

Supplementary material

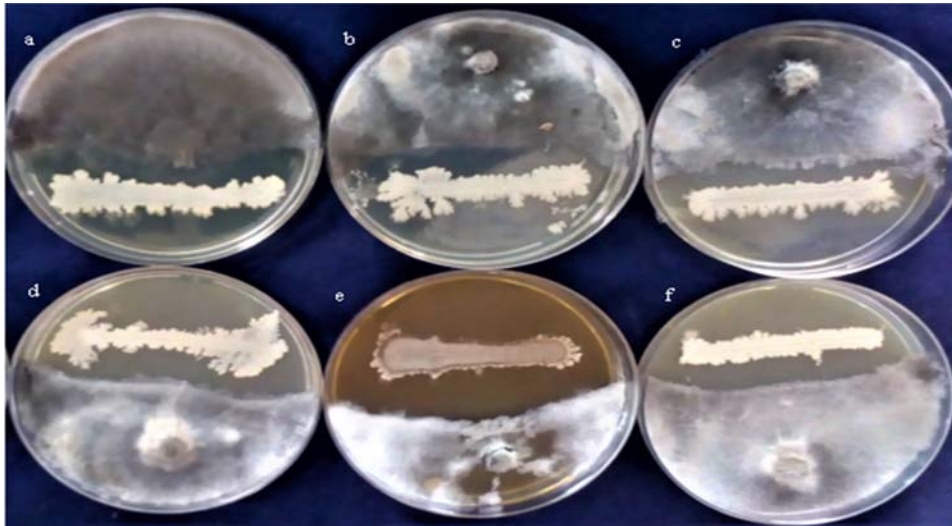


Figure S1: Dual culture plate assay for mycelial growth inhibition of *M. phaseolina* BRMP1 *Bacillus*. (a) *B. subtilis* BRBac4, (b) f mutants of *B. subtilis* BRBac4. Pictures shown are representatives of three replications per treatment, and experiments repeated thrice.

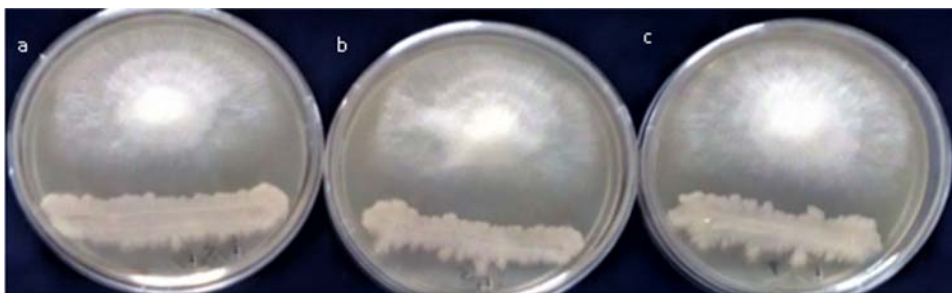


Figure S2: Dual culture plate assay for mycelial growth inhibition of *Fusarium oxysporum*. sp. *udum* NAIMCC-F-01125 by *B. siamensis* BRBac21. (a) BRBac21, (b) BRBac21-M10, (c) BRBac21-M12. Pictures shown are representatives of three replications per treatment, and experiments repeated thrice.

