Table 2. The highest 12 bioactive anti-methicillin resistant Staphylococcus aureus

Isolate	Soil Type	Closest strain; Accession number	Similarity	MRSA-4656 (inhibition zone in mm)	MRSA-B-8-41-D-4 (inhibition zone in mm)
SB-31-18-10%	Salt Plain	*Virgibacillus marismortui; NT-6; EU095647*	97%	15	20
SB-28-6-0%	Salt Plain	*Bacillus subtilis; AMM202; AB092795*	100%	0	20
SB-26-5-10%	Vegetation	*Halobacillus sp. SB115_1; EU308338*	98%	30	0
SB-8-17-10%	Salt Plain	Unknown		0	40
SB-4-11-10%	Salt Plain	*Bacillus licheniformis; C32; DQ153970*	100%	30	0
SB-4-13-10%	Salt Plain	*Virgibacillus salarius; AN-R37; AB523705*	99%	25	0
SB-14-8-0%	Salt Plain	*Bacillus subtilis; D-39-25-2; AB190126*	100%	25	0
SB-9S-6-T	Salt flat	Unknown		13	13
SB-22S-3-T	Vegetation	*Bacillus licheniformis strain OKF02; gb KC969075.1*	99%	15	15
SB-EN6-1-H	Vegetation	*Halobacillus trueperi strain GSP062; gb DQ157162.1*	99%	16	15
SB-22S-1-T	Vegetation	Unknown		0	18
SB-19N-1-H	Vegetation	*Bacillus sp. Zh168.gb|FJ851424.1|*	99%	15	15

Table 1. Taxonomic affiliation of the bioactive isolates from the GSP soils, soil type and results of bioactivity against the test

Isolate	Sample Type	*Genus*	Phylum	Inhibition zone (mm) against MRSA-4656	Inhibition zone (mm) against MRSA-B-8-41-d-D-4
SB-31-12-5%	Salt flat	*Bacillus*	Firmicutes	11.5	0
SB-31-19-5%	Salt flat	*Staphylococcus*	Firmicutes	15	10
SB-31-18-10%	Salt flat	*Virgibacillus*	Firmicutes	15	20
SB-17-18-5%	Salt flat	*Bacillus*	Firmicutes	0	20
SB-17-24-10%	Salt flat	*Bacillus*	Firmicutes	23	9.5
SB-17-21-0%	Salt flat	*Bacillus*	Firmicutes	0	10.5
SB-17-27-0%	Salt flat	*Brevibacillus*	Firmicutes	0	10
SB-17-22-5%	Salt flat	*Bacillus*	Firmicutes	0	10
SB-17-19-10%	Salt flat	*Bacillus*	Firmicutes	0	12.5
SB-17-26-10%	Salt flat	Bacterial isolate	Bacterial isolate	0	11

SB-27-15-10%	Vegetation	*Halomonas*	Proteobacteria	18.5	0
SB-27-14-5%	Vegetation	*Halomonas*	Proteobacteria	18.5	13
SB-27-18-10%	Vegetation	*Virgibacillus*	Firmicutes	18	13
SB-27-20-10%	Vegetation	*Marinococcus*	Actinobacteria	20	0
SB-13-13-10%	Salt flat	*Halobacillus*	Firmicutes	13	0
SB-13-12-10%	Salt flat	*Halobacillus*	Firmicutes	11.5	0
SB-13-11-0%	Salt flat	*Bacillus*	Firmicutes	20	9
SB-13-18-5%	Salt flat	*Bacillus*	Firmicutes	11.5	11
SB-13-17-5%	Salt flat	*Brevibacillus*	Firmicutes	20	8
SB-13-10-0%	Salt flat	*Bacillus*	Firmicutes	15	0
SB-13-6-5%	Salt flat	*Bacillus*	Firmicutes	18	10
SB-28-5-0%	Salt flat	*Halobacillus*	Firmicutes	13	8
SB-28-4-0%	Salt flat	*Bacillus*	Firmicutes	9	0
SB-28-7-10%	Salt flat	*Virgibacillus*	Firmicutes	13.5	8

