Supplementary Material

The role of natural and synthetic flavonoids in the prevention of marine biofouling

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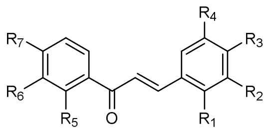
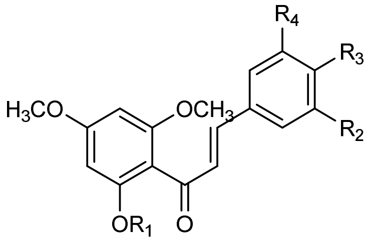
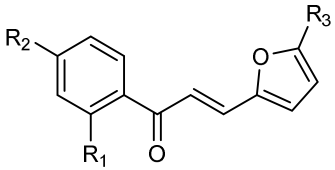
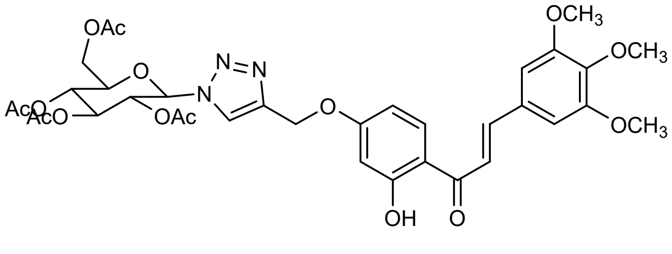
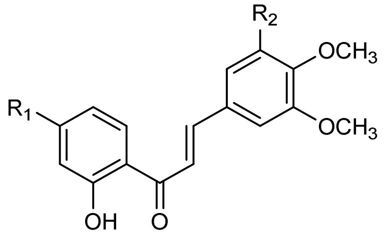
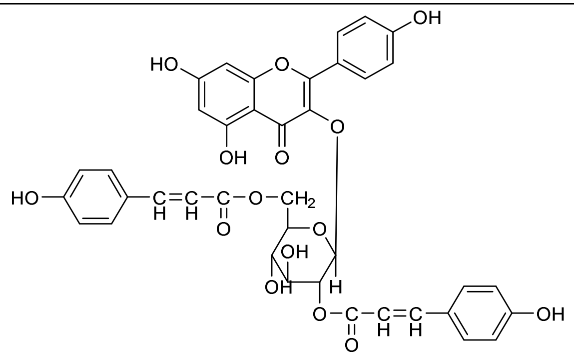
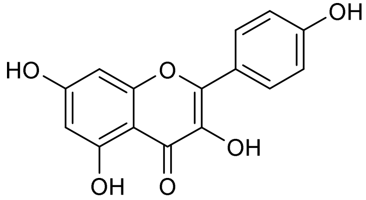
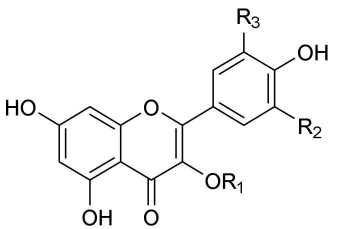
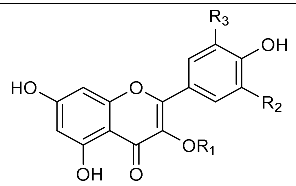
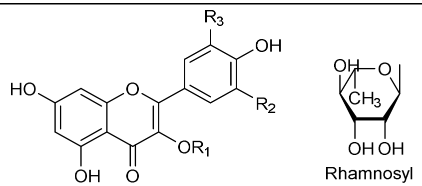
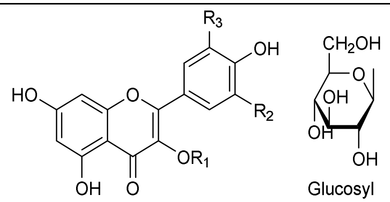
Table S1. Structure, origin, and antifouling activity of flavonoids **1-106** reported in the review.