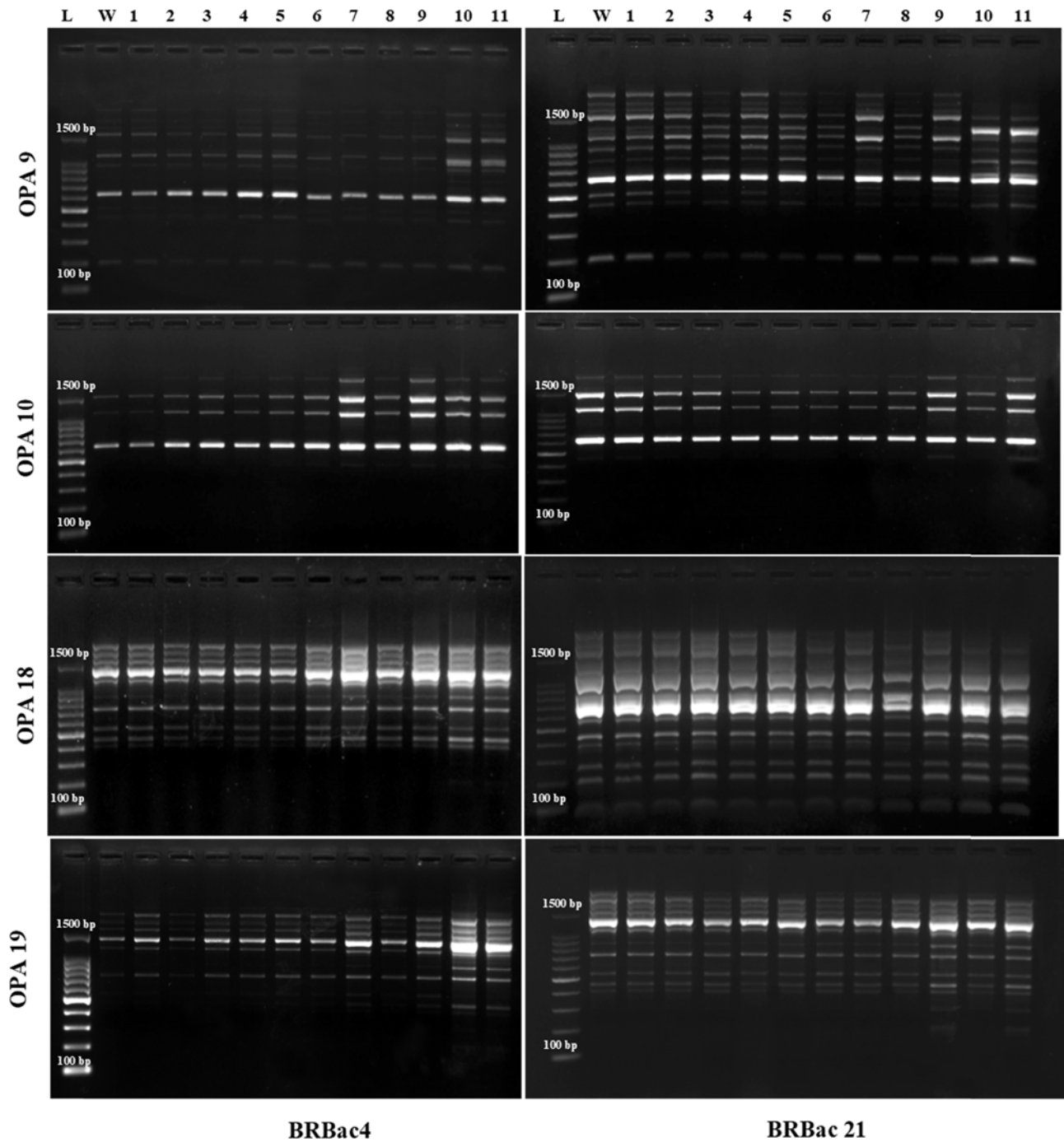


Figure S3: RAPD fingerprinting in wild strains of *B. subtilis* BRBac4, *B. siamensis* BRBac21, and their mutants. W – wild strains of BRBac4 and BRBac21, Lane 1 to 11 represent their respective mutants namely (1-M1, 2-M2, 3-M3, 4-M4, 5-M5, 6-M6, 7-M7, 8-M8, 9-M9, 10-M10, and 11-M11), L – 100bp DNA Ladder.

