Support Information

Polyketide Derivatives from Mangrove Derived Endophytic Fungus *Pseudopestalotiopsis theae*

Xiaoqin Yu^{1, 2}, Werner E. G. Müller ³, Dieter Meier ¹, Rainer Kalscheuer ¹, Zhiyong Guo ², Kun Zou ², Blessing O. Umeokoli ⁴, Zhen Liu ^{1,*} and Peter Proksch ^{1, 2,*}

- ¹ Institute of Pharmaceutical Biology and Biotechnology, Heinrich-Heine-University Duesseldorf, 40225 Duesseldorf, Germany; xiyu101@hhu.de (X.Y.); dieter.meier@hhu.de (D.M.); Rainer.Kalscheuer@hhu.de (R.K.)
- ² Hubei Key Laboratory of Natural Products Research and Development, College of Biological and Pharmaceutical Sciences, China Three Gorges University, Yichang 443002, People's Republic of China; zhyguoctgu@foxmail.com (Z.G.); kzou@ctgu.edu.cn (K.Z.)
- ³ Institute of Physiological Chemistry, Universitätsmedizin der Johannes Gutenberg-Universität Mainz, 55128 Mainz, Germany; wmueller@uni-mainz.de (W.E.G.M.)
- ⁴ Department of Pharmaceutical and Medicinal Chemistry, Nnamdi Azikiwe University, Awka, Nigeria; blessingumeokoli@gmail.com (B.O.U.)
- * Correspondence: zhenfeizi0@sina.com (Z.L.); proksch@uni-duesseldorf (P.P.); Tel.: +49-211-81-14163

Table of Content

Figure S1. The HRESIMS of compound 1	8
Figure S2. The UV spectrum of compound 1.	8
Figure S3. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 1 .	9
Figure S4. The ¹³ C-NMR (150 MHz, DMSO- d_6) spectrum of compound 1	9
Figure S5. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 1	10
Figure S6. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 1	10
Figure S7. The HMBC (600 MHz, DMSO- d_6) spectrum of compound 1	11
Figure S8. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 1	11
Figure S9. The HRESIMS of compound 2	12
Figure S10. The UV spectrum of compound 2.	12
Figure S11. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 2	13
Figure S12. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 2	13
Figure S13. The HSQC (600 MHz, DMSO- d_6) spectrum of compound 2	14
Figure S14. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 2.	14
Figure S15. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 2	15
Figure S16. The HRESIMS of compound 3.	15
Figure S17. The UV spectrum of compound 3.	16
Figure S18. The ¹ H-NMR (600 MHz, Acetone- d_6) spectrum of compound 3	16
Figure S19. The ¹³ C-NMR (150 MHz, Acetone- d_6) spectrum of compound 3	17
Figure S20. The ¹ H- ¹ H COSY (600 MHz, Acetone- d_6) spectrum of compound 3	17
Figure S21. The HSQC (600 MHz, Acetone- d_6) spectrum of compound 3 .	18
Figure S22. The HMBC (600 MHz, Acetone- d_6) spectrum of compound 3 .	18
Figure S23. The ROESY (600 MHz, Acetone-d ₆) spectrum of compound 3	19
Figure S24. The HRESIMS of compound 4.	19
Figure S25. The UV spectrum of compound 4.	20
Figure S26. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 4	20
Figure S27. The ¹³ C-NMR (150 MHz, DMSO- d_6) spectrum of compound 4	21
Figure S28. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 4	21
Figure S29. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 4	22
Figure S30. The HMBC (600MHz, DMSO- <i>d</i> ₆) spectrum of compound 4.	22

