pharmaceutics

MDPI

Supplementary Materials: Interactions with Microbial Proteins Driving the Antibacterial Activity of Flavonoids

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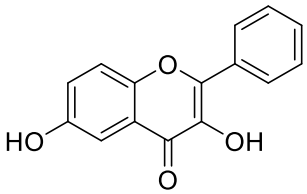
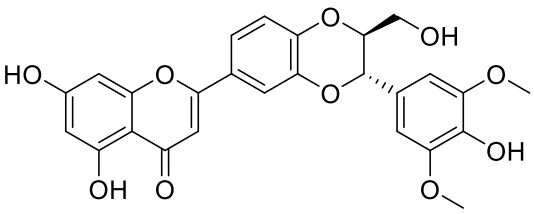
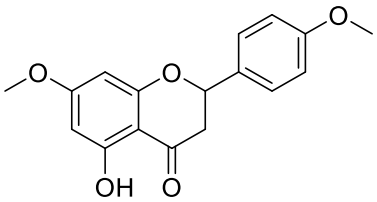
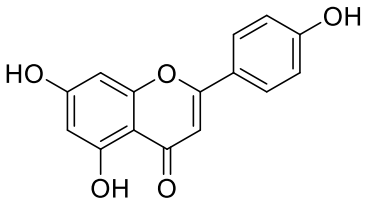
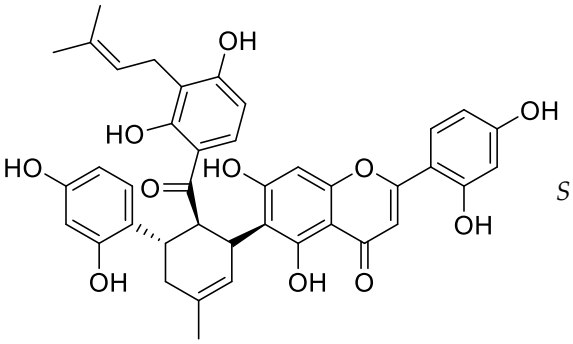
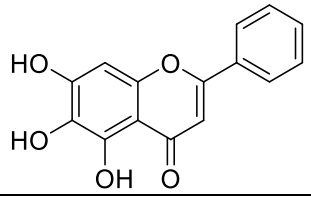
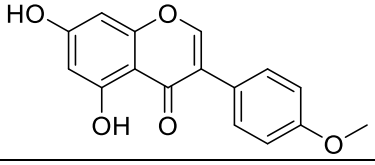
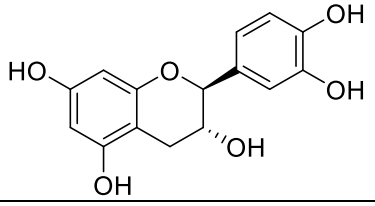
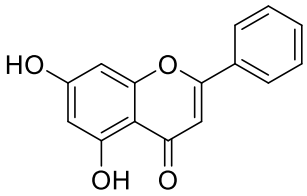
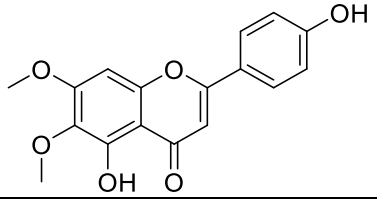
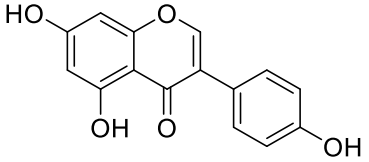
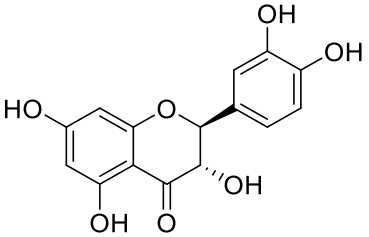
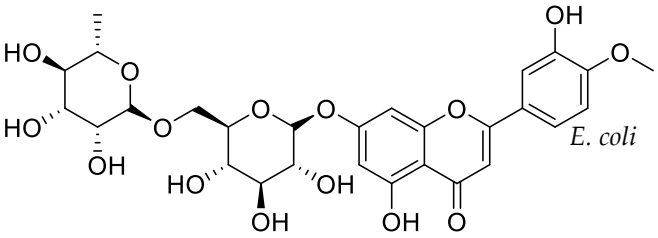
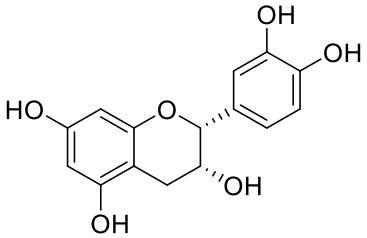
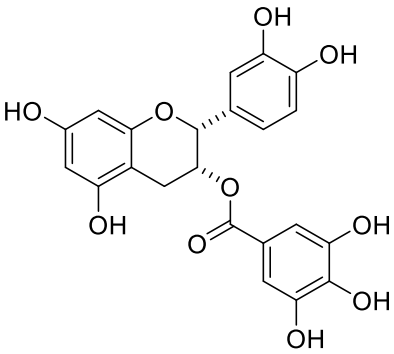
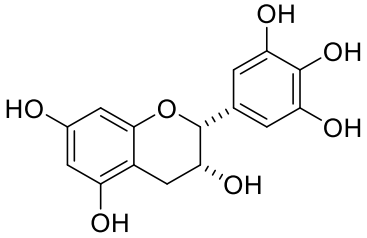
