

AG- ABST Discs

PRINCIPLE

AstraGene - ABST –Discs are used for antimicrobial in-vitro susceptibility testing (ABST) in clinical laboratories to detect drug resistance to staphylococcus aureus

Disc Diffusion method a common technique used for antimicrobial susceptibility testing (ABST) of common rapidly growing bacterial pathogens and sometimes for fastidious species.

PACKAGE CONTENTS

50 test kit contains 50 discs packed with a desiccant envelope.

SUSCEPTABILITY TEST PROCEDURE

Prepare plates with Mueller Hinton Agar (MUA)& Ready Prepared Plates(Cat.No.AG/MHA/22/01) for use in the Bauer-Kirby Method for rapidly growing aerobic organisms. For fastidious organisms such as Streptococci, the agar (Cat.No.AG/MHSB/22/01) is supplemented with 5% sterile, defibrinated blood. For Haemophilus spp. Haemophilus Test Medium and for N. gonorrhoeae, GC Agar Base with 1% defined growth supplement are recommended respectively. The medium in the plates should be sterile and have a depth of about 4 mm.

PROCEDURE

1.Preparation of plates

Procure/ prepare sterile Muller Hinton Agar (MHA) with 4mm depth. Ensure that there is no moisture on the agar surface for clear interpretation of results.. 5% defibrinated sterile sheep blood should be aseptically added to MHA for testing Streptococci and other fastidious organisms.

2. Inoculum preparation and inoculation

- a) Use only pure culture for sensitivity testing. Perform Gram staining before preparing an inoculum.
- b) Select 4 to 5 colonies and transfer them into tube containing 5 ml of Trypticase Soy Broth with the help of a inoculation loop.
- c) Incubate the broth culture at 35-37 °C for 2- 5 hours to obtain moderate turbidity.
- d) Dilute the broth culture of actively growing organisms with sterile broth or saline to obtain a turbidity equivalent to that of half density of McFarland Standard No.1 which prepared by adding 0.5 ml of 1.175% BaCl₂ 2H₂O solution to 99.5 ml of 0.36N H₂SO₄. Avoid overnight cultures. Alternately, for the development of a sufficiently turbid broth culture, colonies can be suspended directly into a small volume of saline or broth which is then adjusted upto the turbidity equivalent to half density of McFarland Standard No.1 . Immediately use the standardized inoculum (within 15mins) to prevent further growth.
- e) Dip a sterile cotton swab into the standardised inoculum, rotate it while pressing against the inside wall of the tube to remove excess inoculum
- f) Streak the agar surface of the MUA plate in three directions, tuning the plate by 60° between each streaking.
- g) Keep the inoculated MUA plate for 10 minutes to dry the inoculum. Confluent growth is desirable for accurate results.

3. Application of sensitivity-discs

- a) Remove one antibiotic sensitivity disc from the vial with the help of sterile forceps and carefully place it on the surface of the medium.
- b) Finally, press it tightly with the forceps to make complete contact with the surface of the medium.
- c) Allow the plate to stand at room temperature for 30minutes (pre-diffusion time) before incubation. Incubate the plates at 35-37 °C for 18 hrs – 24hrs.

4. Reading the zone of inhibition

- a) Measure the diameter of the zone of inhibition at the end of the incubation period.
- b) Measure only those zones that are showing complete inhibition and record the zone diameter to the nearest millimeter.
- c) If only isolated colonies grow instead of confluent growth, the inoculum is too light and the test should be repeated.

STORAGE &STABILITY

Store at -20 °C under dry conditions and protected from light immediately upon receipt.

MICROBIOLOGICAL TEST

Refer Annexure 1 for interpretation of susceptibility criteria (zone of inhibition) on Mueller Hinton Agar after 18 hours incubation at 35-37 °C as per CLSI (Clinical Laboratory Standards Institute).

