

Review

Phytochemistry and Biological Activities of Endophytic Fungi from the Meliaceae Family

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Supplementary Materials

Table S1. Secondary Metabolites Derived from Endophytic fungi-Meliaceae

Table S2. Antimicrobial Activity of Compounds that have been evaluated against several fungi and bacteria

Table S3. Cytotoxic Activity of compounds (165–174) against Several Cells

			<i>G. fujikurai</i> MTCC 11382	<i>Amoora rohituka</i>	Bark	Broth	[61]
Rohitukine <i>N</i> -oxide (247)	C ₁₆ H ₁₉ NO ₅	321.1212	<i>F. oxysporum</i> MTCC 11383	<i>D. binectariferum</i> <i>Hook.f</i>	Leaves	Broth	[61]
			<i>F. solani</i> MTCC 11385	<i>D. binectariferum</i> <i>Hook.f</i>	Fruit	Broth	[61]
			<i>F. oxysporum</i> MTCC 11384	<i>D. binectariferum</i> <i>Hook.f</i>	Bark	Broth	[61]
			<i>G. fujikurai</i> MTCC 11382	<i>Amoora rohituka</i>	Bark	Broth	[61]
Flavopiridol (248)	C ₂₁ H ₂₀ ClNO ₅	401.1030	<i>F. oxysporum</i> MTCC 11383	<i>D. binectariferum</i> <i>Hook.f</i>	Leaves	Broth	[61]
			<i>F. solani</i> MTCC 11385	<i>D. binectariferum</i> <i>Hook.f</i>	Fruit	Broth	[61]
			<i>F. oxysporum</i> MTCC 11384	<i>D. binectariferum</i> <i>Hook.f</i>	Bark	Broth	[61]
			<i>G. fujikurai</i> MTCC 11382	<i>A. rohituka</i>	Bark	Broth	[61]
2-(furan-2-yl)-6-(2S,3S,4-trihydroxybutyl)pyrazine (249)	C ₁₂ H ₁₄ N ₂ O ₄	250.0954	<i>J. endophytica</i> 161111	<i>X. granatum</i>	Root	Broth (glucose 2%, yeast extract 0.5%, peptone 0.5%, KNO ₃ 1.5%, CaCO ₃ 0.4%, and NaCl 0.4% (pH 7.2))	[62]
2-(furan-2-yl)-5-(2S,3S,4-trihydroxybutyl)pyrazine (250)	C ₁₂ H ₁₄ N ₂ O ₄	250.0954	<i>J. endophytica</i> 161111	<i>X. granatum</i>	Root	Broth (glucose 2%, yeast extract 0.5%, peptone 0.5%, KNO ₃ 1.5%, CaCO ₃ 0.4%, and NaCl 0.4% (pH 7.2))	[62]

Fatty Acid & Sugars							
Fusaroside (269)	C ₃₄ H ₅₄ O ₁₃	670.3564	<i>Fusarium</i> sp. LN-11	<i>M. azedarach</i>	Leaves	Liquid Culture	[21]
Phalluside (270)	C ₄₄ H ₈₁ NO ₈	751.5962	<i>Fusarium</i> sp. LN-11	<i>M. azedarach</i>	Leaves	Liquid Culture	[21]
(9R,10R,7E)-6,9,10-trihydroxyoctadec-7-enoic acid (271)	C ₁₈ H ₃₄ O ₅	330.2406	<i>Fusarium</i> sp. LN-11	<i>M. azedarach</i>	Leaves	Liquid Culture	[21]
Porrigenic acid (272)	C ₁₈ H ₃₀ O ₄	310.2144	<i>Fusarium</i> sp. LN-11	<i>M. azedarach</i>	Leaves	Liquid Culture	[21]
(9Z)-2,3-dihydroxypropyl octadeca-9-enoate (273)	C ₂₁ H ₄₀ O ₄	356.2927	<i>Fusarium</i> sp. LN-11	<i>M. azedarach</i>	Leaves	Liquid Culture	[21]
Cerebroside C (274)	C ₃₉ H ₇₁ NO ₉	697.5129	<i>B. dothidea</i> KJ-1	<i>M. azedarach L.</i>	Stem	Rice	[44]
Eucalyptacid A (275)	C ₁₇ H ₃₂ O ₅	316.2250	<i>D. eucalyptorum</i> KY-9	<i>M. azedarach</i>	Leaves	Rice	[50]
Phomopene (276)	C ₁₀ H ₁₈ O ₃	186.1256	<i>D. eucalyptorum</i> KY-9	<i>M. azedarach</i>	Leaves	Rice	[50]

	<i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Cyclo-(Ala-trans-4-OH-Pro) (240)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Cyclo-(cis-OH-D-Pro-L-Phe) (241)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Cyclo-(Gly-Phe) (242)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Cyclo-(Pro-trans-4-OH-Pro) (243)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Cyclo-(Gly-Ala) (244)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	
Uracil (245)	Antifungal activity (MIC: µg/mL) <i>B. cinerea</i> , <i>A. solani</i> , <i>A. alternata</i> , <i>C. gloeosporioides</i> , <i>Fusarium solani</i> , <i>F. oxysporum</i> f. sp. <i>niveum</i> , <i>F. oxysporum</i> f. sp. <i>vasinfectum</i> , <i>G. saubinetii</i> (>100)	[32]
	Positive control (MIC: µg/mL) carbendazim: 12.5, 12.5, 6.25, 6.25, 25, 12.5, 25, 6.25, respectively hymexazol: 12.5, 12.5, 12.5, 12.5, 50, 12.5, 2.5, 12.5, respectively	

Table S3. Cytotoxic Activity of compounds (**165–174**) against Several Cells [59].

Cell	Compound										
	165	166	167	168	169	170	171	172	173	174	Cont.
A375 (IC ₅₀ μM)	>100	>100	34.4	47.4	48.5	71.2	18.0	72.9	41.7	42	18.1
AGS (IC ₅₀ μM)	>100	80.2	21.8	94.2	69.8	82.2	91.5	55.0	27.4	92.4	15.4
HCT-8 (IC ₅₀ μM)	>100	62.2	>100	7.5	4.4	4.2	1.0	0.3	4.7	0.6	22.0
HCT-8/T (IC ₅₀ μM)	>100	64.3	11.2	8.6	6.4	6.5	1.5	1.0	7.2	0.8	28.2
A549 (IC ₅₀ μM)	>100	42.9	27.6	6.4	4.0	3.3	1.0	0.6	2.0	0.6	12.1
MDA-MB-231(IC ₅₀ μM)	>100	62.8	44.6	3.4	6.3	5.5	7.5	1.0	3.7	1.0	6.3
SMMC-7721 (IC ₅₀ μM)	>100	87.4	29.3	>100	76.0	99.8	>100	68.5	50.8	>100	10.7
A2780 (IC ₅₀ μM)	>100	61.1	8.6	7.1	3.8	<1	<1	<1	<1	<1	8.5