Electronic Supporting Information

Fungal phytotoxins with potential herbicidal activity: chemical and biological characterization

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Table 1

Compound	IUPAC name	Source	Target Weed	References
Ascaulitoxin, **1**	(1*R*, 3*S*, 4*S, 5S*, 7R*)-N^2-β-D-Glucopyranoside of the 2,4,7-triamino-5-hydroxy octandioic acid	*Ascochyta caulina*	*Chenopodium album* L.	22
trans-4-Aminoproline, **2**	(2*S*, 4*R*) 4-Amino-pyrrolidine-2-carboxylic acid	"	"	25
Ascaultitoxin aglycone, **3**	(1*R*, 3*S*, 4*S, 5S*, 7R*)-2,4,7-Triamino-5-hydroxyoctandioic acid	"	"	34
Ascosonchine, **4**	(*Z*)-2-Hydroxy-3-(4-pyridyl)-2-propenoic acid	*Ascochyta sonchi*	*C. arvense* L. and *S. arvensis* L.	40
Cytochalasin A, **5**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 21*E*)-19-Benzyl-15-hydroxy-10,17-dimethyl-16-methylene-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12-diene-3,6,21-trione	*Phoma exigua var. heteromorpha*	*C. arvense* L. and *S. arvensis* L., *Bromus tectorum*	44 46, 48 53,
Cytochalasin B, **6**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 20*R*, 21*E*)-19-Benzyl-15-hydroxy-10,17-dimethyl-16-methylene-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12-diene-3,6,21-trione	*Phomaexigua var. exigua, Pyrenophora semeniperda*	"	
Cytochalasin F, **7**	(3*S*, 4*S*, 5*S*, 6*R*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 20*R*, 21*E*)-19-Benzyl-15-14,15-epoxy-hydroxy-10,17-dimethyl-16-methylene-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12-diene-3,6,21-trione	"	"	"
Cytochalasin T, **8**	(3*S*, 4*S*, 5*R*, 8*S*, 9*R*, 13 *E*, 16*R*, 20*R*, 21*E*)-19-Benzyl-6-hydroxy-10,16,17-trimethyl-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12,15-triene-3,21-dione	"	"	"
Cytochalasin Z1, **9**	(3*S*, 4*S*, 5*R*, 8*S*, 9*R*, 13 *E*, 16*R*, 20*R*, 21*E*)-19-(4-Hydroxy-benzyl)-10,16,17-trimethyl-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12,15-triene-3,21-dione			"
Cytochalasin Z2, **10**	(3*S*, 4*S*, 5*S*, 6*E*, 8*S*, 9*R*, 13 *E*, 16*R*, 21*E*)-19-Benzyl-6-hydroxy-10,16,17-trimethyl-2-oxa-20-aza-tricyclo[12.7.0.01,18]henicosa-4,12,15-triene-3,21-dione	"	"	"
Cytochalasin Z3, **11**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 21*E*)-19-Benzyl-7,15-dihydroxy-10,17-dimethyl-16-methylene-2-oxa-	"	"	"

	20-aza-tricyclo[12.7.0.01,18]henicosa-4,12-diene-3,21-dione			
Deoxaphomin, **12**	(3*S*, 4*R*, 5*S*, 7*S*, 8*R*, 9*R*, 13 *E*, 16*R*, 20*R*, 21*E*)18-Benzyl-14-hydroxy-9,16-dimethyl-15-methylene-19-aza-tricyclo[11.7.0.01,17]icosa-3,11-diene-2,5,20-trione	"	"	"