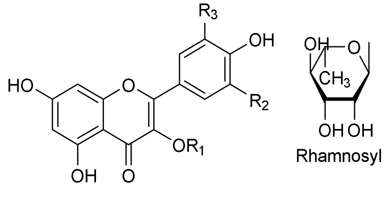
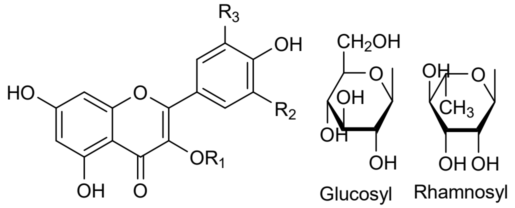
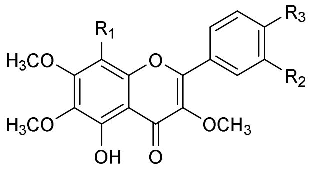
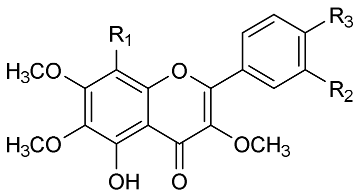
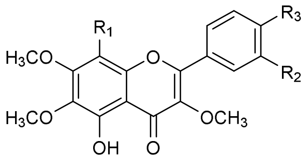
Chalcones			
Code and structure of Flavonoid	**Origin**	**Activity**	**Reference**
 **1**:$R_1=R_2=R_4=R_5=R_6=R_7=H$; $R_3=NMe_2$ **2**:$R_1=R_2=R_4=R_5=R_6=R_7=H$; $R_3=SMe$ **3**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=NO_2$ **4**:$R_1=R_2=R_3=R_4=R_5=R_6=R_7=H$ **5**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=SMe$; $R_6=OH$ **6**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=OMe$ **7**:$R_1=R_2=R_4=R_6=R_7=H$; $R_3=SMe$; $R_5=OH$ **8**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=Me$ **9**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=Cl$ **10**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=SMe$; $R_6=NO_2$ **11**:$R_1=R_2=R_4=R_5=R_6=R_7=H$; $R_3=OMe$ **12**:$R_1=R_2=R_4=R_6=H$; $R_3=SMe$; $R_5=R_7=Cl$ **13**:$R_1=OMe$;$R_2=R_3=R_4=R_5=R_6=R_7=H$ **14**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=Br$ **15**:$R_1=R_5=R_6=R_7=H$; $R_3=R_2=R_4=OMe$ **16**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=OH$ **17**:$R_1=R_2=R_6=H$; $R_3=R_4=OMe$; $R_5=R_7=Cl$ **18**:$R_2=R_4=R_5=R_7=H$; $R_1=R_3=OMe$; $R_6=NO_2$ **19**:$R_1=R_2=R_5=R_7=H$; $R_3=R_4=OMe$; $R_6=NO_2$ **20**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=NMe_2$; $R_6=NO_2$ **21**:$R_1=OMe$; $R_2=R_3=R_4=R_5=R_6=H$; $R_7=NO_2$ **22**:$R_1=R_2=R_4=R_6=H$; $R_3=NMe_2$; $R_5=R_7=Cl$ **23**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=OMe$; $R_6=OH$ **24**:$R_1=OMe$; $R_2=R_3=R_4=R_5=R_7=H$; $R_6=NO_2$ **25**:$R_1=R_3=R_4=R_5=H$; $R_2=NO_2$; R_6-R_7=-O-CH_2-O- **26**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=Cl$; $R_6=NO_2$ **27**:$R_1=R_3=R_4=R_5=R_7=H$; $R_2=NO_2$; $R_6=Br$ **28**:$R_1=Cl$; $R_2=R_3=R_4=R_5=R_7=H$; $R_6=OMe$ **29**:$R_1=Cl$; $R_2=R_3=R_4=R_5=R_6=H$; $R_7=OEt$ **30**:$R_1=R_2=R_4=R_5=R_6=R_7=H$; $R_3=SO_2CH_3$ **31**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SO_2CH_3$; $R_7=NO_2$ **32**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SO_2CH_3$; $R_7=Cl$ **33**:$R_1=R_2=R_4=R_6=H$; $R_3=SO_2CH_3$; $R_5=R_7=Cl$ **34**:$R_1=R_5=R_7=Cl$; $R_2=R_3=R_4=R_6=H$ **35**:$R_1=Cl$; $R_2=R_3=R_4=R_5=R_7=H$; $R_6=NO_2$ **36**:$R_1=Cl$; $R_2=R_3=R_4=R_5=R_7=H$; $R_6=OH$ **37**:$R_1=R_2=R_4=R_5=H$; $R_3=SMe$; R_6-R_7=-O-CH_2-O- **38**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=SMe$; $R_6=NH_2$ **39**:$R_1=R_2=R_4=R_5=H$; $R_3=SMe$; $R_6=R_7=OMe$ **40**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=SMe$; $R_6=OMe$ **41**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=OEt$ **42**:$R_1=R_2=R_4=R_5=R_7=H$; $R_3=SMe$; $R_6=Br$ **43**:$R_1=R_2=R_4=R_5=R_6=H$; $R_3=SMe$; $R_7=F$ **44**:$R_1=Cl$; $R_2=R_3=R_4=R_5=H$; R_6-R_7=-O-CH_2-O- **45**:$R_1=OMe$; $R_2=R_3=R_4=R_6=H$; SMe; $R_5=R_7=Cl$ **46**:$R_1=R_2=R_4=R_5=H$; $R_3=OMe$; R_6-R_7=-O-CH_2-O- **47**:$R_1=R_2=R_4=R_5=H$; $R_3=OH$; R_6-R_7=-O-CH_2-O-	Synthesis	- *Bacillus flexus*: MIC = 0.002 – 0.466 μM - *Pseudomonas fluorescens*: MIC = 0.004 – 0.133 μM - *Vibrio natriegens*: MIC = 0.024 – 0.249 μM	(Sivakumar, Prabhawathi et al. 2010)
	Synthesis	Reduction of the adhesion of the marine bacterium *V. natriegens* for marine paints with chalcone **45** comparing to control paint and paint with copper: Polymer surfaces coated with the paint without additives exhibited an amount of colony forming unit (CFU) of 30 – 40×10^6/mL after 28 days of assay, followed by surfaces with paint mixed with copper (20 – 40×10^6/mL) and the surfaces with chalcone **45** mixed paint (1×10^6/mL).	(Sivakumar, Prabhawathi et al. 2010)
	Synthesis	Paints containing chalcone **4** (1.25 mmol chalcone/100 g of paint) were able to inhibit the settlement and growth of diatoms *Achnanthes* sp., *Coscinodiscus* sp., *Grammatophora* sp., *Licmophora* sp., *Navicula* sp., *Nitzschia longissima*, *Pinnularia* sp., *Pleurosigma* sp., *Synedra* sp. and *Skeletonema costatum*, and protozoans such as *Vorticella* sp. and *Zoothamnium* sp. by about 70% in comparison with control paint.	(Sathicq, Paola et al. 2019)

