

Bacillus subtilis subsp. Spizizenii (ATCC®6633™)

Breakpoints

(1) Moustafa Y.M. El-Naggar. Comparative Study of Probiotic Cultures to Control the Growth of Escherichia coli O157: H7 and Salmonella typhimurium. Biotechnology, 3 (2): 173-180, 2004

Table 5: Antibiotic sensitivity profile of indicator and probiotic strains

Inhibition zone diameter and their interpretative breakpoints							
Antibiotic	Disc Content (µg)	E.coli O157: H7	S.typhimurium	B. subtilis	L. acidophilus.	L. plantarum	L. brevis
Amikacin	30	S (19±0)	S (20±1)	R (10±0)	R (9±0)	R (6±0)	R (11±0)
Amoxicillin	10	R (6±1)	S (30±1)	R (7±1)	R (7±1)	R (7±1)	R (7±1)
Ciprofloxacin	30	S (20±1)	S (22±0)	S (24±1)	S (20±1)	S (17±1)	S (19±1)
Erythromycin	15	S (25±1)	I (17±1)	R (6±1)	R (6±1)	R (6±1)	R (6±1)
Gentamicin	10	S (18±0)	S (22±1)	S (28±0)	R (13±1)	S (28±0)	R (13±1)
Kanamycin	30	S (30±1)	S (33±0)	S (16±1)	R (7±0)	R (7±0)	S (16±1)
Lincomycin	2	S (30±1)	R (10±0)	R (6±0)	R (6±0)	R (6±0)	R (6±0)
Nalidixic acid	5	R (6±1)	R (6±0)	S (28±0)	S (28±0)	S (36±0)	S (30±0)
Ofloxacin	10	S (18±0)	S (19±1)	R (6±1)	R (6±1)	R (6±1)	R (6±1)
Oxytetracycline	30	S (23±1)	S (25±0)	S (20±0)	R (6±1)	R (6±1)	R (6±1)
Penicillin G	10	R (12±0)	R (12±0)	S (24±0)	S (20±0)	S (20±0)	S (20±0)
Streptomycin	10	I (13±0)	S (19±1)	R (12±0)	R (12±0)	R (12±0)	R (12±0)
Sulbactam	20	S (19±1)	S (22±1)	S (20±1)	S (18±1)	S (17±1)	S (21±0)
Tetracycline	30	R (12±0)	I (15±1)	R (25±0)	R (20±0)	R (21±0)	R (23±0)
Vancomycin	30	S (13±1)	S (13±0)	S (22±0)	R (6±0)	R (6±0)	R (6±0)

S=susceptible; I=intermediate; R=resistant

Results (in parentheses) represent the means of six independent measurements of the inhibition zone diameter with standard deviation (±). S, R and I were interpreted for each individual test-antibiotic following the interpretative breakpoints issued by NCCLS

(2) <https://bacdiv.dsmz.de/strain/1187>

	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
Reference	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)	(Ref.: #140)
Medium	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller-Hinton Agar	Mueller Hinton
Incubation temperature [°C]			30	30	37	30	30	30
Incubation time [d]				1				
Oxygen condition			aerob	aerob		aerob	aerob	aerob
Manual Annotation	yes	yes	yes	yes	yes	yes	yes	yes
	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm	Inhibition zone diameter in mm
Penicillin G	38	38	40	40	38	36-38	36-38	40
Oxacillin	32	32	32-34	34	32	32	32	34
Ampicillin	36	36-38	40	40	38	36-38	36-38	38
Ticarcillin	42	42	42	44	40	40	40	42
Mezlocillin	32-34	32	32-34	36	32	32	32	34
Cefalotin	48	46	50	50	44	48	48	48
Cefazolin	42	42	42	42	40	40-42	40-42	42
Cefotaxime	38-40	40	38-40	40	36	38	38	40
Aztreonam	12	14-16	10-12	12	12	16	16	16
Imipenem	48	50	50	50	46	50	50	48
Tetracycline	36-38	36	38-40	38	34	38	38	40
Chloramphenicol	34	34-36	36	38	32	36	36	34
Gentamycin	28	26	28-30	30	30	30	30	26
Amikacin	30	30	30-32	30	30	30	30	28
Vancomycin	26	26	26	26-28	24	24	24	24
Erythromycin	34	32-34	36	36-38	32	34	34	32
Lincomycin	20	20	22	22	16	22	22	16-18
Ofloxacin	36	34	36	36	34	36	36	36
Norfloxacin	34	34	36	38	34	34-36	34-36	34
Colistin	10	10	12	10	10	10	10	8
Pipemidic acid	24	24	26	28	24	26	26	26
Nitrofurantoin	24	22	22	24	22	24	24	28
Bacitracin	14-16	8	10	10	8	6	6	6
Polymyxin B	14	12	16	14	12	14	14	12
Kanamycin	30	30	32	32	30	32	32	30
Neomycin	24	22-24	26	24	22	24	24	24
Doxycycline	36	38-40	38-40	40	36	40	40	40
Ceftriaxone	34	34-36	36	36-38	n.d.	34	34	36-38
Clindamycin	32	32	32-34	32	n.d.	34	34	30
Fosfomycin	10	14	6-8	8	n.d.	0	0	8-10
Moxifloxacin	40	38	40	40	n.d.	40	40	40
Linezolid	36	36	40	40	n.d.	40	40	40
Nystatin	0	0	0	0	n.d.	0	0	0
Quinupristin/Dalfopristin	20	22	22	22-24	n.d.	22	22	22
Teicoplanin	20	22	22	22	n.d.	22	22	20
Piperacillin/Tazobactam	34	34	34	36	n.d.	34	34	34