Phomachalasin A, **13**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 21*E,* 23*Z*)-21-Benzyl-17-hydroxy-12,19-dimethyl-18-methylene-2-oxa-21(6,7-Dihydroxy-4-methoxy-bicyclo[3.2.0]hept-2-ene-1-carboxylic acid amide)-22-aza-tricyclo[14.7.0.01,20]tricosa-4,6,14-triene-3,8,23-trione	"	"	49
Phomachalasin B, **14**	(3*S*, 4*R*, 5*S*, 7*S*, 8*R*, 9*R*, 13 *E*, 16*R*, 21*E,* 23*Z*)-20-Benzyl-16-hydroxy-11,18-dimethyl-17-methylene-21-aza-tricyclo[13.7.0.01,19]docosa-3,5,13-triene-2,7,22-trione	"	"	"
Phomachalasin C, **15**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 21*E,* 23*Z*)-21-Benzyl-17-hydroxy-12,19-dimethyl-18-methylene-2-oxa-21(6-hydroxy-4-methoxy-bicyclo[3.2.0]hept-2-ene-1-carboxylic acid amide)-22-aza-tricyclo[14.7.0.01,20]tricosa-4,6,14-triene-3,8,23-trione	"	"	"
Phomachalasin D, **16**	(3*S*, 4*S*, 5*S*, 7*S*, 8*S*, 9*S*, 13 *E*, 16*R*, 21*E,* 23*Z*)-21-Benzyl-17-hydroxy-12,19-dimethyl-18-methylene-2-oxa-21(6-hydroxy-4-methoxy-bicyclo[3.2.0]hept-2-ene-1-carboxylic acid amide)-22-aza-tricyclo[14.7.0.01,20]tricosa-4,6,14-triene-3,8,23-trione	"	"	"
Stagonolide, **17**	(9*S*, 10*R,* 6*E*)-9-Hydroxy-10-propyl-4,5,9,10-tetrahydro-3H-oxecine-2,8-dione	*Stagonospora cirssii*	"	57
Stagonolide B, **18**	(5*R*, 6*E*, 8*S*, 9*S*, 10*R*)-5,8,9-Trihydroxy-10-propyl-3,4,5,8,9,10-hexahydro-oxecin-2-one	"	"	58
Stagonolide C, **19**	(5*S*, 6*E*, 8*S*, 10*R*)-5,8-Dihydroxy-10-methyl-3,4,5,8,9,10-hexahydro-oxecin-2-one	"	"	"
Stagonolide D, **20**	(1*R,* 2S, 7*S*, 8*E*, 10*S*,)-7-Hydroxy-2-methyl-3,11-dioxa-bicyclo[8.1.0]undec-8-en-4-one	"	"	"

Stagonolide E, **21**	(3*Z*, 5*E*, 7*R*, 10*R*)-7-Hydroxy-10-methyl-5-methylene-5,6,7,8,9,10-hexahydro-oxecin-2-one	"	"	"
Stagonolide F, **22**	(6*S*, 7*E*, 9*R*)-6-Hydroxy-10-methyl-3,4,5,6,9,10-hexahydro-oxecin-2-one	"	"	"
Stagonolide G, **23**	(5*S*, 7*Z*, 9*R*, 10*R*)-5,9-Dihydroxy-10-methyl-3,4,5,6,9,10-hexahydro-oxecin-2-one	"	"	59
Stagonolides H, **24**	(1***R***, 2*S*, 5*Z*, 7*S*, 8*E*, 10*S*)-7-Hydroxy-2-methyl-3,11-dioxa-bicyclo[8.1.0]undeca-5,8-dien-4-one	"	"	"
Stagonolide I, **25**	(3*Z*, 5*R*, 6*Z*, 8*S*, 10*R*)-5,8-Dihydroxy-10-methyl-5,8,9,10-tetrahydro-oxecin-2-one	"	"	"
Modiolide A, **26**	(3*Z*, 5*R*, 6*E*, 8*S*, 10*R*) 5,8-Dihydroxy-10-methyl-5,8,9,10-tetrahydro-oxecin-2-one			"
Pinolidoxin, **27**	(2*E*, 4*E*)-Hexa-2,4-dienoic acid (2*S*, 5*E*, 7*R*, 8*S*, 9*R*)-8,9-dihydroxy-2-oxo-10-propyl-3,4,5,8,9,10-hexahydro-2H-oxecin-3-yl ester	*Dydimella pinodes*	*O. crenata, O. cumana, O. minor, O. ramosa*	139, 159