Figure S31. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 4	23
Figure S32. The HRESIMS of compound 5.	23
Figure S33. The UV spectrum of compound 5	24
Figure S34. The ¹ H-NMR (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 5	24
Figure S35. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 5	25
Figure S36. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 5	25
Figure S37. The HMBC (600MHz, DMSO- <i>d</i> ₆) spectrum of compound 5.	26
Figure S38. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 5	26
Figure S39. The HRESIMS of compound 6.	27
Figure S40. The UV spectrum of compound 6	27
Figure S41. The ¹ H-NMR (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 6	28
Figure S42. The ¹³ C-NMR (150 MHz, DMSO- d_6) spectrum of compound 6	28
Figure S43. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 6	29
Figure S44. The HSQC (600 MHz, DMSO- d_6) spectrum of compound 6	29
Figure S45. The HMBC (600 MHz, DMSO- d_6) spectrum of compound 6 .	
Figure S46. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 6	
Figure S47. The HRESIMS of compound 7.	31
Figure S48. The UV spectrum of compound 7	31
Figure S49. The ¹ H-NMR (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 7	32
Figure S50. The ¹³ C-NMR (150 MHz, DMSO- d_6) spectrum of compound 7	32
Figure S51. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 7	
Figure S52. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 7	
Figure S53. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 7.	34
Figure S54. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 7	34
Figure S55. The HREISMS of compound 8.	35
Figure S56. The UV spectrum of compound 8	35
Figure S57. The ¹ H-NMR (600 MHz, Acetone- d_6) spectrum of compound 8	
Figure S58. The ¹³ C-NMR (150 MHz, Acetone- d_6) spectrum of compound 8	36
Figure S59. The ¹ H-H COSY (600 MHz, Acetone- d_6) spectrum of compound 8	37
Figure S60. The HSQC (600 MHz, Acetone- d_6) spectrum of compound 8 .	37
Figure S61. The HMBC (600 MHz, Acetone- d_6) spectrum of compound 8	
Figure S62. The ROESY (600 MHz, Acetone- d_6) spectrum of compound 8	

Figure S63. The HREISMS of compound 9.	
Figure S64. The UV spectrum of compound 9	
Figure S65. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 9	40
Figure S66. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 9	40
Figure S67. The HSQC (600 MHz, DMSO- d_6) spectrum of compound 9	41
Figure S68. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 9.	41
Figure S69. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 9	42
Figure S70. The HREISMS of compound 15.	42
Figure S71. The UV spectrum of compound 15.	43
Figure S72. The ¹ H-NMR (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 15	43
Figure S73. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 15	44
Figure S74. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 15	44
Figure S75. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 15.	45
Figure S76. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 15	45
Figure S77. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 15.	46
Figure S78. The HREISMS of compound 16.	46
Figure S79. The UV spectrum of compound 16.	47
Figure S80. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 16	47
Figure S81. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 16	48
Figure S82. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 16	48
Figure S83. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 16.	49
Figure S84. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 16	49
Figure S85. The ROESY (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 16.	50
Figure S86. The HREISMS of compound 17.	50
Figure S87. The UV spectrum of compound 17.	51
Figure S88. The ¹ H-NMR (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 17	51
Figure S89. The ¹³ C-NMR (75 MHz, DMSO- <i>d</i> ₆) spectrum of compound 17	52
Figure S90. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (300 MHz, DMSO- d_{6}) spectrum of compound 17	52
Figure S91. The HSQC (300 MHz, DMSO- d_6) spectrum of compound 17.	53
Figure S92. The HMBC (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 17	53
Figure S93. The ROESY (300 MHz, DMSO- d_6) spectrum of compound 17.	54
Figure S94. The HREISMS of compound 18.	54

