Supplementary information

Table S1. Other metals with antibacterial potential.

Metal	Observed Activity	References
Bismuth	• Bi(III) exhibits low toxicity against humans and potent toxicity against bacteria. • *H. pylori* appears particularly susceptible to three bismuth drugs: ranitidine bismuth citrate (Pylorid), colloidal bismuth subcitrate (CBS, De-Nol), and bismuth subsalicylate (Pepto-Bismol) • Bi(III) and CBS identified as metallo-β lactamase inhibitors.	[26, 193]
Iridium	• Ir(III) complexes shown bacteriostatic activity • Good antimicrobial potential • High cost of element and high dosage required for antibacterial effect, thus not a primary resource	[26]
Iron	• Moderate antibacterial activity against the Gram-positive bacteria *S. aureus* • Inactive against Gram-negative *E. coli* and *P. aeruginosa* • More studies required to determine *in vitro* and *in vivo* efficacy and toxicity	[194]
Palladium	• Antibacterial activity observed against *E. faecalis, S. aureus, E. coli, K. pneumonia,* and *P. aeruginosa* • Proposed antibacterial activity caused by binding with DNA and protein • More studies required to determine *in vitro* and *in vivo* efficacy and toxicity	[195, 196]
Platinum	• Bactericidal activity, inducing bacterial filamentation and lysis in lysogenic bacteria • Proposed antibacterial activity caused by interaction with DNA	[197]
Rhenium	• Antimicrobial activity not well researched • Promising activity against Gram-positive bacteria in particular • Lack of *in vivo* data, requires further research	[26]

Metal	Observed Activity	References
Rhodium	• Bacteriostatic effect against the Gram-positive bacterium *S. pneumoniae* without significant cytotoxic side-effect on host cell *in vitro* • Affects bacterial metal ion binding and metabolic pathways • More studies required to determine *in vitro* and *in vivo* efficacy and toxicity	[198]
Ruthenium	• Bactericidal activity • Labile ruthenium complexes bind nucleic acids through ligand exchange reactions • Inert ruthenium compounds, generally bearing one or more polypyridyl ligand(s), can bind DNA and RNA through intercalation • Remarkable antimicrobial activity shown *in vitro* • Rapid clearance following IV administration reduces efficacy of compounds administered *in vivo*, likely better for topical administration • Lower propensity to induce resistance in *Streptococcus pyogenes* than penicillin • Further efficacy experiments required to determine *in vivo* efficacy	[26]
Tellurium	• Antibacterial activity demonstrated against *E. coli*, *E. cloacae*, and *P. aeruginosa* • Te ions taken up by bacteria as if amino acids, replacing sulfur atom to form Tellurium-cysteine and Tellurium-methionine • More studies required to determine *in vitro* and *in vivo* efficacy and toxicity	[199-201]

Table S2. MIC values of auranofin analogues **(11)** to **(16)** tested against a series of Gram-negative and Gram-positive bacterial strains (µM).

	Gram-negative					**Gram-Positive**	
	A. baumannii	***P. Aeruginosa***	***E. cloacae***	***K. pneumoniae***	***E. Coli***	***S. aureus***	***E. faecium***
(11)	24	189	47	189	12	0.04-0.09	0.09
(12)	15-29	464	116	464	4-7	0.02	0.05-0.1
(13)	4-17	>547	4-9	34	9	0.3-0.5	0.3-0.5
(14)	9-19	>547	4	34	9	0.3	0.3-0.5
(15)	8-16	>503	8-16	31	8-31	0.5	0.2-0.5
(16)	3-6	23-91	3	11	1-6	0.3	0.3

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