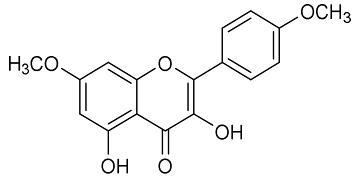
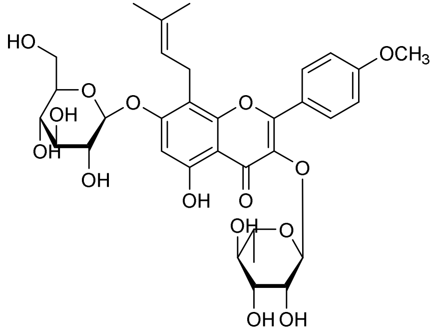
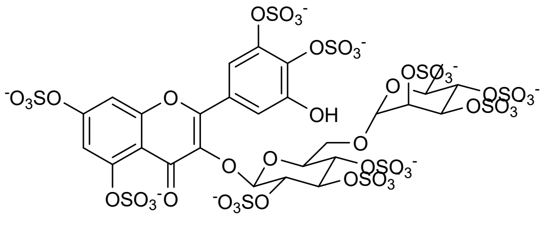
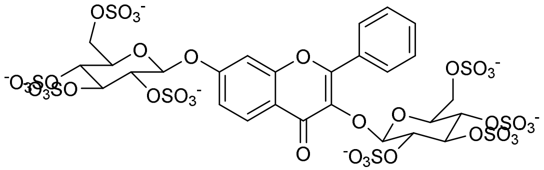
 **48**: $R_1=R_2=R_4=H$, $R_3=OCH_3$ **49**: $R_1=R_3=R_4=H$, $R_2=OCH_3$ **50**: R_1=Prenyl, $R_2=R_3=R_4=OCH_3$	Synthesis	**48**: *Mytilus galloprovincialis* mussel larvae, EC_{50}: 34.63 μM **49**: *M. galloprovincialis* (EC_{50}: 7.24 μM); bacterial growth inhibitory activity against *Halomonas aquamarina* (EC_{50}: 18.67 μM) and *Roseobacter litoralis* (EC_{50}: 4.09 μM) **50**: *M. galloprovincialis* (EC_{50}: 16.48 μM); growth inhibitory activity against *H. aquamarina* (EC_{50}: 18.78 μM) and *R. litoralis* (EC_{50}: 12.34 μM); diatom inhibitory activity against *Cylindrotheca* sp. (EC_{50}: 7.04 μM), *Halamphora* sp. (EC_{50}: 14.65 μM), *Nitzschia* sp. (EC_{50}: 20.31 μM) and *Navicula* sp. (EC_{50}: 6.75 μM)	(Almeida, Moreira et al. 2018)
 **51**: $R_1=R_2=R_3=H$ **52**: $R_1=R_2=H$; $R_3=Me$ **53**: $R_1=R_3=H$; $R_2=Me$ **54**: $R_1=H$; $R_2=R_3=Me$ **55**: $R_1=OH$; $R_2=R_3=H$ **56**: $R_1=OH$; $R_2=H$; $R_3=Me$	Synthesis	Paints containing chalcones **51-56** (1.25 mmol chalcone/100 g of paint) were able to inhibit the settlement and growth of diatoms *Achnanthes* sp., *Coscinodiscus* sp., *Grammatophora* sp., *Licmophora* sp., *Navicula* sp., *Nitzschia longissima*, *Pinnularia* sp., *Pleurosigma* sp., *Synedra* sp. and *Skeletonema costatum*, and protozoans *Vorticella* sp. and *Zoothamnium* sp. by about 60-80% and the settlement of filamentous red alga *Polysiphonia* sp., green alga *Ulva* sp., and filamentous brown alga *Ectocarpus* sp. and calcareous tubeworms *Hydroides* sp. and *Spirorbis* sp. by about 75-~100% in comparison with control paint.	(Sathicq, Paola et al. 2019)