LIMITS

Disc diffusion method use an in-vitro technique and cannot therefore reproduce the extremely in-vivo conditions. Many variable factors influence the final result of the AST. The major factors are : the culture medium used, impregnation of the discs, inoculation of the medium, temperature, time and incubation atmosphere of the plates, pre-incubation and pre diffusion conditions, depth of the medium etc.

PRECAUTION

The Antibiotic Disc cannot be classified as being hazardous according to current legislation but fall within the specific field of application where safety data sheet must be supplied because they can cause phenomena of sensitisation in sensitive subjects if they come into contact with the skin.

Antibiotic discs are disposable products. Antibiotic Disc are only for diagnostic in-vitro use and are intended for professional use.They must be used in the laboratory by properly trained operators using approved aseptic and safety methods for pathogenic agents.

Antibiotic Disc	Symbol	µg*	Catalogue Number
Amikacin	AK	30	AG/Reagent/AK30/23/01
Amoxycillin	AML	2	AG/Reagent/AML2/23/01
Amoxycillin	AML	10	AG/Reagent/AML10/23/01
Amoxycillin	AML	25	AG/Reagent/AML25/23/01
Amoxycillin	AML	30	AG/Reagent/AML30/23/01

AG- ABST Discs

Amoxicillin + clavulanic acid (2+1)	AUG	3	AG/Reagent/AUG3/23/01
Amoxicillin + clavulanic acid (20+10)	AUG	30	AG/Reagent/AUG30/23/01
Ampicillin	AMP	10	AG/Reagent/AML10/23/02
Ampicillin + Sulbactam (10+10)	AMS	20	AG/Reagent/AMS20/23/01
Ampicillin + Cloxacillin (25+5)	ACL	30	AG/Reagent/ACL30/23/01
Azithromycin	AZM	15	AG/Reagent/AZM15/23/01
Aztreonam	ATM	30	AG/Reagent/ATM30/23/01
Bacitracin B (10 IU)	BA	10	AG/Reagent/BA10/23/01
Carbenicillin	CAR	100	AG/Reagent/CAR100/23/01
Cefaclor	CEC	30	AG/Reagent/CEC30/23/01
Cefazolin	KZ	30	AG/Reagent/KZ30/23/01
Cefipime	FEP	30	AG/Reagent/FEP30/23/01
Cefixime	CFM	5	AG/Reagent/CFM5/23/01
Cefoperazone	CFP	30	AG/Reagent/CFP30/23/01
Cefoperazone	CFP	75	AG/Reagent/CFP75/23/01
Ceftazidime	CAZ	10	AG/Reagent/CAZ10/23/01
Ceftazidime	CAZ	30	AG/Reagent/CAZ30/23/01
Ceftizoxime	CZX	30	AG/Reagent/CZX30/23/01
Ceftriaxone	CRO	30	AG/Reagent/CRO30/23/01
Cefuroxime	CXM	30	AG/Reagent/CXM30/23/01
Cephalexin	CL	30	AG/Reagent/CL30/23/01
*Cefotaxime	CX	30	AG/Reagent/CX30/23/01
*Cefotaxime + Clavulanic acid (30+10)	CXC	30	AG/Reagent/CXC30/23/01
*Chloramphenicol	C	10	AG/Reagent/C10/23/01
Chloramphenicol	C	30	AG/Reagent/C30/23/01
Ciprofloxacin	CIP	5	AG/Reagent/CIP5/23/01
Clarithromycin	CLR	15	AG/Reagent/CLR15/23/01
Clindamycin	CD	2	AG/Reagent/CD2/23/01
Clindamycin	CD	10	AG/Reagent/CD10/23/01
Cloxacillin	CX	5	AG/Reagent/CX5/23/01
Colistin sulphate	CO	10	AG/Reagent/CO10/23/01
Doxycycline hydrochloride	DXT	30	AG/Reagent/DXT30/23/01
Erythromycin	E	15	AG/Reagent/E2/23/01
Fluconazole	FL	15	AG/Reagent/FL15/23/01
Furazolidone	FR	50	AG/Reagent/FR50/23/01
Gentamicin	CN	10	AG/Reagent/CN10/23/01
Gentamicin	CN	30	AG/Reagent/CN30/23/01
Gentamicin	CN	120	AG/Reagent/CN120/23/01
Kanamycin	K	30	AG/Reagent/K30/23/01
Levofloxacin	LEV	5	AG/Reagent/LEV5/23/01
Lincomycin	MY	15	AG/Reagent/MY15/23/01
Linezolid	LNZ	30	AG/Reagent/LNZ30/23/01
Metronidazole	MTZ	50	AG/Reagent/MTZ50/23/01
Moxifloxacin	MOX	5	AG/Reagent/MOX5/23/01
Nalidixic Acid	NA	30	AG/Reagent/NA30/23/01
Neomycin	NA	30	AG/Reagent/NA30/23/01
Netilmicin Sulphate	NET	10	AG/Reagent/NET10/23/01
Netilmicin Sulphate	NET	30	AG/Reagent/NET30/23/01
Nitrofurantoin	F	50	AG/Reagent/F50/23/01
Nitrofurantoin	F	100	AG/Reagent/F100/23/01
Nitrofurantoin	F	300	AG/Reagent/F300/23/01
Norfloxacin	NOR	10	AG/Reagent/NOR10/23/01

