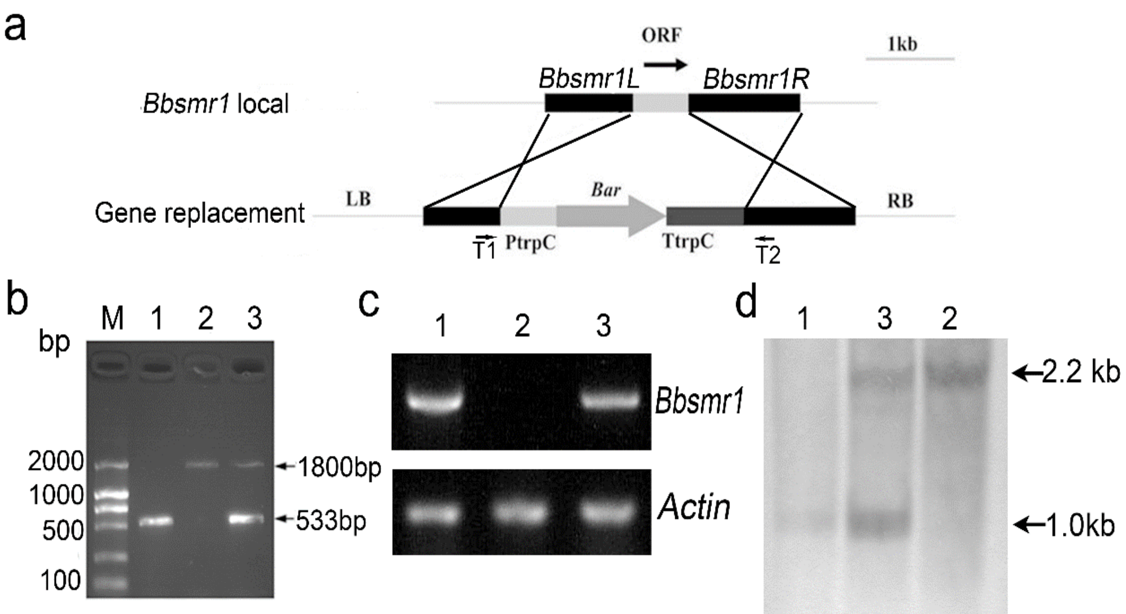

Fig. S2. (a) Schematic diagram of construction of *ΔBbsmr1* mutant and complementation strains. Screening and confirmation of the integrity of the strains by PCR (b), RT-PCR (c), and Southern blot (d). Lane 1, *B. bassiana* wild type, lane 2, *ΔBbsmr1*, lane 3, *CM*. About 300 bp fragment in the Bbsmr1L was used a probe for Southern blot.