Putaminoxin, **28**	(5*S*, 6*E*)-6-Hydroxy-10-propyl-3,4,5,6,9,10-hexahydro-oxecin-2-one	*Phoma putaminum*	*Erigeron annus* L.	160
Herbarumin I, **29**	(7*S*,8*S*,9*R*)-7,8-Dihydroxy-9-propyl-5-nonen-9-olide	*Phoma herbarum*	*Amaranthus hypochondriacus*	64
Herbarumin II, **30**	(2*R*,7*S*,8*S*,9*R*)-2,7,8-Trihydroxy-9-propyl-5-nonen-9-olide	*P. herbarum* *Dydimella pinodes*	*Pisum sativum* L. *Amaranthus hypochondriacus*	64, 159
2-*epi*-herbarumin, **31**	(2*S*,7*S*,8*S*,9*R*)-2,7,8-Trihydroxy-9-propyl-5-nonen-9-olide	"	"	"
Herbarumin III, **32**	(7*R*,9*R*)-7-Hydroxy-9-propyl-5-nonen-9-olide	*Phoma herbarum*	*Amaranthus hypochondriacus*	126 62
Pinolide, **33**	(3*S*, 6*E*, 8*R*, 9*S*, 10*R*)-3,8,9-Trihydroxy-10-propyl-3,4,5,8,9,10-hexahydro-oxecin-2-one	*Dydimella pinodes*	*O. crenata, O. cumana, O. minor, O. ramosa*	139, 159
Trisubstituted nonenolide, **34**	(6*S*,7*R*,9*R*)-6,7-Dihydroxy-9-propylnon-4-eno-9-lactone	*Phomopsis sp.* HCCB03520	*Medicago sativa* L., *Trifolium hybridum* L., *Buchloe dactyloides*	63
Phyllostictine A, **35**	(1*E*, 5*R*, 11*S*, 12*S*, 15*S*)-4-Ethyl-11,15-dihydroxy-12-methoxy-5-methyl-13-oxa-4-aza-tricyclo[10.2.1.0*2,5*]-pentadec-1-en-3-one	*Phyllosticta cirsii*	*C. arvense* L.	67
Phyllostictine B, **36**	(1*E*, 5*R*, 10*S*, 11*S*, 14*S*)-4-Ethyl-9,13-dihydroxy-10-methoxy-5-methyl-11-oxa-4-aza-	"	"	"

	tricyclo[8.2.1.02,5]tridec-1-en-3-one			
Phyllostictine C, **37**	(1*E*, 5*R*, 10*S*, 11*S*, 14*S*)-4-Ethyl-10,14-dihydroxy-5-(1-hydroxy-ethyl)-11-methoxy-12-oxa-4-aza-tricyclo[9.2.1.02,5]tetradec-1-en-3-one	"	"	"
Phyllostictine D, **38**	(1*E*, 7*S*, 12*S*, 13*S*, 16*S*)-12,16-Dihydroxy-13-methoxy-4,7-dimethyl-14-oxa-4-aza-tricyclo[11.2.1.02,7]hexadec-1-ene-3,8-dione	"	"	"
Phyllostoxin, **39**	Acetic acid 3,7-dimethyl-8-oxo-7-propionyl-bicyclo[4.2.0]octa-1,3,5-trien-2-yl ester	"	"	69
Phyllostin, **40**	(3*R*, 4a*S*, 6*E*, 8*R*, 8a*S*)-8-hydroxy-3-methyl-2-oxo-2,3,4a,5,8,8a-hexahydro-benzo [1,4]dioxine-6-carboxylic acid methyl ester	"	"	"
Scytolide, **41**	(4a*S*, 6*E*, 8*R*, 8a*S*)-6-Acetyl-8-hydroxy-3-methylene-4a,5,8,8a-tetrahydro-benzo[1,4]dioxin-2-one	"	"	"
Drazepinone, **42**	6,8,10a-Trimethyl-5b,6,10,10a-tetrahydro-11-oxa-10-aza-naphtho[2,3-a]azulen-9-one	*Drechslera siccans*	*Lolium perenne* L.	73
Alternethanoxin A, **43**	1-((6*R*)-1,4,6-trihydroxy-7-methoxy-6*H*-benzo-(*d*)chromen-2-yl)ethanone	*Alternaria sonchi*	*S. arvensis* L.	76