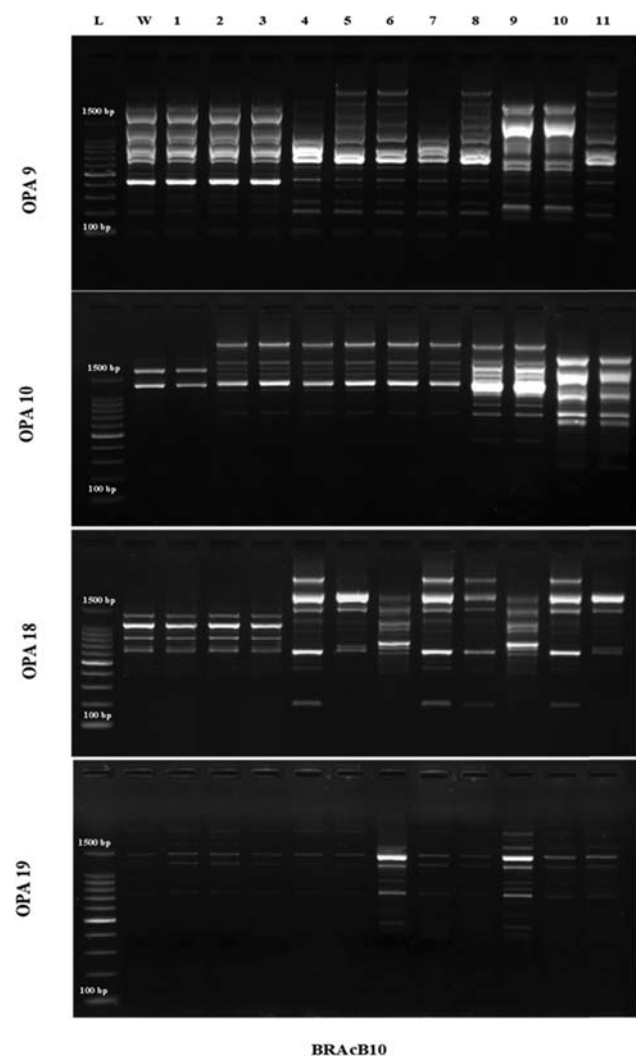


Figure S4: RAPD fingerprinting in the wild strain of *Streptomyces cavourensis* BRACB10, and its mutants (Lane W – wild strains, Lane 1 to 11 represent respective mutants namely (1-M1, 2-M2, 3-M3, 4-M4, 5-M5, 6-M6, 7-M7, 8-M8, 9-M9, 10-M10, and 11-M11); L – 100bp DNA Ladder.