Figure S95. The UV spectrum of compound 18.	55
Figure S96. The ¹ H-NMR (300 MHz, DMSO- d_6) spectrum of compound 18	55
Figure S97. The ¹³ C-NMR (75 MHz, DMSO- <i>d</i> ₆) spectrum of compound 18	56
Figure S98. The ¹ H- ¹ H COSY (300 MHz, DMSO- d_6) spectrum of compound 18	56
Figure S99. The HSQC (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 18	57
Figure S100. The HMBC (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 18	57
Figure S101. The ROESY (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 18.	58
Figure S102. The HREISMS of compound 19.	58
Figure S103. The UV spectrum of compound 19.	59
Figure S104. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 19.	59
Figure S105. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 19	60
Figure S106. The HSQC (600MHz, DMSO- <i>d</i> ₆) spectrum of compound 19.	60
Figure S107. The HMBC (600MHz, DMSO- <i>d</i> ₆) spectrum of compound 19	61
Figure S108. The ROESY (600 MHz, DMSO- d_6) spectrum of compound 19.	61
Figure S109. The HREISMS of compound 20.	62
Figure S110. The UV spectrum of compound 20.	62
Figure S111. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 20	63
Figure S112. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 20	63
Figure S113. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 20	64
Figure S114. The HMBC (600 MHz, DMSO- d_6) spectrum of compound 20	64
Figure S115. The ROESY ((600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 20	65
Figure S116. The HREISMS of compound 21.	65
Figure S117. The UV spectrum of compound 21.	66
Figure S118. The ¹ H-NMR (300 MHz, DMSO- d_6) spectrum of compound 21.	66
Figure S119. The ¹³ C-NMR (75 MHz, DMSO- d_6) spectrum of compound 21 .	67
Figure S120. The ¹ H- ¹ H COSY (300 MHz, DMSO- d_6) spectrum of compound 21	67
Figure S121. The HSQC (300 MHz, DMSO- <i>d</i> ₆) spectrum of compound 21	68
Figure S122. The HMBC (300 MHz, DMSO- d_6) spectrum of compound 21	68
Figure S123. The ROESY (300 MHz, DMSO- d_6) spectrum of compound 21.	69
Figure S124. The HREISMS of compound 22.	69
Figure S125. The UV spectrum of compound 22.	70
Figure S126. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 22 .	70

Figure S127. The ¹³ C-NMR (150 MHz, DMSO- d_6) spectrum of compound 22.	71
Figure S128. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 22	71
Figure S129. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 22.	72
Figure S130. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 22	72
Figure S131. The ROESY (600 MHz, DMSO- d_6) spectrum of compound 22 .	73
Figure S132. The HREISMS of compound 23.	73
Figure S133. The UV spectrum of compound 23.	74
Figure S134. The ¹ H-NMR (600 MHz, DMSO- d_6) spectrum of compound 23 .	74
Figure S135. The ¹ H- ¹ H COSY (600 MHz, DMSO- d_6) spectrum of compound 23	75
Figure S136. The HSQC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 23.	75
Figure S137. The HMBC (600 MHz, DMSO- <i>d</i> ₆) spectrum of compound 23	76
Figure S138. The ROESY (600 MHz, DMSO- d_6) spectrum of compound 23.	76
Figure S139. The ¹ H-NMR (600 MHz, Prydine- d_5) spectrum of 1a .	77
Figure S140. The ¹ H- ¹ H COSY (600 MHz, Prydine- d_5) spectrum of 1a .	77
Figure S141. The ESIMS of 1a	78
Figure S142. The ¹ H-NMR (600 MHz, Prydine- d_5) spectrum of 1b	78
Figure S143. The ¹ H- ¹ H COSY (600 MHz, Prydine- d_5) spectrum of 1b .	79
Figure S144. The ESIMS of 1b.	79
Figure S145. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 7a.	80
Figure S146. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 7a.	80
Figure S147. The ESIMS of 7a	81
Figure S148. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 7b.	81
Figure S149. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 7b.	82
Figure S150. The ESIMS of 7b.	82
Figure S151. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 8a.	83
Figure S152. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 8a.	
Figure S153. The ROESY (600 MHz, CD ₃ OD) spectrum of 8a.	
Figure S154. The ESIMS of 8a	
Figure S155. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 8b	
Figure S156. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 8b.	
Figure S157. The ROESY (600 MHz, CD ₃ OD) spectrum of 8b.	
Figure S158. The ESIMS of 8b.	

Figure S159. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 17a	
Figure S160. The ESIMS of 17a.	
Figure S161. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 17b.	
Figure S162. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 17b	
Figure S163. The ESIMS of 17b.	
Figure S164. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 17c.	
Figure S165. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 17c.	90
Figure S166. The ESIMS of 17c.	90
Figure S167. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 18a.	91
Figure S168. The ¹ H- ¹ H COSY (600 MHz, CD3OD) spectrum of 18a.	91
Figure S169. The ESIMS of 18a.	92
Figure S170. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 18b.	92
Figure S171. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 18b	93
Figure S172. The ESIMS of 18b.	93
Figure S173. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 25a.	94
Figure S174. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 25a.	94
Figure S175. The ESIMS of 25a.	95
Figure S176. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 25b.	96
Figure S177. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 25b.	96
Figure S178. The ESIMS of 25b.	97
Figure S179. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 26a.	
Figure S180. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 26a.	
Figure S181. The ESIMS of 26a.	
Figure S182. The ¹ H-NMR (600 MHz, CD ₃ OD) spectrum of 26b.	
Figure S183. The ¹ H- ¹ H COSY (600 MHz, CD ₃ OD) spectrum of 26b	100
Figure S184. The ESIMS of 26b.	100
Table S1. SMILES table of compounds 1–26.	101
Table S2. Results of cytotoxicity and antibacterial activity assay of compounds $1-26$	102