Alternethanoxin B, **44**	1-((9*S*)-7,9-dihydroxy-1-methoxy-9*H*-4,8-dioxacyclopenta[*def*]phenanthren-5-yl)ethanone	"	"	"
Alternethanoxin C, **45**	2'-dihydroxymethyl-2,5,6,6'-tetrahydroxy-3'-methoxy-biphenyl-3-carboxylic acid methyl ester	"	"	77
Alternethanoxin D, **46**	(6*S*)-1,4,6,9,10-pentahydroxy-7-methoxy-6*H*-benzo[*c*]chromene-2-carboxylic acid methyl ester	"	"	"
Alternethanoxin E, **47**	(9*S*)-7,9-dihydroxy-2-methoxy-9*H*-4,8-dioxa-cyclopenta[*def*]phenanthrene-5-carboxylic acid methyl este	"	"	"
Spirostaphylotrichin A, **48**	(4*R*, 5*S*, 6*S*, 8*Z*, 10*Z*)-4,6-Dihydroxy-2-methoxy-3-methylene-10-propylidene-2-aza-spiro[4.5]dec-8-ene-1,7-dione	"	"	82
Spirostaphylotrichin C, **49**	(5*R*, 6*S*, 8*Z*, 10*Z*)-6-Hydroxy-2-methoxy-3-methylene-10-propylidene-2-aza-spiro[4.5]dec-8-ene-1,4,7-trione	"	"	"
Spirostaphylotrichin D, **50**	(5*R*, 6*R*, 8*Z*, 10*Z*)-6-Hydroxy-2-methoxy-3-methylene-10-propylidene-2-aza-spiro[4.5]dec-8-	"	"	"

	ene-1,4,7-trione			
Triticone E, **51**	(3*R*, 4*R*, 5*S*, 6*R*, 8*Z*, 10*Z*)-3,4,6-Trihydroxy-2-methoxy-3-methyl-10-propylidene-2-aza-spiro[4.5]dec-8-ene-1,7-dione	"	"	"
Spirostaphylotrichin R, **52**	(3*R*, 4*R*, 5*S*, 6*S*, 8*Z*, 10*Z*)-3,4,6-Trihydroxy-2-methoxy-3-methyl-10-propylidene-2-aza-spiro[4.5]dec-8-ene-1,7-dione	"	"	"
Spirostaphylotrichin V, **53**	(3*R*, 4*R*, 5*S*, 6*S*, 8*Z*, 10*Z*)-4,6-Dihydroxy-2,3-dimethoxy-3-methyl-10-propylidene-2-aza-spiro[4.5]dec-8-ene-1,7-dione	"	"	"
Spirostaphylotrichin W, **54**	(3*S**,4*S**,5*S**,6*S**,9*Z*,10*Z*)-4,6-dihydroxy-2,3-dimethoxy-3-methyl-10-propyliden-2-azaspiro [4.5]dec-8-ene-1,7-dione	"	"	"
Papyracillic acid, **55**	(3*E*, 5*S*, 7*R*, 8*S*)-7-Hydroxy-4-methoxy-7,8-dimethyl-9-methylene-1,6-dioxa-spiro[4.4]non-3-en-2-one	*Ascochyta agropyrina var. nana*	*Orobanche crenata, O. cumana, O. minor, O. ramosa*	80
Palmarumycin EG_1, **56**	1,1-(1,8-Dioxa-naphtalene)-5,8-dihydroxy-4-methoxy-3,4-dihydro-2H-naphthalene	*Edenia gomezpompae*	*A. hypochondriacus, S. lycopersicum* L. *and E. crusgalli* L.	83
Palmarumycin CP_2, **57**	(4,4-Dioxa-naphtalene)-8-hydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Palmarumycin CP_{17}, **58**	(4,4-Dioxa-naphtalene)-5,8-dihydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Palmarumycin CP_{19}, **59**	1,1-(1,8-Dioxa-naphtalene)-5-hydroxy-4-methoxy-3,4-dihydro-2*H*-naphthalene	"	"	"