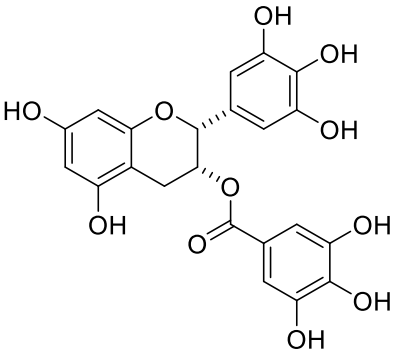
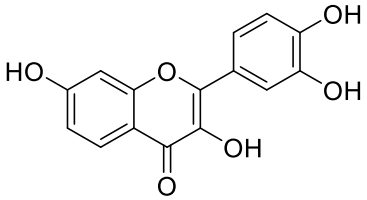
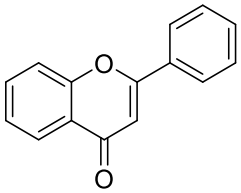
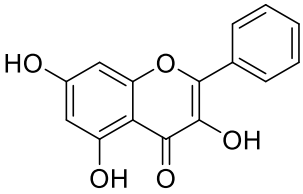
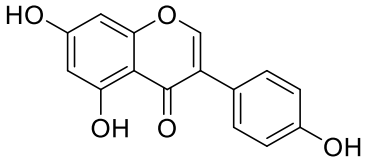
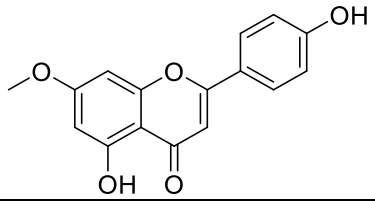
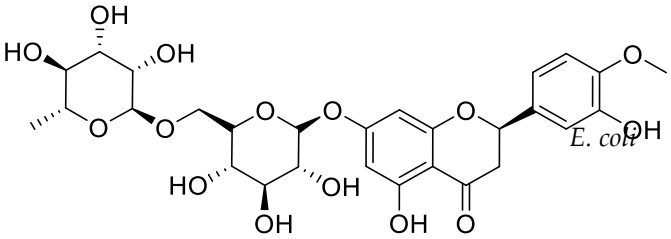
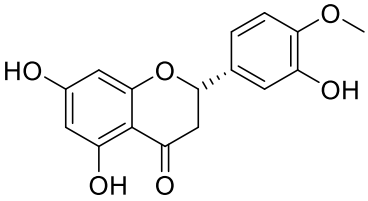
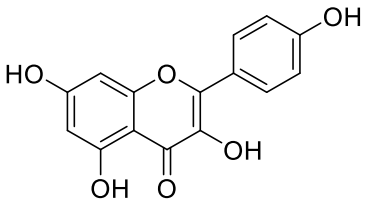
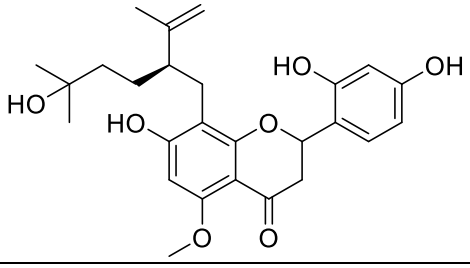
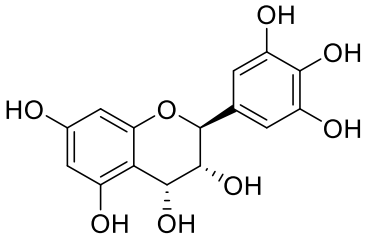
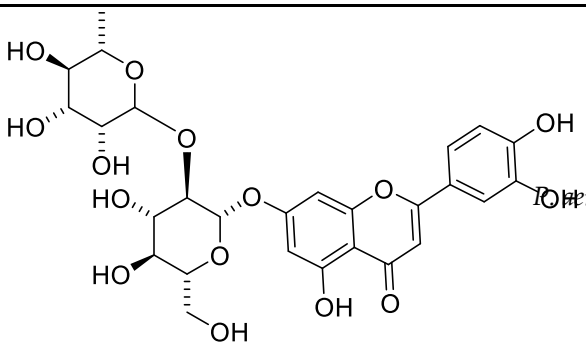
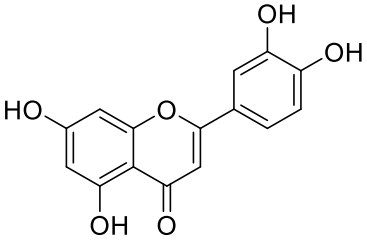
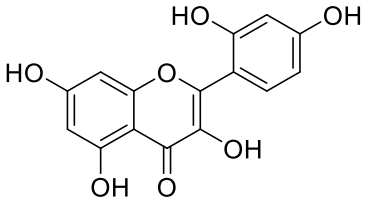
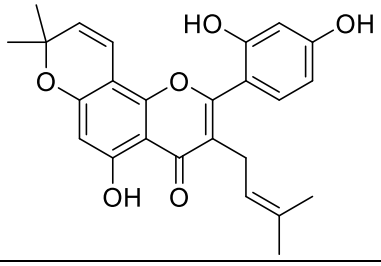
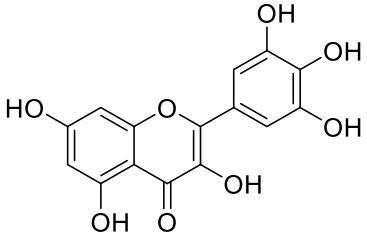
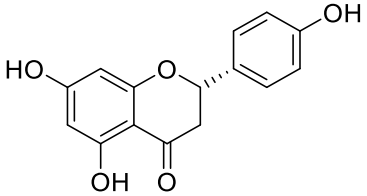
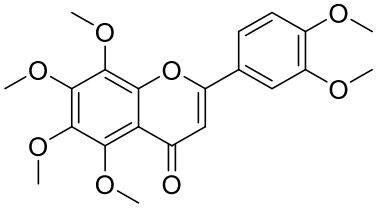
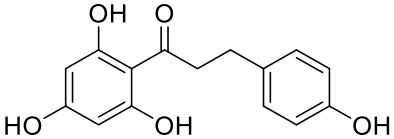
Table 1. Antimicrobial flavonoids and their respective molecular targets.