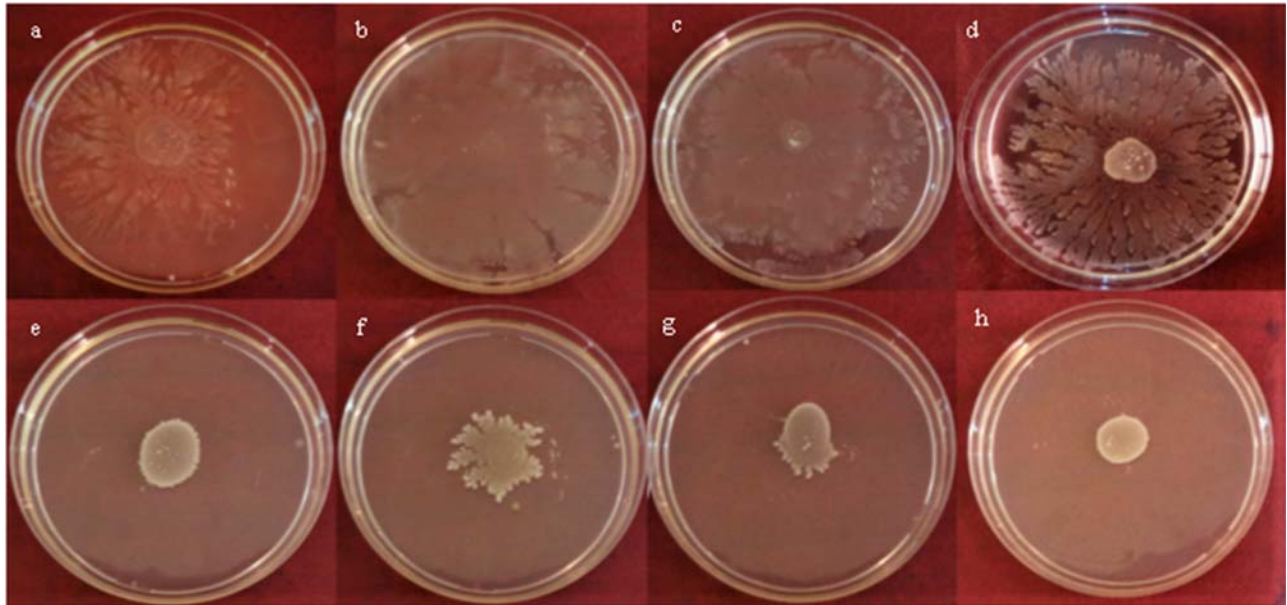


Figure S5: Assay of swimming (LB with 0.3% agar), swarming (LB with 0.7% agar) motility in *B. subtilis* BRBac4, *B. siamensis* BRBac21. Swimming motility ((a) BRBac4, (b) BRBac4-M6, (c) BRBac21, (d) BRBac21-M10) swarming motility ((e) BRBac4, (f) BRBac4-M6, (g) BRBac21, (h) BRBac21-M10).

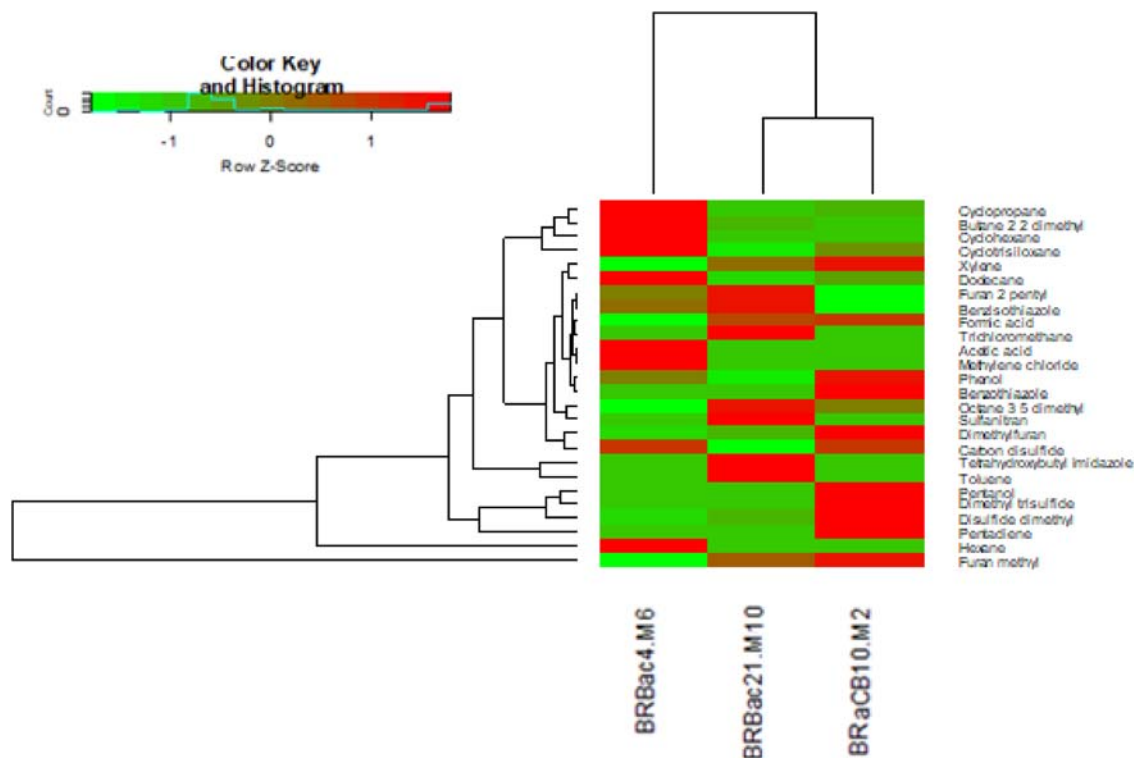


Figure S6: Heat map obtained from the volatile compounds produced by the *B. subtilis* BRBac4-M6, *B. siamensis* BRBac21-M10, and *S. cavourensis* BRaC810-M2.; red colour indicates the Z score >1, whereas yellow indicates the Z score <1.