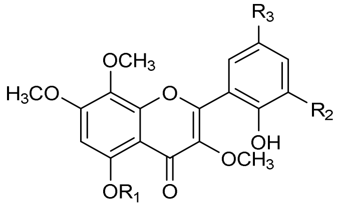
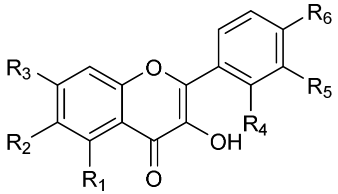
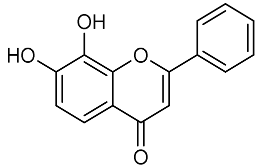
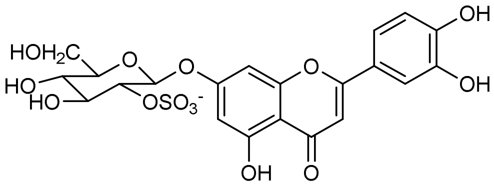
 **57**	Synthesis	Activity against mussel *M. galloprovincialis* (EC_{50} = 3.28 μM, 2.43 μg/mL). Activity against diatom *Navicula* sp. (EC_{50} = 41.76 μM, 30.94 μg/mL)	(Pereira, Gonçalves et al. 2021)
 **58**: R_1=OH, R_2=H **59**: R_1=OH, R_2=OCH_3 **60**: R_1=OCH_2CCH, R_2=H **61**: R_1=OCH_2CCH, R_2=OCH_3	Synthesis	**58**: activity against *M. galloprovincialis* (EC_{50} = 18.10 μM, 5.44 μg/mL). **59**: activity against *M. galloprovincialis* (EC_{50} = 9.64 μM, 3.18 μg/mL). **60**: bacterial inhibitory activity against *R. litoralis* (EC_{50} = 135 μM). **61**: bacterial inhibitory activity against *R. litoralis* (EC_{50} = 83.5 μM).	(Pereira, Gonçalves et al. 2021)
Flavonols			
Code and structure of Flavonoid	**Origin**	**Activity**	**Reference**
 kaempferol 3-O-(2'',6''-di-O-(*E*)-*p*-coumaroyl-β-*D*-glucopyranoside (**62**)	Isolated from the leaves of *Quercus dentata*	Anti-settlement activity against the blue mussel *Mytilus edulis* at 0.22 μmol/cm², higher than positive control copper sulfate (0.50 μmol/cm²)	(Yamashita, Etoh et al. 1989)

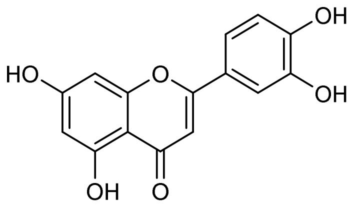
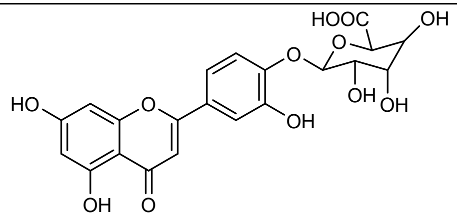
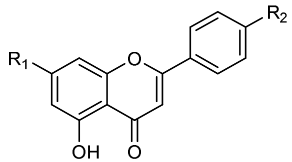
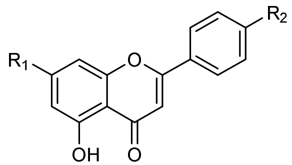
 kaempferol (**63**)	Commercial	Anti-settlement activity against the blue mussel *M. edulis* at 6.0 μmol/cm^2, lower than positive control copper sulfate (0.50 μmol/cm^2)	(Yamashita, Etoh et al. 1989)
	Commercial	Low anti-settlement activity against blue mussel *M. edulis* (8% of positive control copper sulfate).	(Singh, Etoh et al. 1997)
	Isolated from the terrestrial plant *Micromelum integerrinum*	Anti-settlement activity against the barnacle *Amphibalanus amphitrite* larvae (EC_{50}: 33.54 μM, 9.6 μg/mL; $LC_{50}/EC_{50} > 5.2$)	(Zhou, Zhang et al. 2009)
	Isolated from the methanol extract of the leaves of the marine halophyte *Apocynum venetum*	Activity against marine bacteria *Bacillus thuringiensis*, *Pseudoalteromonas elyakovii* and *Pseudomonas aeruginosa* at a concentration of 100 μg/disc (inhibition zone 9.5 – 17.4 mm), (positive control chloramphenicol at 100 μg/disc: inhibition zone 29.2 – 33.7 mm)	(Kong, Fang et al. 2014)
 Quercetin (**64**): R_1=R_3=H, R_2=OH	Commercial	Low anti-settlement activity against blue mussel *M. edulis* (12% comparing to positive control copper sulfate).	(Singh, Etoh et al. 1997)
	Isolated from the methanol extract of the leaves of the halophyte *Apocynum venetum*	Activity against *B. thuringiensis*, *P. elyakovii* and *P. aeruginosa* at 100 μg/disc (inhibition zone 9.3 – 9.5 mm) (positive control chloramphenicol at 100 μg/disc: inhibition zone 29.2 – 33.7 mm)	(Kong, Fang et al. 2014)
	Isolated from the marine-derived actinobacterium, *Streptomyces fradiae* PE7	Activity against marine bacteria *Staphylococcus* sp. M1 (MIC: 5.36 μM, 1.62 μg/mL), *Micrococcus* sp. M50 (MIC: 10.34 μM, 3.125 μg/mL), *Lactobacillus* sp. M6 (MIC: 10.34 μM, 3.125 μg/mL), *Bacillus* sp. N16 (MIC: 5.36 μM, 1.62 μg/mL), *Aeromonas* sp. N8 (MIC: 20.68 μM, 6.25 μg/mL), *Alcaligenes* sp. P2 (MIC: 20.68 μM, 6.25 μg/mL), *Alcaligenes* sp. N22 (MIC: 20.68 μM, 6.25 μg/mL), *Alcaligenes* sp. E4	(Gopikrishnan, Radhakrishnan et al. 2016)