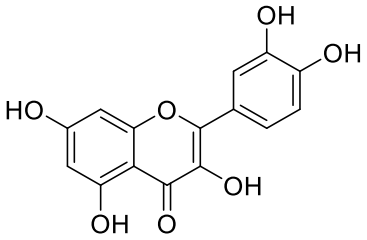
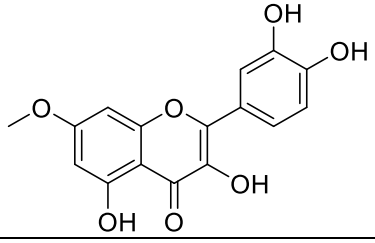
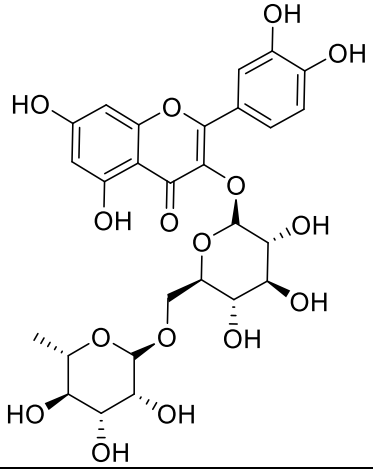
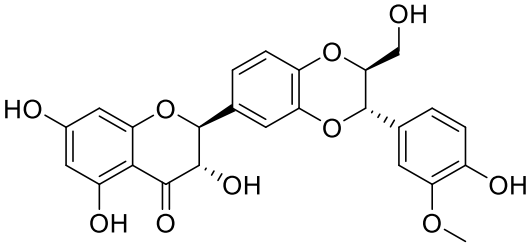
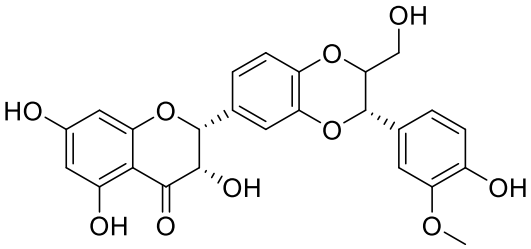
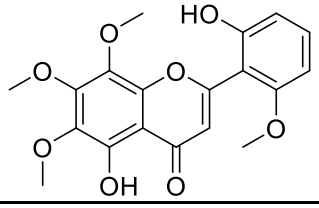
Compound name	Structure	Bacterial strain	Target	Reference
3,6-dihydroxyflavone		*E. coli*	Inhibition of β-ketoacyl acyl carrier protein (ACP) synthases	[83]
5′-methoxyhydnocarpin		*S. aureus*	Inhibition of MDR-NorA efflux pump	[57]
7,4′-dimethylapigenin		*S. aureus*	Inhibition of NorA efflux pump	[53]
Apigenin		*E. coli*	Partial inhibition of ATP synthase	[81]
		S. aureus	Inhibition of efflux pump	[44]
		S. aureus	Inhibition of NorA efflux pump	[53]
Artonin I		*S aureus*	Inhibition of efflux pump Membrane damage	[56]
Baicalein		*M. smegmatis, M. aurum* and *M. bovis*	Inhibition of efflux pump	[58]
		E. coli	Inhibition of ATP synthase	[81]