AG- ABST Discs

Novobiocin	NO	10	AG/Reagent/NO10/23/01
Novobiocin	NO	30	AG/Reagent/NO30/23/01
Nystatin	NY	10	AG/Reagent/NY10/23/01
Ofloxacin	OFX	5	AG/Reagent/OFX5/23/01
Oxacillin	OX	1	AG/Reagent/OX1/23/01
Oxacillin	OX	5	AG/Reagent/OX5/23/01
Oxytetracycline	OT	30	AG/Reagent/OT30/23/01
Penicillin – G	P	1	AG/Reagent/P1/23/01
Penicillin – G	P	2	AG/Reagent/P2/23/01
Penicillin – G	P	10	AG/Reagent/P10/23/01
Piperacillin	PRL	100	AG/Reagent/PRL100/23/01
Piperacillin+ Tazobactam (100+10)	TZP	110	AG/Reagent/TZP100/23/01
Polymyxin-B	PB	300	AG/Reagent/PB300/23/01
Rifampicin	RD	5	AG/Reagent/RD5/23/01
Roxithromycin	RXT	15	AG/Reagent/RXT15/23/01
Sparfloxacin	SPA	10	AG/Reagent/SPA10/23/01
Spiramycin	SP	100	AG/Reagent/SP100/23/01
Streptomycin	S	10	AG/Reagent/S10/23/01
Streptomycin	S	300	AG/Reagent/S300/23/01
Tazobactam	TAZ	10	AG/Reagent/TAZ10/23/01
Teicoplanin	TEC	30	AG/Reagent/TEC30/23/01
Tetracycline	TE	30	AG/Reagent/TE30/23/01
Ticarcillin	TC	75	AG/Reagent/TC75/23/01
Tobramycin	TOB	10	AG/Reagent/TOB10/23/01
Tobramycin	TOB	30	AG/Reagent/TOB30/23/01
Trimethoprim	TM	5	AG/Reagent/TM5/23/01
Trimethoprim+Sulphamethoxazole (1.25+23.75)	SXT	25	AG/Reagent/SXT25/23/01
Vancomycin	VA	30	AG/Reagent/VA30/23/01