Figure S1. The HRESIMS of compound 1.



Figure S2. The UV spectrum of compound 1.



Figure S3. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 1.



Figure S4. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 1.



Figure S6. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 1.



Figure S7. The HMBC (600 MHz, DMSO- d_6) spectrum of compound 1.



Figure S8. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 1.



Figure S9. The HRESIMS of compound 2.



Figure S10. The UV spectrum of compound 2.



Figure S11. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 2.



Figure S12. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 2.



Figure S14. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 2.



9 #182-268 RT: 3.72-5.19 AV: 43 SB: 365 5.66-16.82 , 0.59-4.37 NL: 6.32E5 T: FTMS {1,1} + p ESI Full ms [120.00-2000.00]



Figure S16. The HRESIMS of compound 3.



Figure S17. The UV spectrum of compound 3.



Figure S18. The ¹H-NMR (600 MHz, Acetone- d_6) spectrum of compound 3.



Figure S19. The ¹³C-NMR (150 MHz, Acetone- d_6) spectrum of compound 3.



Figure S20. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, Acetone- d_{6}) spectrum of compound 3.



Figure S21. The HSQC (600 MHz, Acetone- d_6) spectrum of compound 3.



Figure S22. The HMBC (600 MHz, Acetone- d_6) spectrum of compound 3.



Figure S23. The ROESY (600 MHz, Acetone-d₆) spectrum of compound 3.



Figure S24. The HRESIMS of compound 4.



Figure S25. The UV spectrum of compound 4.



Figure S26. The ¹H-NMR (600 MHz, DMSO-*d*₆) spectrum of compound 4.



Figure S27. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 4.



Figure S28. The 1 H- 1 H COSY (600 MHz, DMSO- d_{6}) spectrum of compound 4.





Figure S30. The HMBC (600MHz, DMSO-*d*₆) spectrum of compound 4.



Figure S31. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 4.



Figure S32. The HRESIMS of compound 5.



Figure S33. The UV spectrum of compound 5.



Figure S34. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 5.



Figure S35. The ¹H-¹H COSY (600 MHz, DMSO-*d*₆) spectrum of compound 5.



Figure S36. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 5.



Figure S37. The HMBC (600MHz, DMSO- d_6) spectrum of compound 5.



Figure S38. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 5.



Figure S39. The HRESIMS of compound 6.



Figure S40. The UV spectrum of compound 6.



Figure S42. The ¹³C-NMR (150 MHz, DMSO-*d*₆) spectrum of compound 6.



Figure S44. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 6.



Figure S45. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 6.



Figure S46. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 6.



Figure S47. The HRESIMS of compound 7.



Figure S48. The UV spectrum of compound 7.



Figure S49. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 7.



Figure S50. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 7.



Figure S51. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 7.



Figure S52. The HSQC (600 MHz, DMSO- d_6) spectrum of compound 7.



Figure S53. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 7.



Figure S54. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 7.



Figure S55. The HREISMS of compound 8.



Figure S56. The UV spectrum of compound 8.



Figure S57. The ¹H-NMR (600 MHz, Acetone- d_6) spectrum of compound 8.



Figure S58. The ¹³C-NMR (150 MHz, Acetone- d_6) spectrum of compound 8.


Figure S59. The ¹H-H COSY (600 MHz, Acetone- d_6) spectrum of compound 8.



Figure S60. The HSQC (600 MHz, Acetone- d_6) spectrum of compound 8.



Figure S61. The HMBC (600 MHz, Acetone- d_6) spectrum of compound 8.



Figure S62. The ROESY (600 MHz, Acetone- d_6) spectrum of compound 8.