SB-28-6-0%	Salt flat	*Bacillus*	Firmicutes	0	20
SB-28-6-2-0%	Salt flat	*Bacillus*	Firmicutes	0	17.5
SB-26-5-10%	Vegetation	*Halobacillus*	Firmicutes	30	0
SB-26-9-5%	Vegetation	*Oceanobacillus*	Firmicutes	25	0
SB-30-10-0%	Salt flat	*Bacillus*	Firmicutes	18	0
SB-30-15-5%	Salt flat	*Bacillus*	Firmicutes	14	0
SB-30-8-0%	Salt flat	Bacterial isolate	Bacterial isolate	14	0
SB-12-12-0%	Salt flat	*Sediminibacillus*	Firmicutes	15	0
SB-12-16-5%	Salt flat	Bacterial isolate	Bacterial isolate	22.5	14
SB-12-11-0%	Salt flat	Bacterial isolate	Bacterial isolate	21.5	15
SB-1-9-0%	Salt flat	*Bacillus*	Firmicutes	9	0
SB-1-13-0%	Salt flat	*Brevibacillus*	Firmicutes	15	0
SB-1-14-0%	Salt flat	*Bacillus*	Firmicutes	15	0
SB-19-10-0%	Vegetation	Bacterial isolate	Bacterial isolate	0	16.5

SB-19-14-10%	Vegetation	Bacterial isolate	Bacterial isolate	25	0
SB-29-7-5%	Salt flat	*Bacillus*	Firmicutes	8.5	0
SB-29-10-10%	Salt flat	*Halobacillus*	Firmicutes	10	0
SB-29-6-0%	Salt flat	*Bacillus*	Firmicutes	10	0
SB-8-17-10%	Salt flat	Bacterial isolate	Bacterial isolate	0	40
SB-8-18-0%	Salt flat	Bacterial isolate	Bacterial isolate	25	0
SB-15-11-0%	Salt flat	*Brevibacillus*	Firmicutes	11	0
SB-4-7-0%	Salt flat	*Bacillus*	Firmicutes	11	0
SB-4-11-10%	Salt flat	*Bacillus*	Firmicutes	30	0
SB-4-12-5%	Salt flat	*Bacillus*	Firmicutes	20	0
SB-4-13-10%	Salt flat	*Virgibacillus*	Firmicutes	25	0
SB-14-8-0%	Salt flat	*Bacillus*	Firmicutes	25	0
SB-14-11-10%	Salt flat	*Bacillus*	Firmicutes	16	0
SB-14-10-10%	Salt flat	*Halobacillus*	Firmicutes	15	0
SB-14-15-10%	Salt flat	*Halobacillus*	Firmicutes	20	0

SB-21-12-10%	Vegetation	*Halomonas*	Proteobacteria	20	0
SB-21-13-10%	Vegetation	*Halobacillus*	Firmicutes	15	8.5
SB-24-14-5%	Vegetation	*Cellulomonas*	Actinobacteria	11.5	0
SB-24-5-10%	Vegetation	*Halobacillus*	Firmicutes	20	0
SB-24-12-10%	Vegetation	*Halomonas*	Proteobacteria	10	0
SB-24-4-5%	Vegetation	*Marinobacter*	Proteobacteria	15	0
SB-24-11-10%	Vegetation	Bacterial isolate	Bacterial isolate	25	0
SB-24-8-5%	Vegetation	Bacterial isolate	Bacterial isolate	25	0
SB-3-6-5%	Salt flat	*Bacillus*	Firmicutes	25	0
SB-3-11-5%	Salt flat	*Bacillus*	Firmicutes	11	0
SB-3-5-0%	Salt flat	*Bacillus*	Firmicutes	25	0
SB-3-9-0%	Salt flat	*Bacillus*	Firmicutes	13	0
SB-3-4-5%	Salt flat	*Bacillus*	Firmicutes	20	0
SB-3-8-0%	Salt flat	*Micrococcus*	Actinobacteria	15	0