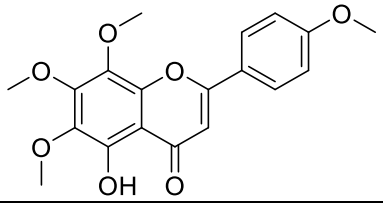
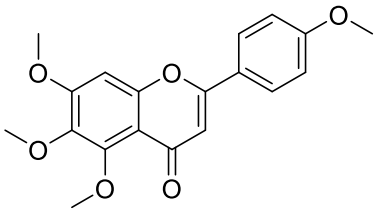
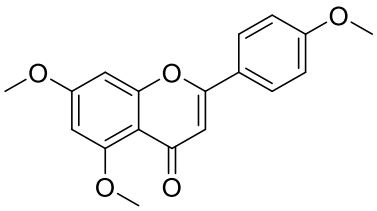
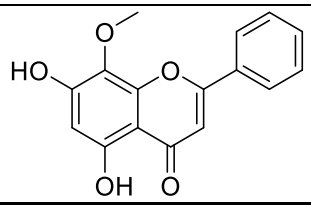
		*L. monocytogenes*	Inhibition of listeriolysin O	[98]
		P. aeruginosa	Interaction with LasR and PilT	[109]
Biochanin A		*M. smegmatis*	Inhibition of MDR efflux pump	[44]
		E. coli	Membrane perturbation	[69]
(+)-Catechin		*B. subtilis and E. coli*	ROS regulation Membrane perturbation	[63]
		MRSA MSSA S. aureus	Decrease of SOD and CAT activity	[64]
		E. col	Membrane perturbation	[69]
Chrysin		*E. coli*	Partial inhibition of ATP synthase	[81]
		L. monocytogenes	Inhibition of listeriolysin O	[98]
		P. aeruginosa	Interaction with LasR and PilT	[109]
Cirsimaritin		*S. aureus*	Inhibition of NorA efflux pump	[53]
Daidzein		*E. coli*	Weak Inhibition of ATP synthase	[81]
Dihydroquercetin		*E. coli and S. aureus*	Inhibition of β-ketoacyl ACP reductase, 3R-hydroxyacyl ACP dehydratase and trans 2- enoyl ACP reductase	[68]
		C. violaceum	Interaction with CviR protein	[112]
Diosmin		*E. coli*	Partial inhibition of ATP synthase	[81]