*Concentration of Antibiotic

Antibiotic	CO DE	µg	CLSI INTERPRETAT IVE CRITERIA	S ≥	SDD	I	R ≤
				Zone diameter (mm)			
Amikacin	AK	30	Enterobacterales	17	15-16		14
			<i>P. aeruginosa</i>	17	15-16		14
			<i>Acinetobacter</i> spp.	17	15-16		14
Amoxicillin-clavulanic acid	AU G	3 (2/1)	Not available				
Amoxicillin-clavulanic acid	AU G	30 (20/10)	Enterobacterales	18	14-17		13
Ampicillin	AM P	10	Enterobacterales	17	14-16		13
			<i>Enterococcus</i> spp.	17	-		16
			<i>Haemophilus</i> spp.	22	19-21		18
			<i>Streptococcus</i> spp.	24	-		-
			β- Hemolytic group				
Ampicillin-sulbactam	AM S	20 (10/10)	Enterobacterales	15	12-14		11
			<i>Acinetobacter</i> spp.	15	12-14		11
			<i>Haemophilus</i> spp.	20	-		19

AG- ABST Discs

Azithromycin	AZM	15	<i>S. Typhi</i>	1	-	1
			<i>Shigella</i> spp.	3	11-	2
			All staphylococci	1	15	1
			<i>Haemophilus</i> spp.	6	14-	0
			<i>N. gonorrhoeae</i>	1	17	1
			<i>S. pneumoniae</i>	8	-	3
			<i>Streptococcus</i> spp. β-	1	-	-
			Hemolytic group	2	14-	-
			<i>Streptococcus</i> spp.	3	17	1
			Viridans group	0	14-	3
			<i>N. meningitidis</i>	1	17	1
				8		3
				1	14-	17
AztreonamATM	30		Enterobacterales	2	18-	1
			<i>P. aeruginosa</i>	1	20	7
			<i>Haemophilus</i> spp.	2	16-	1
				2	21	5
			2	-	-	
Carbenicillin	CAR	100	Not available			
Cefaclor CEC	30		Enterobacterales	1	15-	1
			<i>Haemophilus</i> spp.	8	17	4
				2	17-	1
				0	19	6
Cefazolin KZ	30		Enterobacterales	2	20-	1
			Enterobacterales	3	22	9
			(test for uncomplicated UTI)	1	-	1
				5		4
Cefepime FEP	30		Enterobacterales	2	19-	1
				5	24	8
			<i>P. aeruginosa</i>	1	15-	1
				8	17	4
			<i>Acinetobacter</i> spp.	1	15-	1
				8	17	4
			<i>Haemophilus</i> spp.	2	-	-
				6		
			<i>N. gonorrhoeae</i>	3	-	-
				1		
			<i>Streptococcus</i> spp. β-	2	-	-
			Hemolytic group	4		
			<i>Streptococcus</i> spp.	2	22-	2
Viridans group	4	23	1			
Cefixime CFM	5		Enterobacterales	1	16-	1
			<i>Haemophilus</i> spp.	9	18	5
			<i>N. gonorrhoeae</i>	2	-	-
Cefoperazone	CFP	75	Enterobacterales	2	16-	1
				1	20	5
Ceftazidime	CA Z	30	Enterobacterales	2	18-	1
				1	20	7
			<i>P. aeruginosa</i>	1	15-	1
				8	17	4
			<i>Acinetobacter</i> spp.	1	15-	1
				8	17	4
			<i>B. cepacia</i>	2	18-	1
				1	20	7
			<i>Haemophilus</i> spp.	2	-	-
				6		
Ceftizoxime	CZ X	30	Enterobacterales	2	22-	2
				5	24	1
			<i>Haemophilus</i> spp.	2	-	-
				6		
			<i>N. gonorrhoeae</i>	3	-	-
				8		