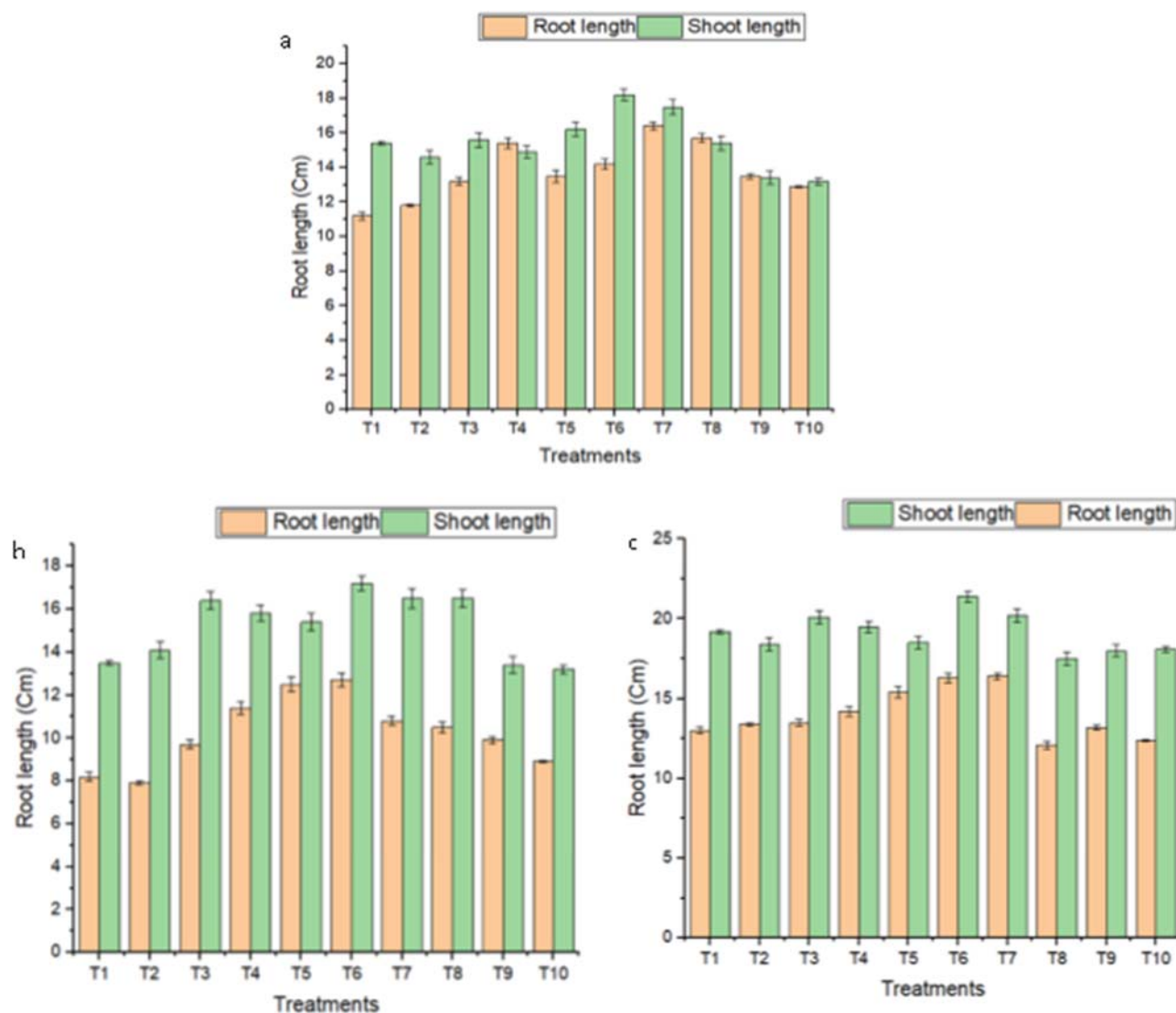


Figure S7: Root length and shoot length after 35 DAS (a) black gram (b) green gram, (c) red gram, T1 – *B. subtilis* BRBac4-M6, T2 – *B. siamensis* BRBac21-M10, T3 – *S. cavourensis* BRACB10-M2, T4 – *B. subtilis* BRBac4-M6 + *Bacillus siamensis* BRBac21-M10, T5 – *B. subtilis* BRBac4-M6 + *Streptomyces* sp. BRACB10-M2, T6 – *B. siamensis* BRBac21-M10 + *S. cavourensis* BRACB10-M2, T7 – *B. subtilis* BRBac4-M6 + *B. siamensis* BRBac21-M10 and *S. cavourensis* BRACB10-M2, T8 – standard bio-control agent (*Trichoderma viride*), T9 – chemical fungicide Thiram (@ 4g kg⁻¹), T10 – control (pathogen inoculated).

Table S1: List of primers used for rep-PCR, RAPD and lipopeptide analysis

Primer name	Primer sequence
OPA-10	5'-GTGATCGCAG-3'
OPA-11	5'-CAATCGCCGT-3'
OPA-14	5'-TCTGTGCTGG-3'
OPA-18	5'-AGGTGACCGT-3'
ERIC1R	5'-ATGTAAGCTCCTGGGGATTAC-3'
ERIC2	5'-AAGTAAGTGACTGGGGTGAGCG-3'
BOXAIR	5'-CTACGGCAAGGCGACGCTGACG-3'
ItuD1f	5'-GATGCGATCTCCTTGATGT-3'
ItuD1r	5'-ATCGTCATGTGCTGCTTGAG-3'
Sur3f	5'-ACAGTATGGAGGCATGGTC-3'
Sur3r	5'-TTCCGCCACTTTTCAGTTT-3'

Table S2: Production of volatile compounds by mutant *Bacillus* and *Streptomyces*

Sl. No.	Retention time (min)	Compound Name	Mutant strains		