(-)-Epicatechin		*E. coli*	Inhibition of ATP synthase	[78,81]
(-)-Epicatechin gallate		*E. coli*	Inhibition of DNA gyrase (sub GyrB)	[115]
(-)-Epigallocatechin		*E. coli*	Inhibition of DNA gyrase (sub GyrB)	[115]
(-)-Epigallocatechin gallate		*E. coli*	Inhibition of DNA gyrase (sub GyrB)	[115]
Fisetin		*L. monocytogenes*	Inhibition of listeriolysin O	[98]
Flavone		*S. aureus*	Inhibition of expression of the gene encoding for α-hemolysin (Hla) Inhibition of staphyloxanthin production	[96]
Galangin		*E. coli*	Weak inhibition of ATP synthase	[81]

Genistein		*E. coli*	Partial Inhibition of ATP synthase	[81]
Genkwanin		*S. aureus*	Inhibition of NorA efflux pump	[53]
Hesperidin		*E. coli*	Partial inhibition of ATP synthase	[81]
Hesperetin		*E. coli*	Membrane perturbation	[69]
Kaempferol		*E. coli*	Partial inhibition of ATP synthase	[81]
		E. coli and S. aureus	Membrane perturbation	[68]
		E. coli		[69]
		S. aureus	Inhibition of efflux pump	[52]
Kurarinol		*S aureus*	Inhibition of Sortase A	[91]
Leucodelphinidin		*E. coli and S. aureus*	Inhibition of β-ketoacyl ACP reductase, 3R-hydroxyacyl ACP dehydratase and trans 2- enoyl ACP reductase	[68]

Lonicerin		*P. aeruginosa*	Inhibition of alginate production protein AlgE	[92]
Luteolin		*E. coli*	Weak inhibition of ATP synthase	[81]
		S. aureus	Inhibition of staphyloxanthin production	[96]
		E. coli	Inhibition of assembly of amyloid curli fibers	[111]
Morin		*E. coli*	Inhibition of ATP synthase	[78,79,81]
		L. monocytogenes	Inhibition of listeriolysin O	[98]
		E. coli	Inhibition of assembly of amyloid curli fibers	[111]
Morusin		*S. aureus* and *S. enterica*	Downregulation of expression levels of different subunit of the fatty-acid-synthase (fabD, fabF, fabG and fabH)	[74]
Myricetin		*L. monocytogenes*	Inhibition of listeriolysin O	[98]
		S. aureus	Inhibition of efflux pump	[44,51]
		E. coli	Inhibition of assembly of amyloid curli fibers	[111]
		E. coli	Inhibition of cellular functions of DnaK	[102]
Naringenin		*B. subtilis*	Inhibition of assembly of amyloid curli fibers	[111]
Nobiletin		*M. smegmatis*, *M. aurum*, and *M. bovis*	Inhibition of efflux pump	[58]
Phloretin		*B. subtilis*	Inhibition of assembly of amyloid curli fibers	[111]

Quercetin		*E. coli and S. aureus*	Inhibition of β-ketoacyl ACP reductase, 3R-hydroxyacyl ACP dehydratase and trans 2- enoyl ACP reductase	[68]
		E. coli	Inhibition of assembly of amyloid curli fibers	[111]
		E. coli	Inhibition DNA gyrase (sub GyrB)	[72]
		E. coli	Inhibition of ATP synthase	[78,79]
		P. aeruginosa	Interaction with PilT and LasR	[109]
Rhamnetin		*S. aureus*	Inhibition of efflux pump	[52]
Rutin		*E. coli*	Partial inhibition of ATP synthase	[81]
Silibinin		*E. coli*	Inhibition of ATP synthase	[81]
Silymarin		*E. coli*	Inhibition of ATP synthase	[81]
Skullcapflavone II		*M. smegmatis*, *M. aurum*, and *M. bovis*	Inhibition of efflux pump	[58]

Tangeretin		*M. smegmatis*, *M. aurum*, and *M. bovis*	Inhibition of efflux pump	[58]
Tetramethylscutellarein		*S. aureus*	Inhibition of NorA efflux pump	[53]
Trimethylapigenin		*S. aureus*	Inhibition of NorA efflux pump	[53]
Wogonin		*M. smegmatis*, *M. aurum*, and *M. bovis*	Inhibition of efflux pump	[58]