Figure S63. The HREISMS of compound 9.



Figure S64. The UV spectrum of compound 9.



Figure S66. The 1 H- 1 H COSY (600 MHz, DMSO- d_{6}) spectrum of compound 9.



Figure S68. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 9.



Figure S69. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 9.



Figure S70. The HREISMS of compound 15.



Figure S71. The UV spectrum of compound 15.



Figure S72. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 15.



Figure S73. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 15.



Figure S74. The ¹H-¹H COSY (600 MHz, DMSO-*d*₆) spectrum of compound 15.



Figure S75. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 15.



Figure S76. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 15.



Figure S77. The ROESY (600 MHz, DMSO- d_6) spectrum of compound 15.



Figure S78. The HREISMS of compound 16.



Figure S79. The UV spectrum of compound 16.



Figure S80. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 16.



Figure S81. The ¹³C-NMR (150 MHz, DMSO-*d*₆) spectrum of compound 16.



Figure S82. The 1 H- 1 H COSY (600 MHz, DMSO- d_{6}) spectrum of compound 16.





Figure S84. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 16.

150 160

0.5

2.0

1.5

1.0



Figure S85. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 16.



Figure S86. The HREISMS of compound 17.



Figure S87. The UV spectrum of compound 17.



Figure S88. The ¹H-NMR (300 MHz, DMSO- d_6) spectrum of compound 17.



Figure S89. The ¹³C-NMR (75 MHz, DMSO-*d*₆) spectrum of compound 17.



Figure S90. The 1 H- 1 H COSY (300 MHz, DMSO- d_{6}) spectrum of compound 17.



Figure S91. The HSQC (300 MHz, DMSO-*d*₆) spectrum of compound 17.



Figure S92. The HMBC (300 MHz, DMSO-*d*₆) spectrum of compound 17.



Figure S93. The ROESY (300 MHz, DMSO- d_6) spectrum of compound 17.



Figure S94. The HREISMS of compound 18.



Figure S95. The UV spectrum of compound 18.



Figure S96. The ¹H-NMR (300 MHz, DMSO- d_6) spectrum of compound 18.



Figure S97. The ¹³C-NMR (75 MHz, DMSO-*d*₆) spectrum of compound 18.



Figure S98. The 1 H- 1 H COSY (300 MHz, DMSO- d_{6}) spectrum of compound 18.



Figure S100. The HMBC (300 MHz, DMSO-*d*₆) spectrum of compound 18.



Figure S101. The ROESY (300 MHz, DMSO-*d*₆) spectrum of compound 18.



Figure S102. The HREISMS of compound 19.



Figure S103. The UV spectrum of compound 19.



Figure S104. The ¹H-NMR (600 MHz, DMSO- d_6) spectrum of compound 19.



Figure S105. The $^{1}\text{H}-^{1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 19.



Figure S106. The HSQC (600MHz, DMSO-*d*₆) spectrum of compound 19.



Figure S107. The HMBC (600MHz, DMSO-*d*₆) spectrum of compound 19.



Figure S108. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 19.



Figure S109. The HREISMS of compound 20.



Figure S110. The UV spectrum of compound 20.



Figure S111.The ¹H-NMR (600 MHz, DMSO-*d*₆) spectrum of compound 20.



Figure S112. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 20.



Figure S113. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 20.



Figure S114. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 20.



Figure S115. The ROESY ((600 MHz, DMSO-*d*₆) spectrum of compound 20.



Figure S116. The HREISMS of compound 21.



Figure S117. The UV spectrum of compound 21.



Figure S118. The ¹H-NMR (300 MHz, DMSO- d_6) spectrum of compound 21.



Figure S119. The 13 C-NMR (75 MHz, DMSO- d_6) spectrum of compound 21.



Figure S120. The 1 H- 1 H COSY (300 MHz, DMSO- d_{6}) spectrum of compound 21.



Figure S121. The HSQC (300 MHz, DMSO-*d*₆) spectrum of compound 21.



Figure S122. The HMBC (300 MHz, DMSO-*d*₆) spectrum of compound 21.



Figure S123. The ROESY (300 MHz, DMSO-*d*₆) spectrum of compound 21.



