

SUPPLEMENTARY MATERIAL

Three new Helvolic acid derivatives from *Sarocladium oryzae* DX-THL3, an endophytic fungus from DongXiang wild Rice (*Oryza rufipogon* Griff.)

Zhi-Bin Zhang¹, Si-Yao Du¹, Bo Ji³, Chang-Jiu Ji^{*2}, Yi-Wen Xiao^{1,3}, Ri-ming Yan¹, and Du Zhu ^{*1,3}

¹ Key Laboratory of Protection and Utilization of Subtropical Plant Resources of Jiangxi Province, College of Life Science, Jiangxi Normal University, Nanchang, 330022, China; zzbio@jxnu.edu.cn(Z.-B. Z.); 1294121506@qq.com(S.-Y. D.); rimingyan@163.com(R.-M. Y.); zhudu12@163.com(D. Z.)

² College of Chemistry and Biological Engineering, Yichun University, Jiangxi, 336000, China; jichjiu999@jxycu.edu.cn(C.-J. J.)

³ College of Life Science, Jiangxi Science and Technology Normal University, Nanchang, 330013, China; 1152858687@qq.com (Y.-W. X.); 1072820639@qq.com(B. J.)

* Correspondence: zhudu12@163.com; Tel.: +86-795-88121934(D. Z.).
jichjiu999@jxycu.edu.cn; Tel.: +86-15279850892(C.-J. J.).

Figure list: Morphological characters and phylogenetic tree of Strain DX-THL3; HR-ESI-MS, 1D and 2D NMR spectra data for compounds 1-7

Figure S1. Morphological characters and phylogenetic tree of Strain DX-THL3

Figure S2. ¹H NMR(400MZ) spectrum of compound **1** in CD₃OD

Figure S3. ¹³C NMR(100MZ) and DEPT spectrum of compound **1** in CD₃OD

Figure S4. ¹H-¹H COSY spectrum of compound **1** in CD₃OD

Figure S5. HSQC spectrum of compound **1** in CD₃OD

Figure S6. HMBC spectrum of p compound **1** in CD₃OD

Figure S7. NOESY spectrum of compound **1** in CD₃OD

Figure S8. HRESIMS spectrum of compound **1**

Figure S9. ¹H NMR(400MZ) spectrum of compound **2** in CDCl₃

Figure S10. ¹³C NMR(100MZ) and DEPT spectrum of compound **2** in CDCl₃

Figure S11. ¹H-¹H COSY spectrum of compound **2** in CDCl₃

Figure S12. HSQC spectrum of compound **2** in CDCl₃

Figure S13. HMBC spectrum of p compound **2** in CDCl₃

Figure S14. NOESY spectrum of compound **2** in CDCl₃

Figure S15. HRESIMS spectrum of compound **2**

Figure S16. ¹H NMR(400MZ) spectrum of compounds **3a** and **3b** in CD₃OD

Figure S16. Expansion ¹H NMR(400MZ) spectrum of compounds **3a** and **3b** in CD₃OD

Figure S17. ¹³C NMR and DEPT spectrum of compounds **3a** and **3b** in CD₃OD

Figure S17. Expansion ¹³C NMR and DEPT spectrum of compounds **3a** and **3b** in CD₃OD

Figure S17. Expansion ¹³C NMR and DEPT spectrum of compounds **3a** and **3b** in CD₃OD

Figure S17. Expansion ¹³C NMR and DEPT spectrum of compounds **3a** and **3b** in CD₃OD

Figure S18. ¹H-¹H COSY spectrum of compounds **3a** and **3b** in CD₃OD

Figure S19. HSQC spectrum of compounds **3a** and **3b** in CD₃OD

Figure S20. HMBC spectrum of compounds **3a** and **3b** in CD₃OD

Figure S21. NOESY spectrum of compounds **3a** and **3b** in CD₃OD

Figure S22. HRESIMS spectrum of compounds **3a** and **3b**

Figure S23. ¹H NMR(400MZ) spectrum of compound **5** in CDCl₃

Figure S24. ¹³C NMR(100MZ) and DEPT spectrum of compound **5** in CDCl₃

Figure S25. ¹H-¹H COSY spectrum of compound **5** in CDCl₃

Figure S26. HSQC spectrum of compound **5** in CDCl₃

Figure S27. HMBC spectrum of compound **5** in CDCl₃

Figure S28. ¹H NMR(400MZ) spectrum of compound **6** in CDCl₃

Figure S29. ¹³C NMR(100MZ) and DEPT spectrum of compound **6** in CDCl₃

Figure S30. ¹H-¹H COSY spectrum of compound **6** in CDCl₃

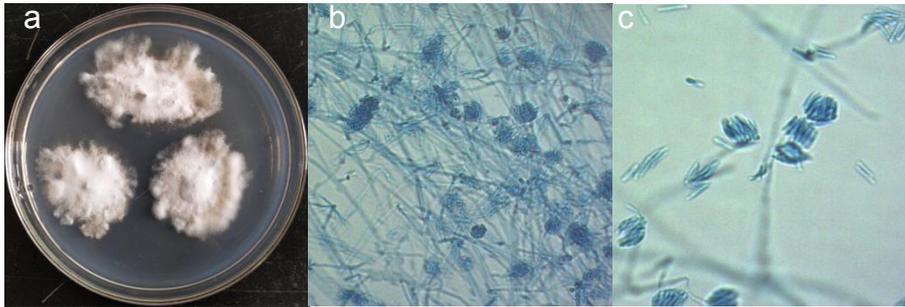
Figure S31. HSQC spectrum of compound **6** in CDCl₃