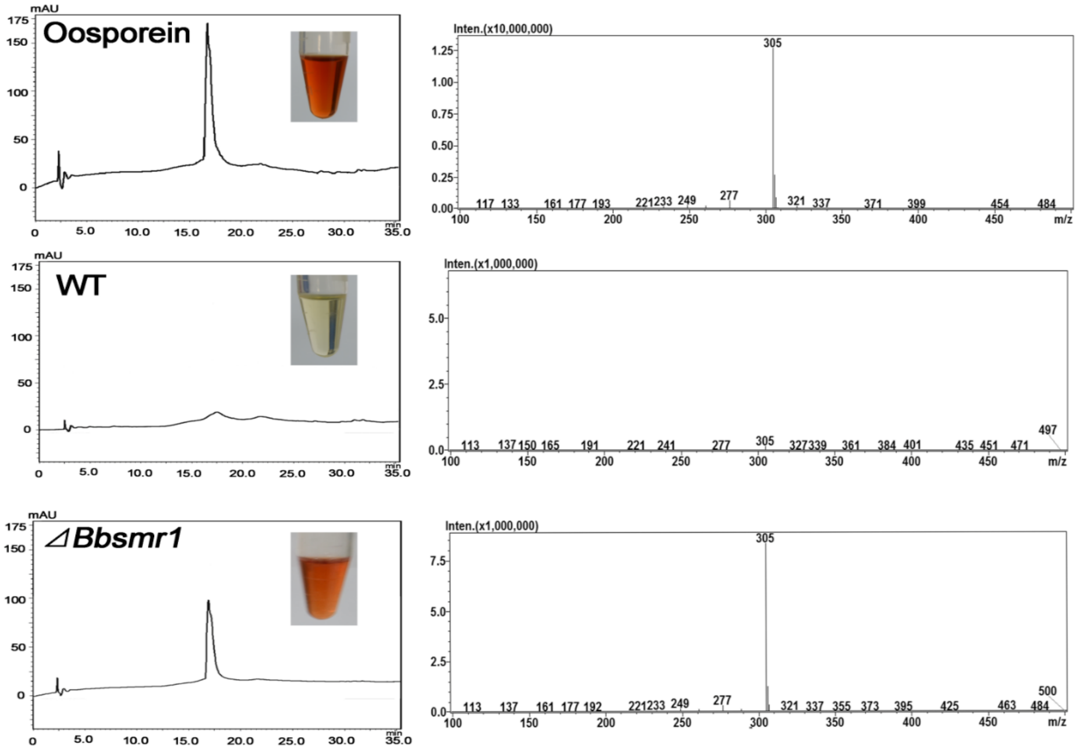

Fig. S3. Extraction and HPLC-MS analysis of culture supernatants derived from *B. bassiana* wild type (middle panel) and *⊿Bbsmr1* mutant (bottom panel). Oosporein standard is shown in the top panel.

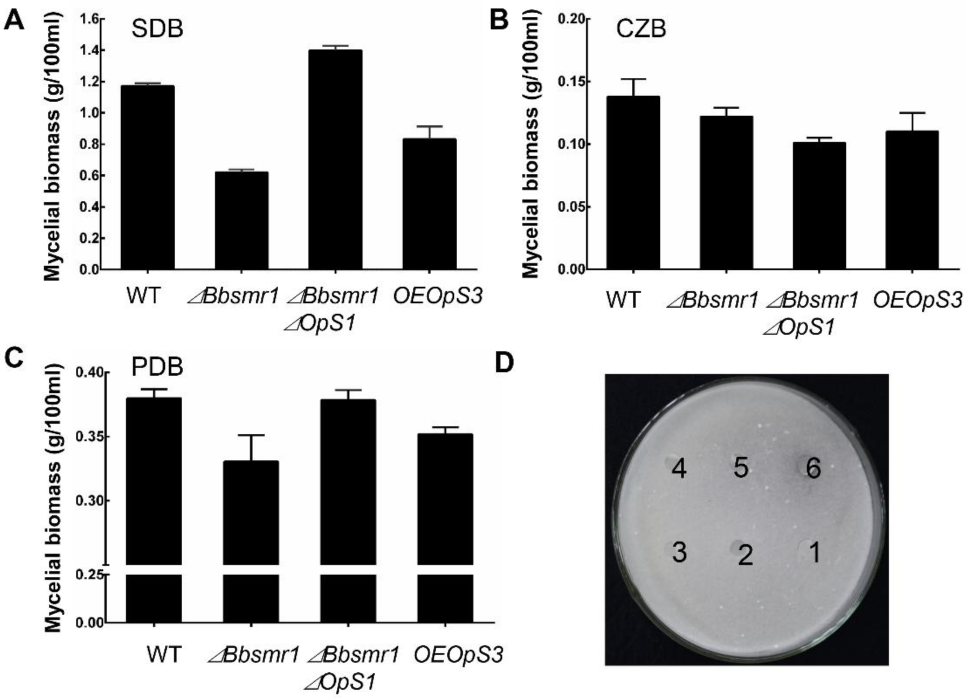

Fig. S4. Total mycelial biomass of *B. bassiana* wild type and mutant strains (A~C). D, Effects of oosporein on the growth of *B. bassiana*. 1 – 6, indicated oosporein concentration, 0, 0.05, 0.1, 0.5, 1.0, 2.0 mg/ml, respectively.