Figure S124. The HREISMS of compound 22.



Figure S125. The UV spectrum of compound 22.



Figure S126. The ¹H-NMR (600 MHz, DMSO-*d*₆) spectrum of compound 22.



Figure S127. The 13 C-NMR (150 MHz, DMSO- d_6) spectrum of compound 22.



Figure S128. The ${}^{1}\text{H}-{}^{1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 22.



Figure S129. The HSQC (600 MHz, DMSO- d_6) spectrum of compound 22.



Figure S130. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 22.


Figure S131. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 22.



Figure S132. The HREISMS of compound 23.



Figure S133. The UV spectrum of compound 23.



Figure S134. The ¹H-NMR (600 MHz, DMSO-*d*₆) spectrum of compound 23.



Figure S135. The ${}^{1}\text{H}-{}^{1}\text{H}$ COSY (600 MHz, DMSO- d_{6}) spectrum of compound 23.



Figure S136. The HSQC (600 MHz, DMSO-*d*₆) spectrum of compound 23.



Figure S137. The HMBC (600 MHz, DMSO-*d*₆) spectrum of compound 23.



Figure S138. The ROESY (600 MHz, DMSO-*d*₆) spectrum of compound 23.



Figure S139. The ¹H-NMR (600 MHz, Prydine- d_5) spectrum of 1a.



Figure S140. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, Prydine- d_5) spectrum of 1a.







Figure S142. The ¹H-NMR (600 MHz, Prydine-*d*₅) spectrum of 1b.







Figure S144. The ESIMS of 1b.



Figure S145. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 7a.



Figure S146. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 7a.



Figure S148. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 7b.



Figure S150. The ESIMS of 7b.



Figure S151. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 8a.



Figure S152. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 8a.



Figure S153. The ROESY (600 MHz, CD₃OD) spectrum of 8a.



Figure S154. The ESIMS of 8a.



Figure S155. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 8b.



Figure S156. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 8b.



Figure S157. The ROESY (600 MHz, CD₃OD) spectrum of 8b.



Figure S158. The ESIMS of 8b.



Figure S160. The ESIMS of 17a.



Figure S161. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 17b.



Figure S162. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 17b.



Figure S164. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 17c.





Figure S166. The ESIMS of 17c.



Figure S167. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 18a.



Figure S168. The ¹H-¹H COSY (600 MHz, CD3OD) spectrum of 18a.



Figure S170. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 18b.



Figure S171. The ${}^{1}\text{H}{}^{-1}\text{H}$ COSY (600 MHz, CD₃OD) spectrum of 18b.



Figure S172. The ESIMS of 18b.



Figure S173. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 25a.



Figure S174. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 25a.



Figure S175. The ESIMS of 25a.



Figure S176. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 25b.



Figure S177. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 25b.



Figure S178. The ESIMS of 25b.



Figure S179. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 26a.



Figure S180. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of 26a.



Figure S182. The ¹H-NMR (600 MHz, CD₃OD) spectrum of 26b.



Figure S183. The ¹H-¹H COSY (600 MHz, CD₃OD) spectrum of **26b**.



Figure S184. The ESIMS of 26b.