			BRBac21-M10	BRBac4-M6	BRAcB10-M2
1.	1.334	Cyclopropane, ethylidene	6.079	—	0.381
2.	1.364	1,4-Pentadiene	6.834	6.910	8.739
3.	1.439	Methylene chloride	0.425	—	—
4.	1.439	Carbon disulfide	1.958	0.270	1.894
5.	1.489	Butane, 2,2-dimethyl-	5.423	0.752	0.248
6.	1.524	<i>n</i> -Hexane	24.141	—	—
7.	1.669	Cyclohexane	3.831	0.479	0.491
8.	2.159	2,4-Dimethylfuran	1.192	1.345	1.997
9.	2.399	Disulfide, dimethyl	1.350	2.89	10.321
10.	3.004	Cyclotrisiloxane, hexamethyl-	6.793	—	2.207
11.	3.079	Acetic acid	0.460	—	—
12.	3.740	<i>p</i> -Xylene	0.725	0.992	1.125
13.	5.200	Dimethyl trisulfide	0.329	0.488	8.610
14.	5.520	Furan, 2-pentyl-	0.301	0.545	—
15.	6.721	Dodecane	1.385	0.502	0.768
16.	7.556	Octane, 3,5-dimethyl-	0.192	1.928	1.106
17.	9.832	1,2-Benzisothiazole	0.295	0.520	—
18.	1.125	Sulfanitrane	—	1.608	—
19.	1.654	Furan, 2-methyl-	—	28.975	38.753
20.	1.694	Tetrahydroxybutyl imidazole	—	7.634	—
21.	1.789	Trichloromethane	—	0.404	—
22.	2.809	Toluene	—	3.901	—
23.	7.251	Formic acid	—	0.219	0.243
24.	2.554	1-Pentanol	—	—	10.328
25.	9.892	Benzothiazole	—	—	0.504
26.	4.725	Phenol	0.180	—	0.360

Volatile metabolites produced by *B. subtilis* BRBac4-M6, *B. siamensis* BRBac21-M10, and *S. cavourensis* BRAcB10-M2.