AG- ABST Discs

Ceftriaxone	CRO	30	Enterobacterales	23	20-22	1
						9
			<i>Acinetobacter</i> spp.	21	14-20	1
					3	
			<i>Haemophilus</i> spp.	26	-	-
			<i>N. gonorrhoeae</i>	35	-	-
			<i>Streptococcus</i> spp.	24	- 25-26	-
			β- Hemolytic group	27	-	2
			<i>Streptococcus</i> spp.			4
			Viridans group	34		-
			<i>N. meningitidis</i>			
Cefuroxime	CXM	30	Enterobacterales	18	15-17	1
						4
			(Parenteral)			
			Enterobacterales (Oral)	23	15-22	1
					4	
<i>Haemophilus</i> spp.	20	17-19	1			
			6			
Cephalexin	CL	30	Not available			
Chloramphenicol	C	30	<i>Enterobacterales</i>	18	13-17	1
						2
			All staphylococci	18	13-17	1
					2	
			<i>Enterococcus</i> spp.	18	13-17	1
					2	
			<i>Haemophilus</i> spp.	29	26-28	2
					5	
			<i>S. pneumoniae</i>	21	-	2
					0	
			<i>Streptococcus</i> spp.	21	18-20	1
			β- Hemolytic group	21	18-20	7
			<i>Streptococcus</i> spp.			1
		7				
Viridans group	26	20-25	1			
			9			
Ciprofloxacin	CIP	5	Enterobacterales	26	22-25	2
						1
			except <i>Salmonella</i> spp.			
			<i>Salmonella</i> spp.	31	21-30	2
					0	
			<i>P. aeruginosa</i>	25	19-24	1
					8	
			<i>Acinetobacter</i> spp.	21	16-20	1
					5	
			All staphylococci	21	16-20	1
					5	
			<i>Enterococcus</i> spp.	21	16-20	1
					5	
			<i>Haemophilus</i> spp.	21	-	-
			<i>N. gonorrhoeae</i>	41	28-40	2
					7	
			<i>N. Meningitidis</i>	35	33-34	3
		2				
Clarithromycin	CLR	15	All staphylococci	18	14-17	1
						3
			<i>Haemophilus</i> spp.	13	11-12	1
			0			

AG- ABST Discs

			<i>S. pneumoniae</i>	21	17-20	1 6
			Streptococcus spp. β- Hemolytic group	21	17-20	1 6 1
			Streptococcus spp. Viridans group	21	17-20	1 6
Clindamycin	CD	2	All staphylococci	21	15-20	1
			<i>S. pneumoniae</i>	19	16-18	4 1 5
			Streptococcus spp. β- Hemolytic Group	19	16-18	1 5
			Streptococcus spp. Viridans Group	19	16-18	1 5
Colistin sulfate	CS	10	Not available			
Doxycycline	DXT	30	Enterobacterales	14	11-13	1 0
			<i>Acinetobacter</i> spp.	13	10-12	9
			All staphylococci	16	13-15	1 2
			<i>Enterococcus</i> spp.	16	13-15	1 2
			<i>S. pneumoniae</i>	28	25-27	2 4
Erythromycin	E	15	All staphylococci	23	14-22	1 3
			<i>Enterococcus</i> spp.	23	14-22	1 3
			<i>S. pneumoniae</i>	21	16-20	1 5
			Streptococcus spp. β- Hemolytic group	21	16-20	1 5
			Streptococcus spp. Viridans group	21	16-20	1 5
Gentamicin	CN	10	Enterobacterales	15	13-14	1 2
			<i>P. aeruginosa</i>	15	13-14	1 2
			<i>Acinetobacter</i> spp.	15	13-14	1
			All staphylococci	15	13-14	2 1 2
Gentamicin	CN	30	Not available			
Gentamicin	CN	120	<i>Enterococcus</i> spp. (Screening Test for HLAR)	10		6
Kanamycin	K	30	Enterobacterales	18	14-17	1 3
Levofloxacin	LEV	5	Enterobacterales	21	17-20	1 6
			except <i>Salmonella</i> spp.			

