



Appendix

Overview of antimicrobials based on mechanism of action

Mechanism of action		Group	Active ingredient
Cell wall	Inhibition of cell wall synthesis	Narrow spectrum penicillins	Penicillin-V Penicillin-G
		Broad spectrum penicillines	Amoxicillin Ampicillin
		Beta-lactam insensitive penicillines	Cloxacillin
		Cefalosporines	-
	Disruption of the cell wall	Polymyxines	Polymyxin-E (colistin)
DNA synthesis	Inhibition of folic acid synthesis	Sulfonamides	Sulfadiazin Sulfadoxin Sulfadimidin Sulfamethoxazol Sulfaquinoxalin
		Diaminopyrimidines	Trimethoprim
	Inhibition of transcription and translation of DNA	Fluoroquinolones	Flumequin Enrofloxacin
Protein synthesis	Inhibition of protein synthesis by binding the 50S subunit of the bacterial ribosome	Macrolides	Tylosin Tilmicosin Tulathromycin
		Lincosamides	Lincomycin
		Pleuromutilines	Tiamulin Valnemulin
		Fenicols	Florfenicol
	Inhibition of protein synthesis by binding the 30S subunit of the bacterial ribosome	Tetracyclines	Doxycycline Oxytetracycline Chlortetracycline
		Aminoglycosides	Neomycin Gentamicin Dihydrostreptomycin

Bactericidal / Bacteriostatic	Concentration / Time dependent	Lipophilicity	Volume of distribution	pK _a
Bactericidal	Time dependent	Low	Small	Low
Bactericidal	Time dependent	Low	Small	Low
Bactericidal	Time dependent	Low	Small	Low
Bactericidal	Time dependent	Low	Small	Low
Bactericidal	Concentration dependent	Low	Small	High
Bacteriostatic ¹	Time dependent	Moderate	Small	Low
Bacteriostatic ¹	Time dependent	Moderate	Large	High
Bactericidal	Concentration dependent	High	Large	Amphoteric ⁴
Bacteriostatic ²	Time dependent	Moderate	Large	High
Bacteriostatic ²	Time dependent	Moderate	Large	High
Bacteriostatic ²	Time dependent	Moderate	Large	High
Bacteriostatic ²	Time dependent	High	Large	High
Bacteriostatic	Co-dependent ³	Doxycycline: High Others: Moderate	Large	Amphoteric ⁴
Bactericidal	Concentration dependent	Low	Small	High

1 Combination of sulfonamides and trimethoprim is bactericidal.

2 These antibiotics are also defined as bactericidal depending on the concentration of the antibiotic, the time the concentration exceeds the MIC, the bacterial strain and the amount of bacteria.

3 The efficacy of tetracyclines is dependent on both the concentration of the antibiotic as well as the exposure time.

4 Amphoteric: these antimicrobials have both a low and a high pK_a.