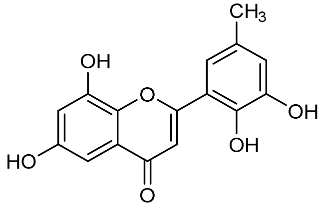
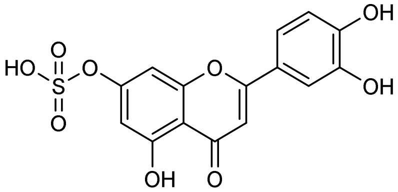
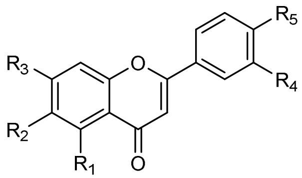
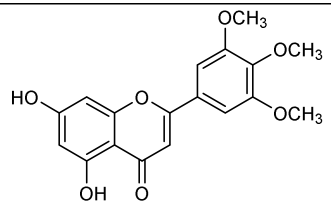
		(MIC: 20.68 μM, 6.25 μg/mL), *Vibrio* sp. M25 (MIC: 41.36 μM, 12.5 μg/mL), *Pseudomonas* sp. P1 (MIC: 82.72 μM, 25 μg/mL), *Pseudomonas* sp. N9 (MIC: 82.72 μM, 25 μg/mL) and *Kurthia* sp. P3 (MIC: 41.36 μM, 12.5 μg/mL); Inhibition of the *Anabaena* sp. and *Nostoc* sp. spore germination at 100 μg/mL and the adherence of the Perna indica mussel foot at 306 ± 19.6 μg/mL	
 Myricetin (**65**): R_1=H, R_2=R_3=OH	Commercial	Low anti-settlement activity against *M. edulis* (8% comparing to positive control copper sulfate).	(Singh, Etoh et al. 1997)
 Kaempferol-3-*O*-rhamnoside (**66**): R_1=Rha, R_2=R_3=H	Commercial	Anti-settlement activity against *M. edulis* (10% of positive control copper sulfate).	(Singh, Etoh et al. 1997)
 Kaempferol-3-O-glucoside (**67**): R_1=Glu, R_2=R_3=H	Commercial	Low anti-settlement activity against mussel *M. edulis* (5% of positive control copper sulfate).	(Singh, Etoh et al. 1997)

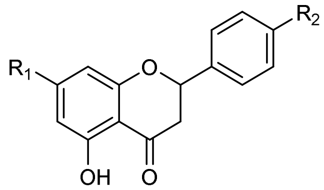
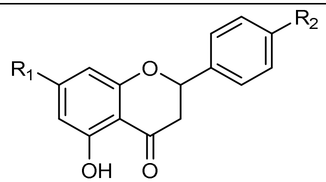
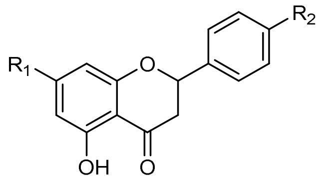
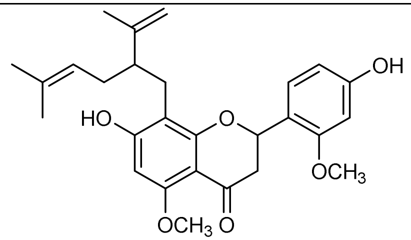
 Quercitrin (**68**): R_1=Rha, R_2=OH, R_3=H	Commercial	Anti-settlement activity against mussel *M. edulis* (20% of positive control copper sulfate).	(Singh, Etoh et al. 1997)
 Neoisorutin (**69**): R_1=Glc-Rha, R_2=OH, R_3=H	Commercial	Anti-settlement activity against mussel *M. edulis* (19% of positive control copper sulfate).	(Singh, Etoh et al. 1997)
	Isolated from the terrestrial plant *Micromelum integerrinum*	Barnacle *A. amphitrite* larvae (EC_{50}: 65.68 μM, 40.1 μg/mL; $LC_{50}/EC_{50} > 5.0$)	(Zhou, Zhang et al. 2009)
 Calycopterin (**70**): R_1=OCH_3, R_2=H, R_3=OH	Isolated from the terrestrial plant *Micromelum integerrinum*	Barnacle *A. amphitrite* larvae (EC_{50}: 9.08 μM, 3.4 μg/mL; $LC_{50}/EC_{50} > 14.7$)	(Zhou, Zhang et al. 2009)
 Casticin (**71**): R_1=H, R_2=OH, R_3=OCH_3	Isolated from the terrestrial plant *Micromelum integerrinum*	Barnacle *A. amphitrite* larvae (EC_{50}: 8.01 μM, 3.0 μg/mL; $LC_{50}/EC_{50} > 16.7$)	(Zhou, Zhang et al. 2009)
	Commercial	Antidiatom activity against *N. leavissima* (EC_{50}: 38.65 μM, 14.47 μg/mL) and *C. socialis* (EC_{50}: 19.53 μM, 7.31 μg/mL)	(Haider, Ma et al. 2020)
 **72**:R_1=R_2=H, R_3=OH	Isolated from the terrestrial plant *Micromelum integerrinum*	Barnacle *A. amphitrite* (EC_{50}: 7.26 μM, 2.5 μg/mL; $LC_{50}/EC_{50} > 20.0$)	(Zhou, Zhang et al. 2009)

