

Herbs and Properties Related to Antibiotic Resistance

KEY: Green colored cells may offer benefit

Common Name	Antimicrobial Activity	Efflux Pump Inhibition	Quorum Sensing Inhibition	Biofilm Disruptor	Enzyme inhibition	Bacterial Adhesion Inhibitor	Bacterial Cell Wall Disruption	Bacterial DNA Alteration	Immune Stimulation	Active constituents	Pairing with ABX (if specified in research)	Considerations
Artemisia										artemisinin, caffeoylquinic acid, chrysophenol, chrysophenetin	pairs well with berberine, honeysuckle.	
Basil												
Berberis Family										berberine, hydrastine, canadensine, 5-MHC, pheophorbide a, flavanolignan 3, porphyrin 3	increased susceptibility of s. aureus, p. aeruginosa & e. coli to ciprofloxacin by 33x. Additive with ampicillin, erythromycin, methicillin, norfloxacin. Synergistic with oxacillin. Doesn't combine well with tetracycline	Goldenseal is an at-risk species. Choose Mahonia, Berberis or Coptis when possible.
Berries												
Berry Extracts (gallic acid)												
Bitter orange											can counter gm - efflux pumps	
Calamus/Sweet flag					β lactamase							
Catnip												
Chinese Skullcap	Bacterial & Viral				β lactamase					baicalin, baicalein, methoxyflavones, F36	β lactams, ciprofloxacin, gentamicin, tetracycline	
Cinnamon										cinnamaldehyde	clindamycin, ampicillin, tetracycline, penicillin, erythromycin, novobiocin. Helpful in C. difficile	Histaminic
Clove												
Cranberry												
Curcumin											oxacillin, ampicillin, ciprofloxacin, norfloxacin	
Dog Rose										tellimagrandin I, rugosin B	β lactam	
Elderberry	Gm +, Gm-, yeast, virus											
Garlic	Strong, Gm + and Gm -				β lactamase, DNA synthase			RNA synthesis inhibitor		allicin	Pairs with vancomycin, cefoperazone, ceftoxitin, oxacillin	
Geranium										polyacylated neohesperidosides	berberine, ciprofloxacin, norfloxacin, rhein	
Ginger										zingiberine, gingerol (fresh)/shogaol (dried)	tetracycline	
Gotu kola											can counter gm - efflux pumps	
Grapefruit juice										furocoumarins, limonoids		
Grapefruit oil											20 fold decreased MIC of norfloxacin against MRSA	
Grapefruit Seed Extract	broad spectrum											
Green Tea	moderate, gm +				β lactamase					ECG, CG, EGCG, myricetin	augmentin, β lactams, carbapenems, ceftazolin, cefmetazole, ceftoxitin, norfloxacin, levofloxacin, tetracycline. reduced MIC of oxacillin from 256/512 to 1-4mg/L	
Honeysuckle												
Hops												
Kale												
Lemongrass												Can increase allergenic potential
Licorice	antibacterial, antiviral, anti fungal	Strong								glycyrrhethinic acid, glycyrrhizin, liquiritigenin, licochalcones A & E, glabridin	polymyxin B, tobramycin, gentamicin, amikacin MIC reduced by 32-64x	Can raise BP
Milk Thistle										silybin	ampicillin, oxacillin	
Myrecetin (found in tea, berries, vegetables and other foods)												
Myrrh											can counter gm - efflux pumps	
Nootka Cypress Cone										totalarol, diterpenes	256 fold potentiation of methicillin against MRSA	
Oregano												
Peppermint											combines well with green tea	
Pomegranate											chloramphenicol, gentamicin, ampicillin, tetracycline, oxacillin against MRSA & MSSA	
Quercetin											fluconazole	
Resveratrol					DNA synthase						ahminoglycosides	
Rosemary										carnosic acid, carnosol	erythromycin, fluoroquinolones, tetracycline	
Tansy					acetylcholinesterase					β-thujone, trans-chrysanthenyl acetate, cichoric acid, volatile oils		
Thyme										thymol, carvacrol		
Usnea	Strong, Gm +									usnic acid, polysaccharides		Sustainability issues: Harvest only from wind-fallen lichen