Preussomerin EG_1, **60**	(4,4,5-Trioxa-4*H*-naphthalen-1-one)-8-hydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Preussomerin EG_2, **61**	(2,3-Dihydro-3-hydroxy-4,4,5-trioxa-4*H*-naphthalen-1-one)-8-hydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Preussomerin EG_3, **62**	(2,3-Dihydro-3-methoxy-4,4,5-trioxa-4*H*-naphthalen-1-one)-8-hydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Preussomerin EG_4, **63**	(2,3-Dihydro-4,4,5-trioxa-4*H*-naphthalen-1-one)-8-hydroxy-3,4-dihydro-2*H*-naphthalen-1-one	"	"	"
Agropyrenol, **64**	2-(3,4-dihydroxypent-1-enyl)-6-hydroxybenzaldehyde	*Ascochyta agropyrina var.*	*Elytrigia repens* L.	84

		nana		
Agropyrenal, **65**	7-Hydroxy-8-methoxy-4-methyl-naphthalene-1-carbaldehyde	"	"	"
Agrpyrenone, **66**	5,7-Dihydroxy-3,4,6-trimethyl-3H-benzofuran-2-one	"	"	"
Cyclopaldic acid, **67**	3,5-Dihydroxy-7-methoxy-6-methyl-1-oxo-1,3-dihydro-isobenzofuran-4-carbaldehyde	*Seiridium cupressi*	*Cupressus sempervirens* L.	139, 158
6-Hydroymellein, **68**	(3*R*)-6,8-Dihydroxy-3-methyl-isochroman-1-one	*P. chenopodiicola*	*C. album* L.	85
Sphaeropsidin A, **69**		*Diplodia cupressi*	*O. crenata, O. cumana, O. minor, O. ramosa*	139, 155
Chenopodolin, **70**	(1*S*,2*S*,3*S*,4*S*,5*S*,9*R*,10*S*,12*S*,13*S*)-1,12-acetoxy-2,3-hydroxy-6-oxopimara-7-(8),15-dien-18-oic acid 2,18-lactone	*Phoma chenopodiicola*	*C. album* L.	99
Pyrenophoric acid, **71**	(2*Z*,4*E*)-5-[(7*S*,9*S*,10*R*,12*R*)-3,4-dihydroxy-2,2,6-trimethylcyclohexyl)]-3-methylpenta-2,4-dienoic acid	*Pyrenophora semeniperda*	*Bromus tectorum*	96
Pyrenophoric acid B, **72**	(2*Z*,4*E*)-5-[(7*R**,10*R**,12*R**)-1,4-dihydroxy-2,2,6-trimethylcyclohexyl)]-3-methylpenta-2,4-dienoic acid	"	"	97
Pyrenophoric acid C, **73**	(2*Z*,4*E*)-5-[(7*S**,9*S**,10*R**,12*S**)-3,4-hydroxy-2,2,6-trimethylcyclohexyl)]-3-methylpenta-2,4-dienoic acid	"	"	"
Absiscic acid, **74**	5-(1-Hydroxy-2,6,6-trimethyl-4-oxo-cyclohex-2-enyl)-3-methyl-penta-2,4-dienoic acid	"	"	"
Phomentrioloxin, **75**	(*1R,2R,3R,4R*)-3-methoxy-6-(7-methyl-3-methylene-oct-6-en-1-ynyl)-cyclohex-5-ene-1,2,4-triol.	*Diaporthe gulyae*	*Cartamus lanatus* L.	86
Phomentrioloxin B, **76**	4,6-dihydroxy-5-methoxy-2-(7-methyl-3-methylene-oct-6-en-1-ynyl)-2-cyclohexenone	"	"	95
Phomentrioloxin C, **77**	2,5-dihydroxy-6-methoxy-3-(7-methyl-3-methylene-oct-6-en-1-ynyl)-3-cyclohexenone	"	"	"
Fusicoccin A, **78**	(1*S*, 3*Z*, 4*R*, 5*R*, 6*R*, 6a*S*, 9*S*, 9a*E*, 10*R*)-Acetic acid 2-[1,5-dihydroxy-3-(2-isopropenyloxy-1-methyl-ethyl)-9-methoxymethyl-6,10a-dimethyl-1,2,4,5,6,6a,7,8,9,10a-decahydro-dicyclopenta[a,d]cycloocten-4-yloxy]-6-(1,1-dimethyl-allyloxymethyl)-3,5-dihydroxy-	*Fusicoccum amygdali*	*O. crenata, O. cumana, O. minor, O. ramosa*	140, 147, 148, 153, 154