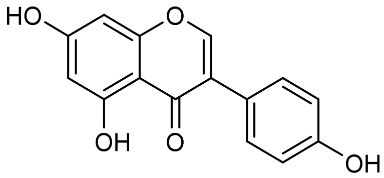
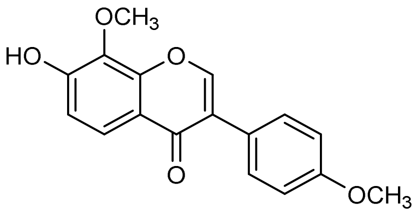
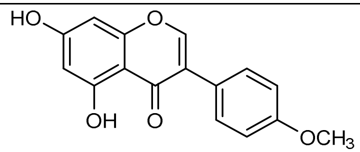
 **73**	Isolated from the plant *Clausena dunniana*	Barnacle *A. amphitrite* (EC_{50}: 37.54 μM, 11.8 μg/mL; LC_{50}/EC_{50} > 4.2)	(Zhou, Zhang et al. 2009)
 Icariin (**74**)	Isolated from the terrestrial plant *Epimedium segittatum*	Barnacle *A. amphitrite* (EC_{50}: 52.17 μM, 35.3 μg/mL; LC_{50}/EC_{50} > 2.8)	(Zhou, Zhang et al. 2009)
 Rutin persulfate (**75**)	Synthesis	Mussel *M. galloprovincialis*, EC_{50}: 22.59 μM; LC_{50}/EC_{50}: >22.13. Inhibitory activity against marine bacteria *Vibrio harveyi* (EC_{50}: 7.69 μM)	(Almeida, Correia-da-Silva et al. 2017)
 **76**	Synthesis	Inhibitory activity against marine bacteria *Halomonas aquamarina* (EC_{50}: 42.3 μM)	(Almeida, Correia-da-Silva et al. 2017)

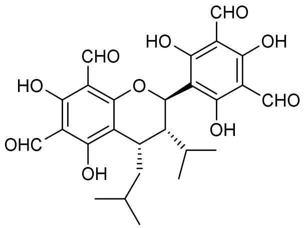
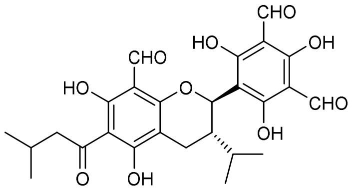
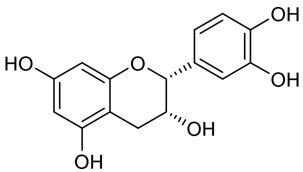
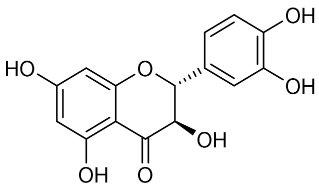
 **77**:$R_1=R_2=R_3=H$ **78**:$R_1=R_3=H$; $R_2=Cl$ **79**:$R_1=H$; $R_2=Cl$; $R_3=OH$	Isolated from the marine-derived fungus *Aspergillus candidus*	Antidiatom activity against *C. socialis*: **77**: EC_{50}: 11.62 μM, 4.0 μg/mL) **78**: EC_{50}: 16.63 μM, 6.3 μg/mL) **79**: EC_{50}: 18.75 μM, 7.4 μg/mL)	(Haider, Ma et al. 2020)
 **80**:$R_1=R_4=H$; $R_2=R_3=R_5=R_6=OH$ **81**:$R_1=R_3=R_4=R_6=OH$; $R_2=R_5=H$ **82**:$R_1=R_3=R_4=R_5=R_6=H$; $R_2=OCH_3$	Commercial	**80**: activity against diatoms *N. leavissima* (EC_{50}: 54.33 μM, 16.42 μg/mL), *C. socialis* (EC_{50}: 44.73 μM, 13.52 μg/mL) and *N. parva* (EC_{50}: 18.76 μM, 5.67 μg/mL) **81**: activity against diatoms *N. leavissima* (EC_{50}: 20.32 μM, 6.14 μg/mL), *C. socialis* (EC_{50}: 19.52 μM, 5.90 μg/mL) and *N. parva* (EC_{50}: 20.38 μM, 6.16 μg/mL) **82**: activity against diatom *C. socialis* (EC_{50}: 37.54 μM, 10.07 μg/mL)	(Haider, Ma et al. 2020)
Flavones			
Code and structure of Flavonoid	**Origin**	**Activity**	**Reference**
 **83**	Commercial	Mussel *M. edulis* (25% of the activity of positive control copper sulfate)	(Singh, Etoh et al. 1997)
 Luteolin 7-O-β-D-glucopyranosyl-2''-sulfate (**84**)	Isolated from the leaf tissue of the marine angiosperm *Thalassia testudinum*	Reduction of the attachment of thraustochytrid *Schizochytrium aggregatum* zoospores (IC_{50}: 511.9 μM, 270 μg/mL)	(Jensen, Jenkins et al. 1998)