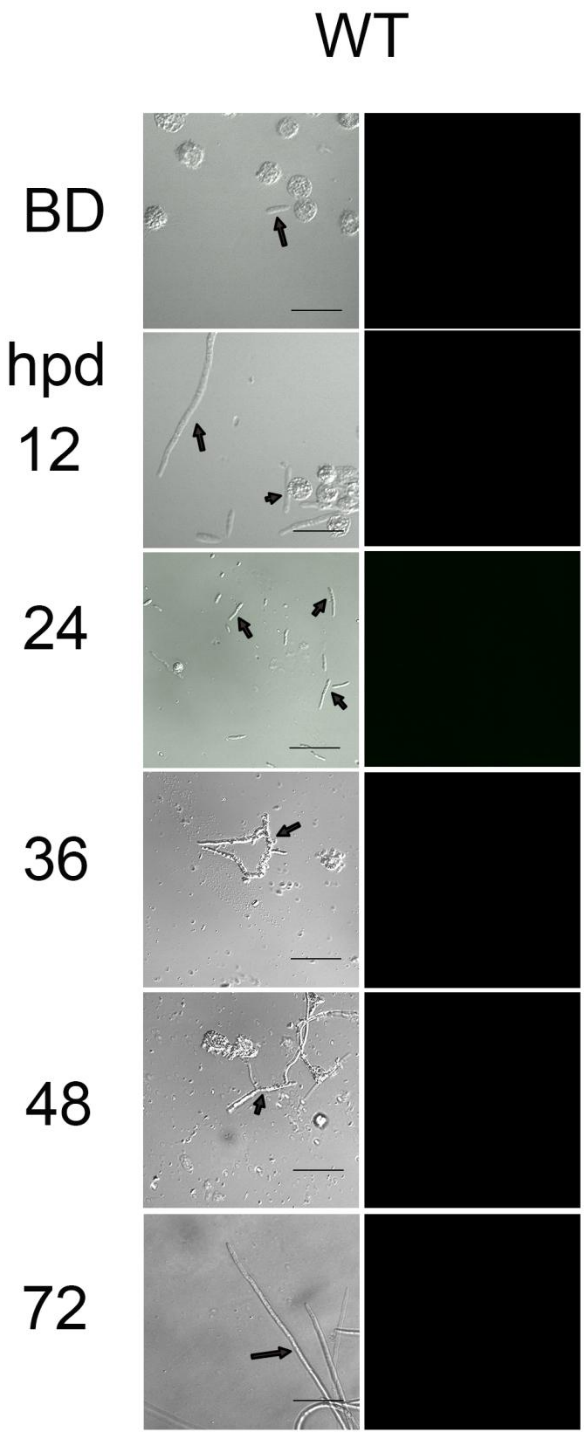

Fig. S5. DIC and fluorescent microscopy images of *B. bassiana* wild type grown in *G. mellonella* cadavers.

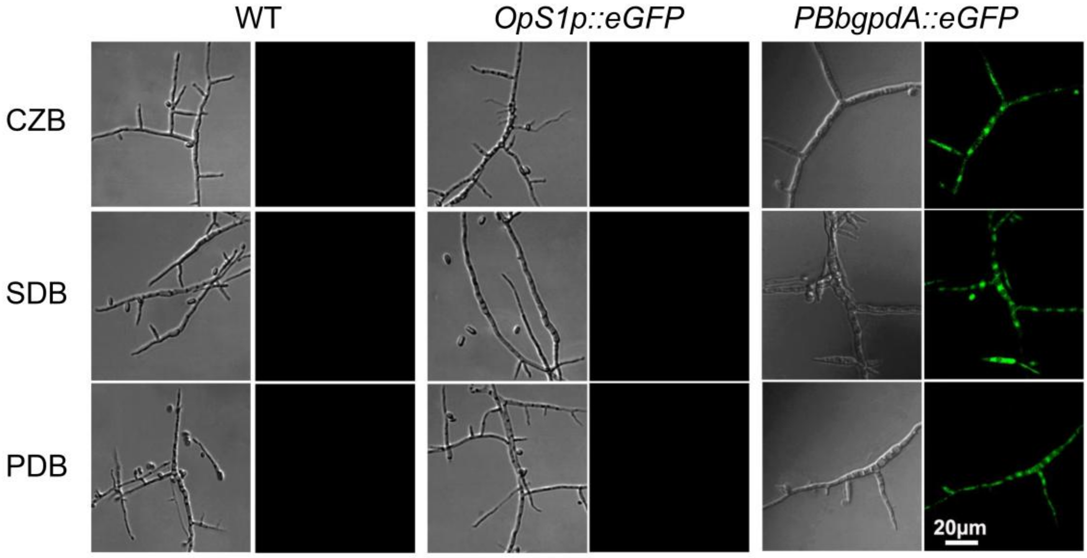

Fig. S6. DIC and fluorescent microscopy images of *B. bassiana* wild type and *OpS1p::eGFP* strains grown in CZB (Czapek-dox broth), SDB (Sabouraud dextrose broth), and PDB (Potato dextrose broth) for 3 d at 26 ℃. The constitutive eGFP producing strain, pBbgpdA::eGFP, was used as a positive control.