	tetrahydro-pyran-4-yl ester			
Didiacetylfusicoccin A, **79**	(1*S*, 3*Z*, 4*R*, 5*R*, 6*R*, 6a*S*, 9*S*, 9a*E*, 10*R*)-2-[1,5-dihydroxy-3-(2-isopropenyloxy-1-methyl-ethyl)-9-methoxymethyl-6,10a-dimethyl-1,2,4,5,6,6a,7,8,9,10a-decahydro-dicyclopenta[a,d]cycloocten-4-yloxy]-6-(1,1-dimethyl-allyloxymethyl)-3, 4, 5-trihydroxy-tetrahydro-pyran- ester	"	"	"
Cotylenol, **80**	(1*S*, 3*Z*, 4*R*, 5*R*, 6*R*, 6a*S*, 9*R*, 9a*E*, 10a*R*)-3-Isopropyl-9-methoxymethyl-6,10a-dimethyl-1,2,4,5,6,6a,7,8,9,10a-decahydro-dicyclopenta[a,d]cyclooctene-1,4,5,9-tetraol	*Chladiosporum* sp. 501-7w	"	140, 149-153
Cotylenin A, **81**	(1*R*, 3a*S*, 4*R*, 5*R*, 6*R*, 6a*Z*, 9*S*, 9a*R*, 10*E*)-7-Isopropyl-1-methoxymethyl-6-(9*R*, 10*S*)-(2-methoxymethyl-4,9-dimethyl-9-oxiranyl-3,7,10,11-tetraoxa-tricyclo[6.2.1.01,6]undec-5-yloxy)-4,9a-dimethyl-1,2,3,3a,4,5,6,8,9,9a-decahydro-dicyclopenta[a,d]cyclooctene-1,5,9-triol	"	"	"
Fusicoccin A deacetylaglycone, **82**	(1*S*, 3*Z*, 4*R*, 5*R*, 6*R*, 6a*S*, 9*S*, 9a*E*, 10*R*)-3-((1*S*)-2-Hydroxy-1-methyl-ethyl)-9-methoxymethyl-6,10a-dimethyl-1,2,4,5,6,6a,7,8,9,10a-decahydro-dicyclopenta[a,d]cyclooctene-1,4,5-triol	*Fusicoccum amigdaly*	"	140, 147, 148, 153, 154
8,9-Isoprpyliden derivative of fusicoccin A deacetylaglycone, **83**	(1*S*, 3*Z*, 4*R*, 5*R*, 6*R*, 6a*S*, 9*S*, 9a*E*, 10*R*)-3-((1*S*)-2-Hydroxy-1-methyl-ethyl)-4,5-diisopropoxy-9-methoxymethyl-6,10a-dimethyl-1,2,4,5,6,6a,7,8,9,10a-decahydro-dicyclopenta[a,d]cycloocten-1-ol	"	"	"
Isomer fusicoccin A, **84**	Acetic acid 3,4,5-triacetoxy-6-[1,5,9-triacetoxy-3-(2-acetoxy-1-methyl-ethyl)-6,11a-dimethyl-2,4,5,6,6a,7,8,9,10,11a-decahydro-1H-benzo[a]cyclopenta[d]cycloocten-4-yloxy]-tetrahydro-pyran-2-yl ester	"	"	140, 153, 154
Isomer fusicoccin A, **85**	Acetic acid 2-[1,5-diacetoxy-6,11a-dimethyl-4-(3,4,5-triacetoxy-6-acetoxymethyl-tetrahydro-pyran-2-yloxy)-2,4,5,6,6a,7,8,11a-octahydro-1H-benzo[a]cyclopenta[d]cycloocten-3-	"	"	"

	yl]-propyl ester			
Ophiobolin A, **86**	(2*S*, 3*R*, 6*S*, 7*E*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-hydroxy-5-oxo-14,17-epoxyophiobola-7,18-dien-7-al	*Drechslera gigantea*	*Digitaria sanguinalis*	100
6-*epi*-Ophiobolin A, **87**	(2*S*, 3*R*, 6*R*, 7*E*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-hydroxy-5-oxo-14,17-epoxyophiobola-7,18-dien-7-al	"	"	"
3-Anhydro-6-*epi*-ophiobolin A, **88**	(2*S*, 6*R*, 7*E*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-dehydroxy-4-dehydro -14,17-epoxyophiobola-7,18-dien-7-al	"	"	"