No.	SMILES
1	CC(C)(O)[C@H](O1)C[C@]2([R1])[C@]1([H])CC(C(/C=C(C)/C)=O)=C[C@@H]2[R2]
2	CC(C)(O)[C@H](O1)C[C@@]2([R1])[C@]1([H])CC(C(/C=C(C)/C)=O)=C[C@H]2[R2]
3	CC(C)(O)[C@H](O1)C[C@]23[C@]1([H])C/C([C@@H](O)[C@H]2O3)=C/C=C(CO)/C
4	CC(C)(O)[C@H](O1)C[C@@]2(O)[C@]1([H])C=C(C#CC(C)=C)[C@@H](O)[C@H]2O
5	CC(C)(O)C(O1)C[C@]2(O)[C@]1([H])C=C(C#CC(C)=C)[C@@H](O)[C@@H]2O
6	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC([C@@H](O)[C@@H]2O)=[C@]=CC(C)=C
7	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC([C@@H](O)[C@@H]2OC(C)=O)=[C@]=CC(C)=C
8	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC(C([C@H](O)C(C)(C)O3)=O)=C3[C@@H]2O
9	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC(C(C([H])C(C)(C)O3)=O)=C3[C@@H]2OC(C)=O
10	C=C(C)C#C[C@H]1C[C@@](OC(C)(C)[C@@H](O)C2)([H])[C@]2(O3)[C@H]3[C@@H]1O
11	CC(C)(O)[C@H](O1)C[C@]23[C@]1([H])CC([C@@H](O)[C@H]2O3)=[C@]=CC(C)=C
12	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC([C@@H](O)[C@@H]2Cl)=[C@]=CC(C)=C
13	CC(C)(O)[C@H](O1)C[C@]2(O)[C@]1([H])CC(C(C([H])C(C)(C)O3)=O)=C3[C@@H]2O
14	CC1(C)CC(C2=C(O1)C=C(C[C@H](C(C)(O)C)O3)C3=C2)=O
15	O[C@@H]1C(/C=C/CCCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]2(O)C1[H]
16	O[C@@H]1C(/C=C/CCCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]2(O)[C@H]1O
17	O[C@@H]1C(/C=C/CCCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
18	O[C@@H]1C(/C=C/CCC([H])[C@@H](O)C)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1
	03
19	O[C@@H]1C(/C=C/C[C@H](O)CCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
20	O[C@@H]1C(/C=C/[C@@H](O)CCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
	or
	O[C@@H]1C(/C=C/[C@H](O)CCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
21	O[C@@H]1C(/C=C/[C@@H](O)CCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
	or
	O[C@@H]1C(/C=C/[C@H](O)CCCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
22	CCCCC/C=C/C1=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@H](O3)[C@]1([H])OC(C)=O
23	CCCCC/C=C/C1=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@H](O3)C1=O
24	O[C@@H]1C(/C=C/CCC(O)C([H])C)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
25	O[C@@H]1C(/C=C/C[C@@H](O)CCC)=C(CO)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3
26	O[C@@H]1C(/C=C/CCCCC)=C(COC(C)=O)[C@@]2([H])OC(C)(C)[C@H](O)C[C@@]23[C@@H]1O3

 Table S1. SMILES table of compounds 1–26.

No.	А.	Antibacte	Cell growth (%) at 10 µg/mL	Cytotoxity (IC50, µM)			
	baumannii (BAA1605)	A.baumannii (BAA1605) + colistin (0.1 μM)	P. aeruginosa (27853)	S. aureus (29213)	M. tuberculosis (H37Rv)	Mouse lymphoma cell line L5178Y	
1	>100	>100	>100	>100	>100	58.5	>20
2	>100	>100	>100	>100	>100	65.4	>20
3	>100	>100	>100	>100	>100	64.8	>20
4	>100	>100	>100	>100	>100	77.4	>20
5	>100	>100	>100	>100	>100	64.3	>20
6	>100	>100	>100	>100	>100	68.3	>20
7	>100	>100	>100	>100	>100	67.1	>20
8	>100	>100	>100	>100	>100	77.8	>20
9	>100	>100	>100	>100	>100	53.0	>20
10	>100	>100	>100	>100	>100	56.1	>20
11	>100	>100	>100	>100	>100	76.5	>20
12	>100	>100	>100	>100	>100	66.7	>20
13	>100	>100	>100	>100	>100	77.5	>20
14	>100	>100	>100	>100	>100	67.2	>20
15	>100	>100	>100	>100	>100	54.4	>20
16	>100	>100	>100	>100	>100	53.2	>20
17	>100	>100	>100	>100	>100	70.5	>20
18	>100	>100	>100	>100	>100	64.8	>20
19	>100	>100	>100	>100	>100	78.1	>20
20	>100	>100	>100	>100	>100	70.1	>20
21	>100	>100	>100	>100	>100	63.6	>20
22	>100	50	>100	>100	>100	44.2	>20
23	>100	100	>100	>100	>100	1.90	3.0
24	>100	>100	>100	>100	>100	80.0	>20
25	>100	>100	>100	>100	>100	77.4	>20
26	>100	>100	>100	>100	>100	65.7	>20

 Table S2. Results of cytotoxicity and antibacterial activity assay of compounds 1–26.