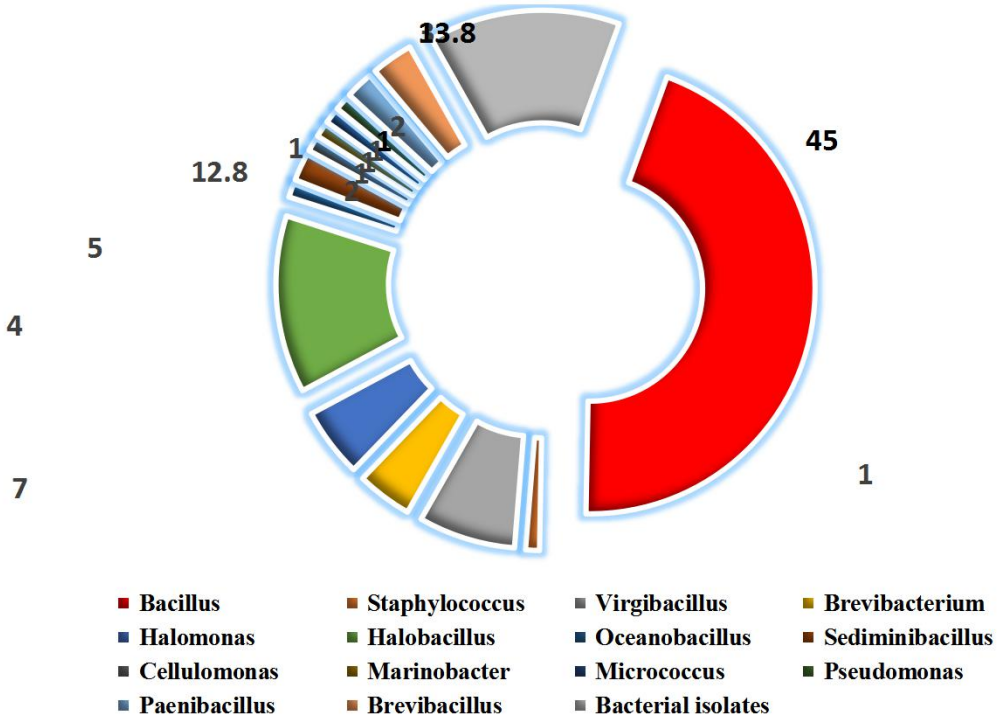
SB-25-9-10%	Vegetation	*Virgibacillus*	Firmicutes	11.5	0
SB-5-4-10%	Salt flat	*Bacillus*	Firmicutes	11.5	9.5
SB-28-11-10%	Salt flat	*Virgibacillus*	Firmicutes	18	14
SB-28-10-10%	Salt flat	*Bacillus*	Firmicutes	20	14
SB-28-8-10%	Salt flat	*Virgibacillus*	Firmicutes	16.5	15
SB-28-4-0%	Salt flat	*Bacillus*	Firmicutes	12	0
SB-7-3-0%	Salt flat	*Bacillus*	Firmicutes	14	0
SB-7-1-0%	Salt flat	*Bacillus*	Firmicutes	11	0
SB-11-13-0%	Salt flat	*Bacillus*	Firmicutes	15	0
SB-11-8-5%	Salt flat	*Bacillus*	Firmicutes	13.5	0
SB-3-12-1-0%	Salt flat	*Pseudomonas*	Proteobacteria	14	0
SB-3-9-0%	Salt flat	*Bacillus*	Firmicutes	20	0
SB-3-10-0%	Salt flat	*Paenibacillus*	Firmicutes	13	0
SB-28S-2-T	Salt flat	*Bacillus*	Firmicutes	11	11

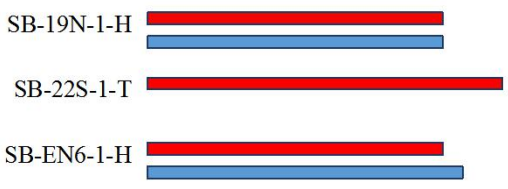
SB-29S-1-T	Salt flat	*Brevibacillus*	Firmicutes	10	11
SB-EN4-3-T	Vegetation	*Bacillus*	Firmicutes	9	11
SB-EN7-1-T	Vegetation	*Bacillus*	Firmicutes	11	12
SB-9S-6-T	Salt flat	Bacterial isolate	Bacterial isolate	13	13
SB-EN8-1-T	Salt flat	Bacterial isolate	Bacterial isolate	9	9
SB-EN4-1-T	Vegetation	Bacterial isolate	Bacterial isolate	12	10
SB-19N-2-T	Vegetation	*Brevibacillus*	Firmicutes	9	9
SB-22S-3-T	Vegetation	*Bacillus*	Firmicutes	15	15
SB-21S-3-T	Vegetation	*Brevibacillus*	Firmicutes	9	10
SB-EN6-1-H	Vegetation	*Halobacillus*	Firmicutes	16	15
SB-22S-1-T	Vegetation	Bacterial isolate	Bacterial isolate	0	18
SB-EN2-2-H	Vegetation	*Bacillus*	Firmicutes	0	9
SB-13S-1-H	Salt flat	*Bacillus*	Firmicutes	0	9
SB-N5-1-H	Salt flat	*Halobacillus*	Firmicutes	0	9