Ophiobolin B, **89**	(2*S*, 3*R*, 6*S*, 7*E*, 10*R*, 11*R*, 14*S*, 15*S*)-3-hydroxy-14-hydroxy phiobola-7,18-dien-7-al	"	"	110
Ophiobolin I, **90**	(2*S*, 6*S*, 7*E*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-dehydroxy-4-dehydro- -14,17-epoxyophiobola-7,18-dien-7-hydroxymethyl	"	"	100
Ophiobolin E, **91**	(2*S*, 3*R*, 6*S*, 7*E,* 11*R,* 15*S*)-3-hydroxy -14,17-dihydropyranophiobola-7,10,12,18-tetraen-7-al.	"	"	110
Ophiobolin J, **92**	(2*S*, 6*Z*, 8*S*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-dehydroxy-4-dehydro -14,17-epoxyophiobola-7,18-dien-7-hydroxymethyl	"	"	"
8-*epi*Ophiobolin J, **93**	(2*S*, 6*Z*, 8*R*, 10*R*, 11*R*, 14*S*, 15*S*, 17*R*)-3-dehydroxy-4-dehydro -14,17-epoxyophiobola-7,18-dien-7-hydroxymethyl	"	"	"
Sporogen AO-1, **94**	(1*R*, 1a*R*, 3*Z*, 6*R*, 7*R*, 7a*R*)-6-Hydroxy-1a-isopropyl-7,7a-dimethyl-4,5,6,7,7a,7b-hexahydro-1a*H*-1-oxa-cyclopropa[a]naphthalen-2-one	*Penicillium sp. G1-a14*	*A. hypochondriacus E. crus-galli* L.	98
Dihydrosporogen AO-1, **95**	(1*R*, 1a*S*, 2*S*, 3*Z*, 6*R*, 7*R*, 7a*R*)-1a-Isopropyl-7,7a-dimethyl-1a,2,4,5,6,7,7a,7b-octahydro-1-oxa-cyclopropa[a]naphthalene-2,6-diol	"	"	"
Gulypyrone A, **96**	(3*E*, 5*Z*)6-((2*S*)-2-Hydroxy-1-methyl-propyl)-4-methoxy-5-methyl-pyran-2-one	*D. gulyae*	*Cartamus lanatus* L.	95
Gulypyrone B, **97**	6-(3-hydroxy-1-methylpropenyl)-4-methoxy-3-methylpyran-2-one,	"	"	"
Chenopodolan A , **98**	2-(3-methoxy-2,6-dimethyl-7a*H*-furo[2,3-b]pyran-4-yl)-butane-2,3-diol	*P. chenopodiicola*	*C. album*	85
Chenopodolan B, **99**	1-(3-methoxy-2,6-dimethyl-7a*H*-furo[2,3-b]pyran-4-yl)ethanol	"	"	"
Chenopodolan C, **100**	3-methoxy-2,6-dimethyl-4-(1-methylpropenyl)-7a*H*-furo[2,3-	"	"	"

	b]pyran			
Tenuazonic acid, **101**	(5*S*,6*S*-3-acetyl-5-*sec*-butyl-4-hydroxypyrrolidone-2,4-dione)	*Alternaria alternata*	*Ageratina adenophora*	119
Cyperin, **102**	characterized as 2-(3-Hydroxy-5-methyl-phenoxy)-5-methoxy-3-methyl-phenol	*Phoma sorghina, and Ascochyta cypericola*	*Cyperus rotundus* L. *Phytolacca americana* L.	124, 125, 127
O-Methylated SMA93 , **103**	3-[2-(2,4-dihydroxy-6-methyl-phenyl)-2-oxo-ethyl]-6-methoxy-isochromen-1-one	*Fusarium proliferatum* ZS07	*Tettigonia chinensis, Amaranthus retroflexus* L.	128
Radicin, **104**	3-hydroxy-2-methyl-7-propenyl-2,3-dihydro-pyrano[4,3-b]pyran-4,5-dione	*Fusarium proliferatum* ZS07, *Curvularia sp.* FH01	*T. chinensis, A. retroflexus* L. *E. crusgalli* L.	128 129
1,4-Disubstituted pentanone, **105**	1-hydroxy-4-(3,5-dimethyl-4-hydroxyphenyl)-pentan-3-one	*P. herbarum* FGCC#54	*Parthenium hysterophorus* L.	129