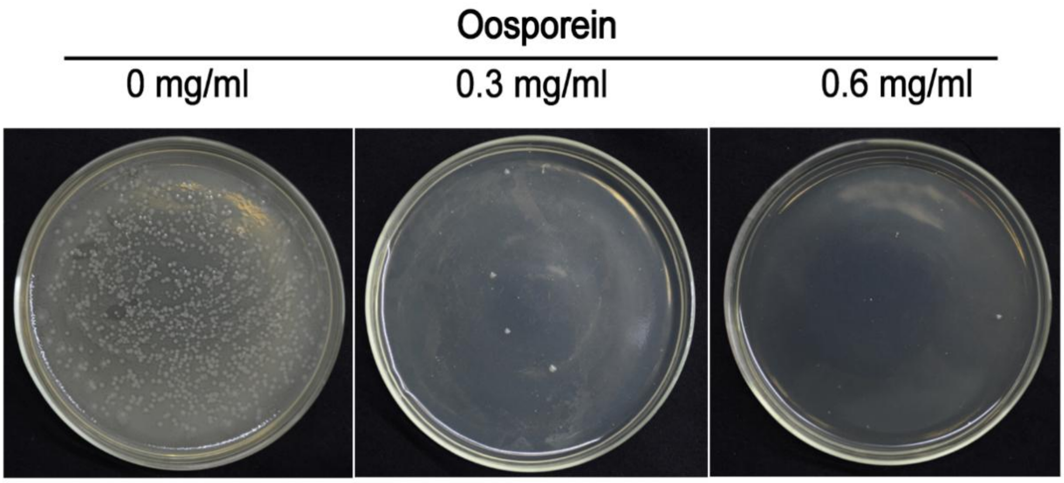

Fig. S7. Antimicrobial activity of oopsorein on total bacteria isolated from *G. mellonella* cadavers.

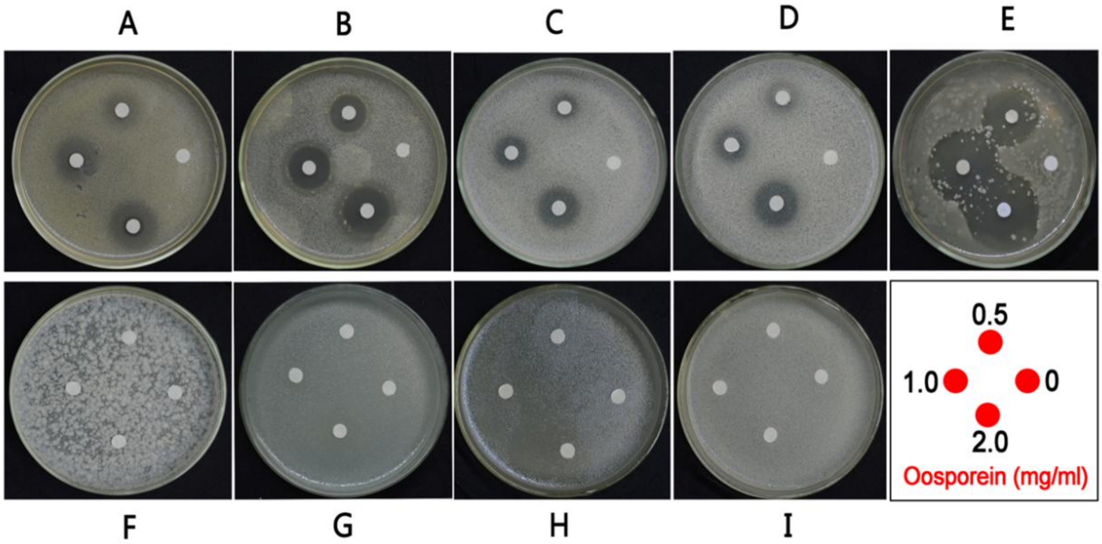

Fig. S8. Antibacterial activity of oosporein. Different concentrations of oosporein (0, 0.5, 1 and 2 mg/ml in citric acid buffer, 50 mM, pH 6.0), was added to bacterial plates inoculated with lawns of *Staphylococcus aureus* N315 (A), *E. coli* (B), *Bacillus thuringiensis* BT-1003 (C), *Bacillus thuringiensis* BT-YZ (D), bacteria from insect cadavers killed by *B. bassiana* (E), *BT-1003*, (F), *Acinetobacter Bauman* (G), *Pseudomonas aeruginosa* PA01 (H), *Pseudomonas aeruginosa* PA14 (I) Citric acid buffer (50 mM, pH 6.0) was used as a negative control.