 Luteolin (**85**)	Isolated from the South China Sea seagrass *Enhalus acoroides*	Activity against marine bacteria *Loktanella hongkongensis* (MIC: 174.68 μM, 50 μg/mL); low inhibition for bacteria *Pseudoalteromonas piscida*, *Rhodovulum* sp. and *Vibrio alginolyticus*	(Qi, Zhang et al. 2008)
	Isolated from the terrestrial plant *Arachis hypogata*	Activity against barnacle *A. amphitrite* larvae (EC_{50}: 13.28 μM, 3.8 μg/mL; LC_{50}/EC_{50} > 13.2)	(Zhou, Zhang et al. 2009)
	Isolated from an extract of the leaves of eelgrass *Zostera marina*	Inhibition of the settlement of marine bacteria *Vibrio cyclitrophicus* and *Marivita litorea* at 14.5 μg/mL	(Guan, Parrot et al. 2017)
	Commercial	Activity against diatoms *N. leavissima* (EC_{50}: 30.39 μM, 8.70 μg/mL), *C. socialis* (EC_{50}: 21.59 μM, 6.18 μg/mL) and *N. parva* (EC_{50}: 27.15 μM, 7.77 μg/mL)	(Haider, Ma et al. 2020)
 Luteolin-4'-glucuronide (**86**)	Isolated from the South China Sea seagrass *Enhalus acoroides*	Activity against marine bacteria *L. hongkongensis*, *V. alginolyticus*, *Vibrio furnissii* and *Vibrio halioticoli*. Inhibition of *Bugula neritina* larval settlement (EC_{50}: 1.12 μM, 0.52 μg/mL)	(Qi, Zhang et al. 2008)
 Apigenin (**87**): R_1=R_2=OH	Isolated from the terrestrial plant *Apium graveolens*	Activity against barnacle *A. amphitrite* (EC_{50}: 11.47 μM, 3.1 μg/mL; LC_{50}/EC_{50} > 16.1)	(Zhou, Zhang et al. 2009)
 Primuletin (**88**): R_1=R_2=H	Commercial	Activity against barnacle *A. amphitrite* (EC_{50}: 11.75 μM, 2.8 μg/mL; LC_{50}/EC_{50} > 17.9)	(Zhou, Zhang et al. 2009)

 6,8,2'3'-tetrahydroxy-5'-methylflavone (**89**)	Isolated from a broth of gorgonian coral-associated fungus *Penicillium* sp. SCSGAF 0023	Activity against barnacle *A. Amphitrite* (EC_{50} value of 22.35 μM, 6.71 μg/mL; LC_{50}/EC_{50} ratio >14.9)	(Bao, Sun et al. 2013)
 Luteolin-7-sulfate (**90**)	Isolated from an extract of the leaves of eelgrass *Zostera marina*	Inhibition of the settlement of marine bacteria *V. cyclitrophicus* and *M. litorea* at 14.5 μg/mL	(Guan, Parrot et al. 2017)
 **91**: R_1=R_3=R_4=R_5=OCH_3, R_2=H **92**: R_1=R_4=OH, R_2=R_3=R_5=OCH_3 **93**: R_1=R_4=R_5=H; R_2=R_3=OH **94**: R_1=R_2=R_3=H, R_4=R_5=OCH_3	Commercial	**91**: active against diatoms *N. leavissima* (EC_{50}: 26.52 μM, 9.08 μg/mL) and *C. socialis* (EC_{50}: 10.75 μM, 3.68 μg/mL) **92**: active against diatoms *N. leavissima* (EC_{50}: 58.32 μM, 20.08 μg/mL) and *C. socialis* (EC_{50}: 25.15 μM, 8.66 μg/mL) **93**: active against diatom *C. socialis* (EC_{50}: 57.15 μM, 14.53 μg/mL) **94**: active against diatom *N. leavissima* (EC_{50}: 55.19 μM, 15.58 μg/mL)	(Haider, Ma et al. 2020)
 **95**	Synthesis	Activity against mussel *M. galloprovincialis* mussel larvae (EC_{50}: 8.34 μM, 2.87 μg/mL)	(Pereira, Gonçalves et al. 2021)
Flavanones			