Phthalic acid butyl isobutyl ester, **106**	1-(1-Butoxy-vinyl)-2-(1-isobutoxy-vinyl)-benzene	*Curvularia sp.* FH01	*E. crusgalli* L.	130
Vulculic acid, **107**	(2-Acetyl-3,4-dihydroxy-5-methoxy-phenyl)-acetic acid	*Nimbya alternantherae*	*Alternanthera philoxeroides*	131, 134
Verrucarin A, **108**	4β,15α-Dioxa-(6-oxo-hexa-2,4-dienoic acid (4-hydroxy-3-methyl-5-oxo-pentyloxy ester))-ester-12,13-epoxytrichotec-9-ene	*Myrothecium verrucaria*	*O. ramosa*	146
Verrucarin B, **109**	4β,15α-Dioxa-(6-oxo-hexa-2,4-dienoic acid 2-(3-formyl-2-methyl-oxiranyl)-ethyloxy ester)-12,13-epoxytrichotec-9-ene	"	"	"
Verrucarin L acetate, **110**	8-Acetoxy-4β,15α-dioxa-(6-oxo-hexa-2,4-dienoic acid 3-methyl-5-oxo-pent-3-enyloxy ester)-ester-12,13-epoxytrichotec-9-ene	"	"	"
Verrucarin M, **111**	3-Hydroy-4β,15α-dioxa-(6-oxo-hexa-2,4-dienoic acid 3-methyl-5-oxo-pent-3-enyloxy ester)-ester-12,13-epoxytrichotec-9-ene	"	"	"
Roridin A, **112**	4β,15α-Dioxa-(4-hydroxy-3-methyl-5-oxo-pentyloxy ester)-(6-oxa-7-hydroxy-octa-2,4-dienoic acid) ester-12,13-epoxytrichotec-9-ene	"	"	"
Isotrichoverrin B, **113**	4β-Oxa-(6,7-Dihydroxy-octa-2,4-dienoic acid ester)-15α-oxa-(5-	"	"	"

	hydroxy-3-methyl-pent-2-enoic ester)-12,13-epoxytrichotec-9-ene			
Trichoverrol B, **114**	4β-Oxa-(6,7-Dihydroxy-octa-2,4-dienoic acid ester)-15a-hydroxy-12,13-epoxytrichotec-9-ene	"	"	"
Neosolaniol, **115**	4β,15-diacetoxy-3α,8α-dihydroxy-12,13-epoxytrichotec-9-ene	"	"	"
Neosolaniolmonoacetate, **116**	3-Hydroxy-4β,15α-triacetoxy-12,13-epoxytrichotec-9ene	*Fusarium compactum*	"	"
Diacetoxyscirpenol, 117	3-Hydroxy-4β,15α-diacetoxy-12,13-epoxytrichotec-9-ene	*Fusarium* spp.	"	7
T-2, **118**	3-Hydroxy-4β,15α-diacetoxy-8a-(3methyl-butyrryloxy)-12,13-epoxytrichotec-9-ene	"	"	"
HT-2, **119**	3α,4β-Dihydroxy-15-acetoxy-8a-(3methyl-butyrryloxy)-12,13-epoxytrichotec-9-ene	"	"	"
Sphaeropsidone, **120**	(1*R*, 3*E*, 5*S*, 6*R*)-5-Hydroxy-4-methoxy-7-oxa-bicyclo[4.1.0]hept-3-en-2-one	*D. cupressi*	*O. crenata, O. cumana, O. minor, O. ramosa*	139, 156
epi-Sphaeropsidone, **121**	(1*R*, 3*E*, 5*R*, 6*R*)-5-Hydroxy-4-methoxy-7-oxa-bicyclo[4.1.0]hept-3-en-2-one	"	"	"
epi-Epoformin, **122**	(1*R*, 3*Z*, 5*S*, 6*R*)-5-Hydroxy-3-methyl-7-oxa-bicyclo[4.1.0]hept-3-en-2-one	*Diplodia quercivora*	"	139, 157
Cavoxin, **123**	2-Hydroxy-6-hydroxymethyl-4-methoxy-3-octa-2,4-dienoyl-benzoic acid	*Phoma cava*		139, 160
Cavoxone, **124**	7-Hydroxymethyl-5-methoxy-4-oxo-2-pent-1-enyl-chroman-8-carboxylic acid	"	"	"