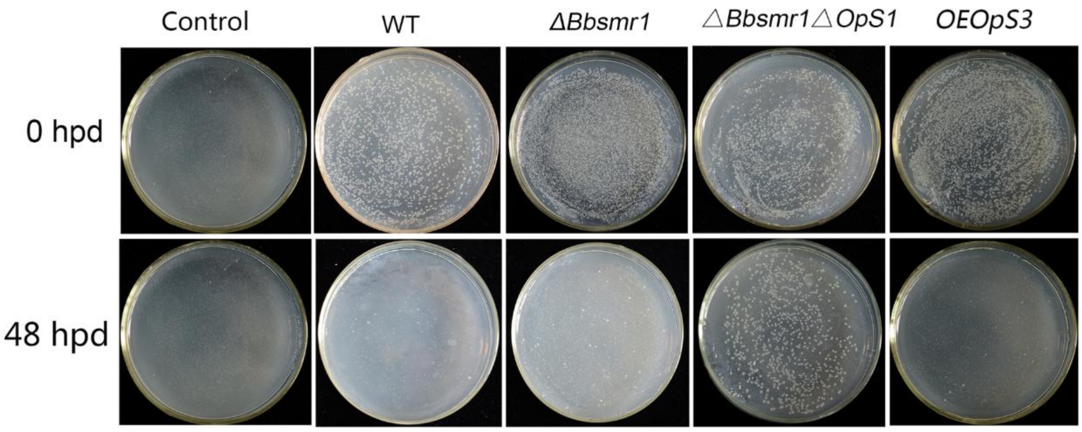

Fig. S9. Representative images of enumeration plates showing bacterial colonies from infected *G. mellonella* cadavers killed by the indicated *B. bassiana* strains at 0 and 48 h post death. Sterile H_2O was used as a control.