Code and structure of Flavonoid	Origin	Activity	Reference
 Naringenin (**96**): R_1=R_2=OH	Isolated from the methanol extract of the bark of *Prunus jamasakura*	Low anti-settlement activity against *M. edulis* at 1.2 mg/cm^2 concentration (11% of the activity of positive control copper sulfate at 0.08 mg/cm^2 concentration)	(Yoshioka, Etoh et al. 1990)
	Commercial	11% activity against mussel *M. edulis* comparing to positive control copper sulfate	(Singh, Etoh et al. 1997)
 Naringin (**97**): R_1=O-Glc-Rha, R_2=OH	Commercial	24% activity against mussel *M. edulis* comparing to positive control copper sulfate	(Singh, Etoh et al. 1997)
 Pinocembrin (**98**): R_1=OH, R_2=H	Isolated from *Eucalyptus signata*	25% activity against mussel *M. edulis* comparing to positive control copper sulfate	(Singh, Etoh et al. 1997)
 2'-methoxykurarinone (**99**)	Isolated from the ethyl acetate extract of the Chinese herb *Sophora flavescens*	Anti-settlement activity against *Balanus albicostatus* (EC_{50}: 4.46 μM, 2.02 μg/mL; LC_{50} value > 25 μg/mL)	(Feng, Ke et al. 2009)
Isoflavones			
Code and structure of Flavonoid	**Origin**	**Activity**	**Reference**

 Genistein (**100**)	Isolated from the bark of *Prunus jamasakura*	Low anti-settlement activity against *M. edulis* at 1.6 mg/cm^2 concentration (9% of the activity of positive control copper sulfate at a concentration of 0.08 mg/cm^2)	(Yoshioka, Etoh et al. 1990)
	Commercial	Low anti-settlement activity against *M. edulis* (9% of the activity comparing to positive control copper sulfate)	(Singh, Etoh et al. 1997)
	Isolated from the plant *Genista tinctoria*	Anti-settlement activity against barnacle *A. amphitrite* (EC_{50}: 11.10 μM, 3.0 μg/mL; LC_{50}/EC_{50}: >16.7) Density of barnacles in panels coated with paint containing genistein was significantly lower after one month of a field assay when compared with the control panel tests.	(Zhou, Zhang et al. 2009)
 8-O-methylretusin (**101**)	Isolated from the plant *Pueraria alopecuroides*	Anti-settlement activity against barnacle *A. amphitrite* (EC_{50}: 44.59 μM, 13.3 μg/mL)	(Zhou, Zhang et al. 2009)
	Isolated from the methanol extract of the leaves of the marine halophyte *Apocynum venetum*	Activity against bacteria *B. thuringiensis* (inhibition zone 9.4 mm) and *P. aeruginosa* (inhibition zone 10.5 mm) at a concentration of 100 μg/disc, the positive control chloramphenicol: inhibition zone of 33.7 and 30.3 mm at the same concentration	(Kong, Fang et al. 2014)
 Biochanin A (**102**)	Commercial	Activity against diatom *C. socialis* (EC_{50}: 28.60 μM, 8.13 μg/mL)	(Haider, Ma et al. 2020)
Other flavonoids			
Code and structure of Flavonoid	**Origin**	**Activity**	**Reference**

 Sideroxylonal A (**103**)	Isolated from the leaves of *Eucalyptus grandis*	High activity against mussel *M. edulis* at a concentration of 0.032 μmol/cm^2	(Singh, Takahashi et al. 1996)
 Grandinal (**104**)	Isolated from the methanolic extract of the leaves of *E. grandis*	Activity against mussel *M. edulis* (same activity as the positive control copper sulfate)	(Singh, Hayakawa et al. 1997)
 Epicatechin (**105**)	Isolated from the methanol extract of the leaves of the marine halophyte *Apocynum venetum*	Activity against bacteria *B. thuringiensis* (inhibition zone: 9.2 mm), *P. elyakovii* (inhibition zone: 10.6 mm) and *P. aeruginosa* (inhibition zone: 10.9 mm) at 100 μg/disc (positive control chloramphenicol: inhibition zone 29.2 – 33.7 mm at the same concentration)	(Kong, Fang et al. 2014)
 Taxifolin (**106**)	Isolated from the mangrove derived actinobacterium *Streptomyces sampsonii* (PM33)	- Activity against bacteria *Staphylococcus* sp. M1 (MIC: 5.32 μM, 1.62 μg/mL), *Micrococcus* sp. M50 (MIC: 10.27 μM, 3.125 μg/mL), *Lactobacillus* sp. M6 (MIC: 10.27 μM, 3.125 μg/mL), *Bacillus* sp. N16 (MIC: 5.32 μM, 1.62 μg/mL), *Aeromonas* sp. N8 (MIC: 20.54 μM, 6.25 μg/mL), *Alcaligenes* sp. P2 (MIC: 20.54 μM, 6.25 μg/mL), *Alcaligenes* sp. N22 (MIC: 20.54 μM, 6.25 μg/mL), *Alcaligenes* sp. E4 (MIC: 20.54 μM, 6.25 μg/mL), *Vibrio* sp. M25 (MIC: 41.08 μM, 12.5 μg/mL), *Pseudomonas* sp. P1 (MIC: 82.17 μM, 25 μg/mL), *Pseudomonas* sp. N9 (MIC:	(Gopikrishnan, Radhakrishnan et al. 2019)

		82.17 μM, 25 μg/mL) and *Kurthia* sp. P3 (MIC: 41.08 μM, 12.5 μg/mL); - Reduction of more than 70% of the *Anabaena* sp. and *Nostoc* sp. spore germination at 100 μg/mL; - Decrease of the foot adherence of mussel *Perna indica*.	

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