SB-EN7-2-H	Vegetation	*Bacillus*	Firmicutes	14	0
SB-8S-2-H	Salt flat	*Halobacillus*	Firmicutes	12	11
SB-19N-1-H	Vegetation	*Bacillus*	Firmicutes	15	15
SB-N7-1-H	Salt flat	*Sediminibacillus*	Firmicutes	9	9
SB-EN9-1-H	Salt flat	*Halobacillus*	Firmicutes	10	10
SB-EN1-1-H	Vegetation	*Halomonas*	Proteobacteria	10	10

Genus	Percentage
Bacillus	45
Staphylococcus	1
Virgibacillus	7
Brevibacterium	4
Halomonas	5
Halobacillus	12.8
Oceanobacillus	1
Sediminibacillus	2
Cellulomonas	1
Marinobacter	1
Micrococcus	1
Pseudomonas	1
Paenibacillus	2
Brevibacillus	3
Bacterial isolates	13.8

Figure 2. Frequency of bioactive bacterial genera obtained from the GSP soils, against methicillin





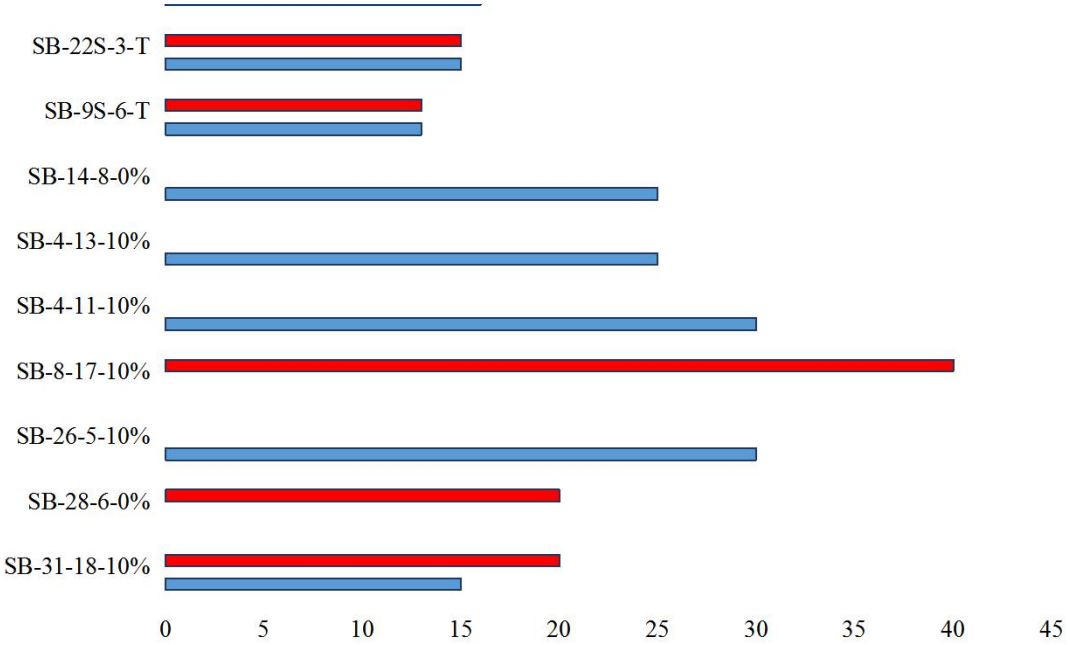


Figure 3. The highest 12-bioactive anti-methicillin resistant Staphylococcus aureus bacterial isolates, and their anti-MRSA compound representing in clear zones in mm