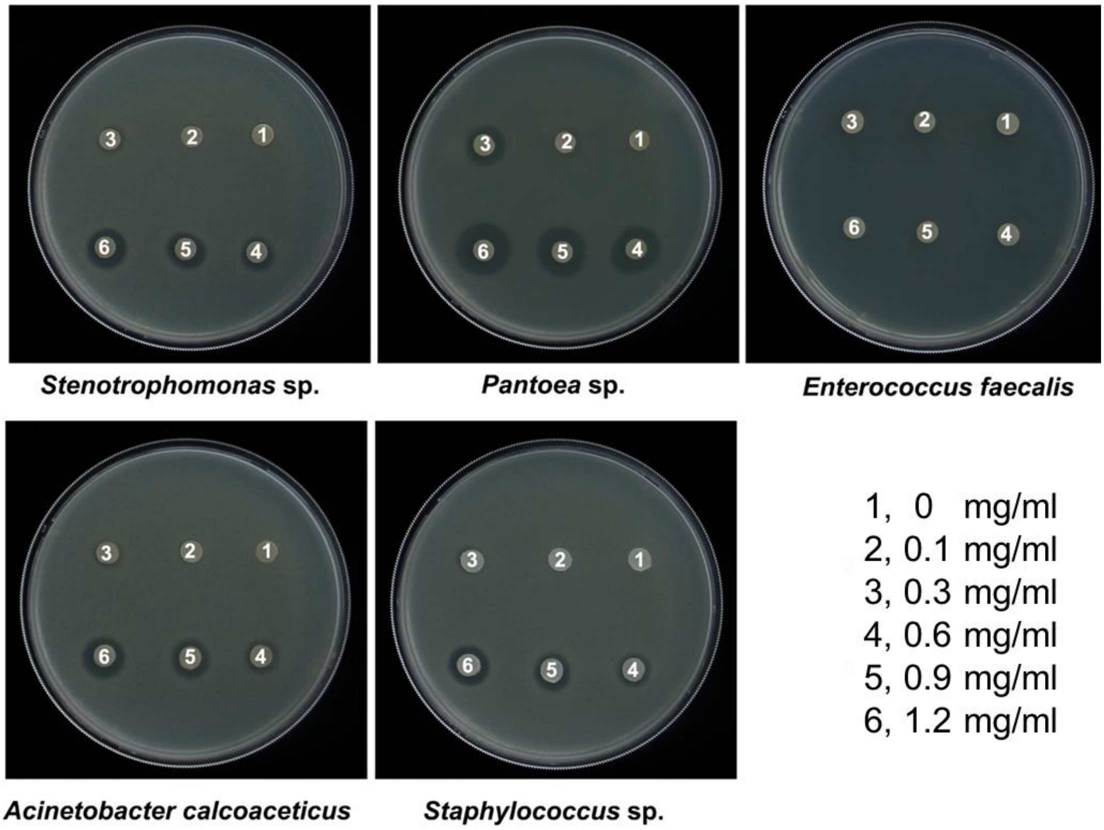

Fig. S10. Antibacterial activity of oosporein against bacteria isolated from *G. mellonella* cadaver infected by *B. bassiana*. Different concentrations of oosporein (1 ~ 6, indicated 0, 0.1, 0.3, 0.6, 0.9, 1.2 mg/ml in citric acid buffer, 50mM, pH6.0) was added to bacterial plates.

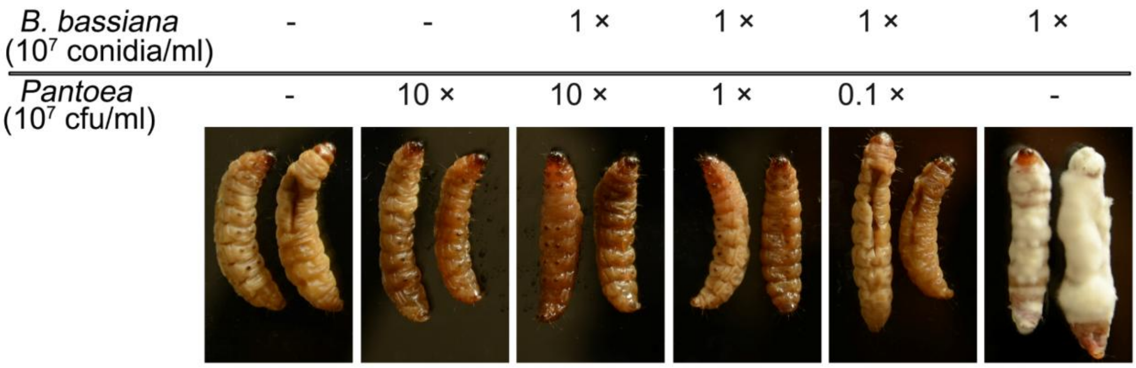

Fig. S11. Effects of *Pantoea* on *B. bassiana* growth on *G. mellonella* cadavers. Sterilized *G. mellonella* larvae (121°C for 15 min) were injected with indicated ratios of fungal spores (1 × 10^7 conidia/ml):bacteria (0.1 ~ 10 × 10^7 cfu/ml). Larvae were placed at 26°C for 5 days, and fungal growth was observed visually.

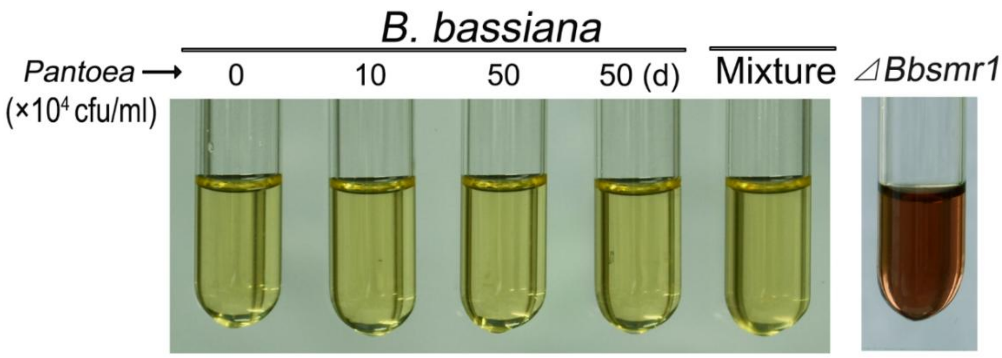

Fig. S12. Lack of oosporein production during *in vitro* co-culture of *Pantoea* and *B. bassiana*. *B. bassiana* was cultured in 0.5×SDB for 36 h, after which *Pantoea* at indicated concentrations as well as bacterial mixture isolated from cadaver (Mixture) were added to the growing fungal culture and the co-culture was incubated for additional 36 h at 26ºC. Controls include addition of heat killed/sterilized *Pantoea* (sample 50(d), negative control) and the *Bbsmr1* deletion mutant (positive control).