AG- ABST Discs

			<i>P. aeruginosa</i>	22	15-21	1
			<i>Acinetobacter</i> spp.	17	14-16	4
			<i>S. maltophilia</i>	17	14-16	1
			All staphylococci	19	16-18	3
			<i>Enterococcus</i> spp.	17	14-16	1
			<i>Haemophilus</i> spp.	17	-	3
			<i>S. pneumoniae</i>	17	14-16	1
			<i>Streptococcus</i> spp.	17	14-16	3
			β- Hemolytic group	17	14-16	1
			<i>Streptococcus</i> spp. Viridans group			3
Linezolid	LNZ	30	All staphylococci	21	-	2
			<i>Enterococcus</i> spp.	23	21-22	0
			<i>S. pneumoniae</i>	21	-	2
			<i>Streptococcus</i> spp. β- Hemolytic group	21	-	-
			<i>Streptococcus</i> spp. Viridans group	21	-	-
Nalidixic acid	NA	30	Enterobacterales	19	14-18	1
						3
Netilmicin	NET	10	Not available			
Netilmicin	NET	30	Enterobacterales	15	13-14	1
			<i>P. aeruginosa</i>	15	13-14	2
						1
						2
Nitrofurantoin	F	100	Not available			
Nitrofurantoin	F	300	Enterobacterales	17	15-16	1
			All staphylococci	17	15-16	4
			<i>Enterococcus</i> spp.	17	15-16	1
						4
						4
Norfloxacin	NOR	10	Enterobacterales	17	13-16	1
			<i>P. aeruginosa</i>	17	13-16	2
			<i>Staphylococcus</i> spp.	17	13-16	1
			<i>Enterococcus</i> spp.	17	13-16	2
						2
Ofloxacin	OFX	5	Enterobacterales	16	13-15	1
			<i>P. aeruginosa</i>	16	13-15	2
						1

AG- ABST Discs

Tetracycline	TE	30	Enterobacterales	15	12-14	1
			<i>Acinetobacter</i> spp.	15	12-14	1
			All staphylococci	19	15-18	1
			<i>Enterococcus</i> spp.	19	15-18	1
			<i>Haemophilus</i> spp.	29	26-28	1
			<i>N. gonorrhoeae</i>	38	31-37	4
			<i>S. pneumoniae</i>	23	19-22	1
			<i>Streptococcus</i> spp.	23	19-22	4
			β- Hemolytic group	23	19-22	2
			<i>Streptococcus</i> spp. Viridans group	23	19-22	5
						3
						0
						1
						8
			1			
			8			
			1			
			8			
Ticarcillin	TC	75	Not available			
Tobramycin	TOB	10	Enterobacterales	15	13-14	1
			<i>P. aeruginosa</i>	15	13-14	2
			<i>Acinetobacter</i> spp.	15	13-14	1
						2
						1
			2			
Trimethoprim	TM	5	Enterobacterales	16	11-15	1
			All staphylococci	16	11-15	0
						1
						0
Trimethoprim-sulfamethoxazole	SXT	25 (1.25/23.75)	Enterobacterales	16	11-15	1
			<i>Acinetobacter</i> spp.	16	11-15	0
						1
						0
						1
						0
						1
						0
						1
						0
						1
						0
						1
						0
Vancomycin	VA	30	<i>Enterococcus</i> spp.	17	15-16	1
			<i>S. pneumoniae</i>	17	-	4
						-
			<i>Streptococcus</i> spp. β-	17	-	-
						-
			Hemolytic Group <i>Streptococcus</i> spp.	17	-	-
						-
			Viridans Group			

AG- ABST Discs

REFERENCE:

1. Bauer, Kirby, Sherris and Turck, 1966, Am. J. Clin. Path., 45: 493
2. Data on file: Microexpress®, A Division of Tulip Diagnostics (P) Lt

SYMBOLS



Do not use if package is damaged



Manufacturer



Batch Code



CE mark of Conformity



Refer to the instructions



13485:2016 ISO



GMP



AstraGene FZ LLC, Office No. 208 – 209, Dubai Science Park Building, Dubai, United Arab Emirates
+971-4-8781222, contact@astragene.com