

Macrolides

Examples: erythromycin, clarithromycin, azithromycin

Mechanism of action

Bind irreversibly to bacterial ribosome 50S subunit to inhibit the translocation step of protein synthesis. They are bacteriostatic but bactericidal at large doses.

Erythromycin is effective against gram positive organisms. In addition, clarithromycin and azithromycin are effective in treating intracellular pathogens such as legionella, mycoplasma, chlamydia, moraxella, ureaplasma. For this reason they are often used in pneumonia to cover atypical organisms and in sexually transmitted disease to treat chlamydia.

They reach good concentrations in body tissues except the CNS - they do not cross the blood-brain barrier. They tend to accumulate in the liver where they are metabolised.

Adverse Effects

Diarrhoea and vomiting, cholestatic jaundice, ototoxicity, hepatotoxicity, prolonged QT.

Lincosamines

Examples: clindamycin, lincomycin

Mechanism of action: identical to that of macrolides. Effective against Gram negative anaerobes and aerobic Gram positive cocci including some strains of MRSA. Ineffective against aerobic Gram negative bacteria. Reaches good concentrations in all tissues other than CNS. Excreted in bile and urine.

They are powerful inhibitors of bacterial toxin synthesis and therefore mitigate Staphylococcal toxic shock syndrome which is mediated by these toxins.

Adverse Effects

D&V, rash, C. difficile infection.

Gram Positive Cocci		Gram Negative Bacilli			Anaerobes	
MRSA	MSSA	Streptococci	E.coli, Klebsiella	Proteus	Pseudomonas	ESCAPPM*
		Penicillin				
		Amoxicillin				
		Flucloxacillin				
		Cephazolin				
		Clindamycin				Clindamycin
		Rifampicin/Fusidic Acid				
		Vancomycin/Teicoplanin, Linezolid, Daptomycin				Metronidazole
			Trimethoprim			
			Ciprofloxacin			
			Gentamicin/Tobramycin, Aztreonam			Moxifloxacin
			Moxifloxacin			
			Cefuroxime			
			Ceftriaxone			
			Ceftazidime			
			Cefepime			
			Amoxicillin-clavulanate			Amoxicillin-clavulanate
			Ticarcillin-clavulanate, Piperacillin-tazobactam			Ticarcillin-clavulanate, Piperacillin-tazobactam
			Meropenem [†] , Imipenem [†]			
			Ertapenem [†]			Ertapenem [†]

Antibiotics in **bold** also cover Enterococcus Faecalis. For simplicity, atypical organisms are not shown.

ESBL-producing organisms are **not** susceptible to most antibiotics containing a beta-lactam ring; carbapenems[†] are the usual agent of choice.

*ESCAPPM organisms are Enterobacter spp., Serratia spp., Citrobacter freundii, Aeromonas spp., Proteus spp., Providencia spp. & Morganella morganii.