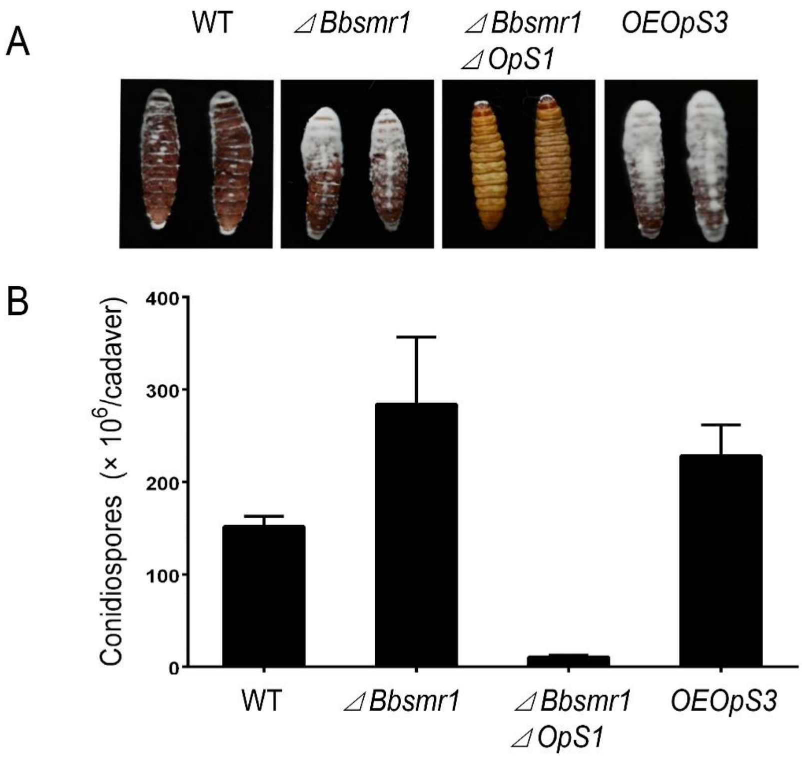

Fig. S13. Representative images of fungal growth (A, 3 d post death) and quantification of conidiation (B, 6 d post death) on *G. mellonella* cadavers killed by the indicated strains. The cadavers infected by wild type, *ΔBbsmr1*, *ΔBbsmr1ΔOpS1* and *OEOpS3* were placed at 26℃ for 1-6 d.

Table S1. Primers used in this study

For Bbsmr1 gene tagging	
L1	TGTCGTGCCAGCTGCATTAA
L2	GCAATTCGGCGTTAATTCAG
R1	TTTCGCCAGCTGGCGTAATA
R2	GAGCTTGGATCAGATTGTC
SiteFinder-1	CGACACGCTACTCAACACACCACCTCGCACAGCGTCCT CAAGCGGCCGCNNNNNNGCCT
SiteFinder-2	CGACACGCTACTCAACACACCACCTCGCACAGCGTCCT CAAGCGGCCGCNNNNNNGCGC
SFP1	CGACACGCTACTCAACACAC
	For recombination and screening
Primer	**Oligonucleotide sequence (5′-3′)**
PsmrL1	ACTCGAATTCCTCGAGACTCAAAGAGCTCTTGGTGC
PsmrL2	ATGCGAATTCAAAGTCTCTCCATGAGATGC
PsmrR1	ATGCTCTAGATGCTCATGGGAGCAAGAC
PsmrR2	ACTGAAGCTTACTAGTAAGAGGGTCACTCTTGAC
PsmrT1	TCGTGCTTGCTTTGTGCTTG
PsmrT2	TGGAGGCTAAAGAGTCGCTG
PsmrC1	GCGAATTCCCGCATAGATCCCTGTCGTA
psmrC2	CGTCTAGACAGGAGGGTTGTCAGCAAGCA
Psmr-sb1	CCATGAGATGCAGGCTCCTT
Psmr-sb2	GCAAACCCACTTCTTCTTGG
POpS1LB1	CCCAAGCTTCTAGA CTTAGAACACTCCTGTGAGG
POpS1LB2	GGACTAGTGAGAGGATTGGTGCTGAAAG
POpS1RB1	GGACTAGTAGAGGCCAAATCCATGGATC
POpS1RB2	CGGAATTCGGTTGGCATGATAGGCTCAC
POpS3LB1	AATCCTTCTTTCTAGAAGCTTCTACCCGAGACATGCAC TCA
POpS3LB2	GGTCTAGAGCTTGGACGGACGTAACATT
POpS3RB1	GGACTAGTTCTCAGTCAGGCGACATACG
POpS3RB2	GCAGGTCGACTCTAGGAATTCCATCGTCCAGAGCTTCA ACA
POpS1t1	ACCATGAGAGTCTCCTGGAG
POpS1t2	AGGCCGTCTGCAGGAGAATG
POpS3t1	AAGCATGCGAGACAGCCTCG
POpS3t2	AGAGCAGGGAATCTGCTGCT
	For Real Time PCR
Primer	**Oligonucleotide sequence (5'-3')**
Bbsmr-RTU	CAGCTTGGCAATATGAAGAC
Bbsmr-RTD	AACATGGGGTAACGGCTGCTG
OpS14-RTU	CGGCTACTACGAAACCATT
OpS14-RTD	CAGAGTCTTTGCGGATGG
OpS13-RTU	GACCTGACTACCGAGGCTAC

OpS13-RTD	AGGCGTGACGGAAATAGA
OpS12-RTU	TTGGAGACAAAGGTGGAAATCG
OpS12-RTD	ACGGCAAACGCAGACAGG
OpS11-RTU	CATCCCGTCCCTCAACCA
OpS11-RTD	TCCGTCTCCGCATCCAAC
OpS10-RTU	GCGGATCAGTTCAACAAT
OpS10-RTD	TTCGGTAAGGGTAGTGGC
OpS9-RTU	TGAGTGGCTGGCTTTGTG
OpS9-RTD	CATGCGAGGTATAGGAGACG
OpS8-RTU	CGACCAGTGCGGCAAGTA
OpS8-RTD	TCACGCTTTCGGGTCCAA
OpS7-RTU	CACTACCTGCCCTTTCCG
OpS7-RTD	CCGTGGTGTACTCCCTGTAA
OpS6-RTU	CTGGAGATTAAGAGGGTGCT
OpS6-RTD	TGTAGTGCGGGACAAAGG
OpS5-RTU	TCTGTAGCGGCTGAAATT
OpS5-RTD	TTGCTCGTAGTAGTTGGTGT
OpS4-RTU	GACGGCGTGGCTGTGATA
OpS4-RTD	CAGTCGTAGGATGATGCGATAT
OpS3-RTU	AAACAATAAGGCAGTTGGAGA
OpS3-RTD	GATGTCACTTGGCGGTTG
OpS2-RTU	CAAGAGGCGAGGAACAGC
OpS2-RTD	CATACCAGACCACCATAGACG
OpS1-RTU	GCCGAAGGTGACCGTATT
OpS1-RTD	GCGGGTTGATTCTGGACT
Actin-F	GTCAAGTCATCACCATTGGC
Actin-R	GAGGAGCAATGATCTTGACC
gpd-F	GTGTCTTCACCACTACTGAG
pgd-R	TGTAGCCGAGAATGCCCTTG
cypA-F	CACGAACCATAACGGCACTG
cypA-R	GAGTCGCTACCGAACTTCTC
	For others
Primer	**Oligonucleotide sequence (5'-3')**
POpS3-O1	GCTCTAGAATGTTTTACACTTTCAATGCTG
POpS3-O2	GCTCTAGATCAAAACGAATATAATTCGGAA
Ppops1-1	GGTCTAGAGCCTGCTTGAGAGCTTGGCCA
Ppops1-2	GGGCGGCCGCGTTGAGAAATGGAAAAGATTCA
Pgpda-t	TCCATTCCATCTCGAGCTTCA
338F	ACTCCTACGGGAGGCAGCAG
806R	GGACTACHVGGGTWTCTAAT