Figure S32. HMBC spectrum of p compound **6** in CDCl₃

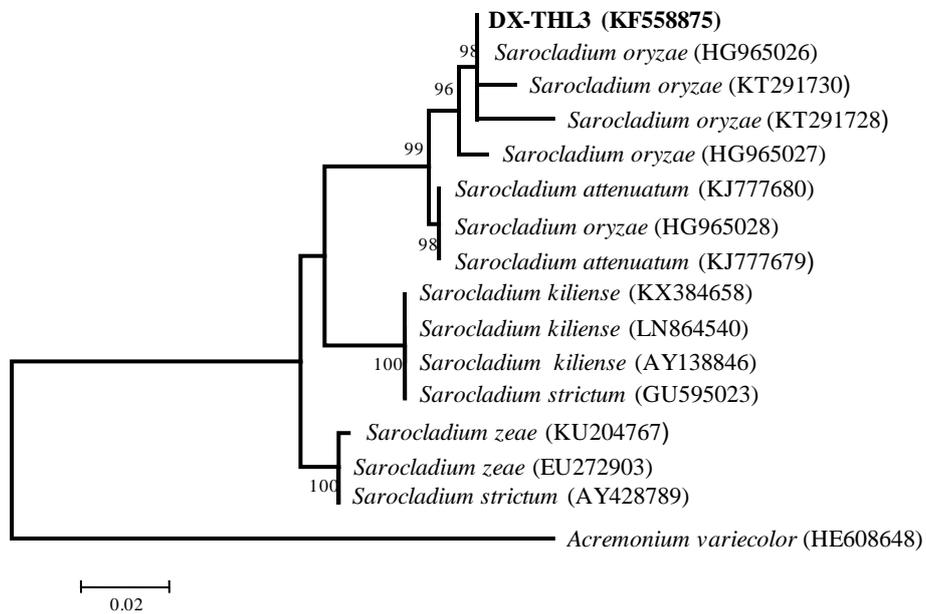
Figure S33. ¹H NMR(400MZ) spectrum of compound **7** in CD₃OD

Figure S34. ¹³C NMR(100MZ) and DEPT spectrum of compound **7** in CD₃OD

Figure S1. Morphological characters and phylogenetic tree of Strain DX-THL3



Colony and conidia of DX-THL3 on PDA medium



Phylogenetic NJ tree inferred from ITS rDNA sequences (Bar represents 0.02 substitutions per site)

Figure S4. ^1H - ^1H COSY spectrum of compound **1** in CDCl_3

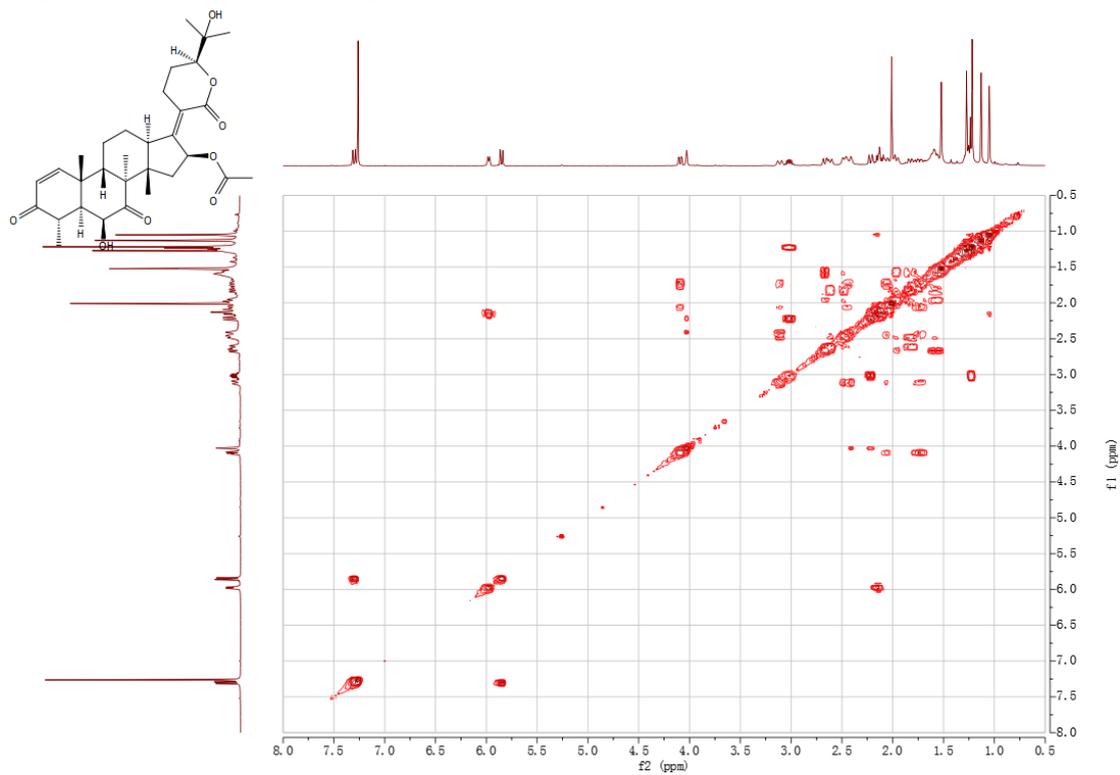


Figure S5. HSQC spectrum of compound **1** in CDCl_3

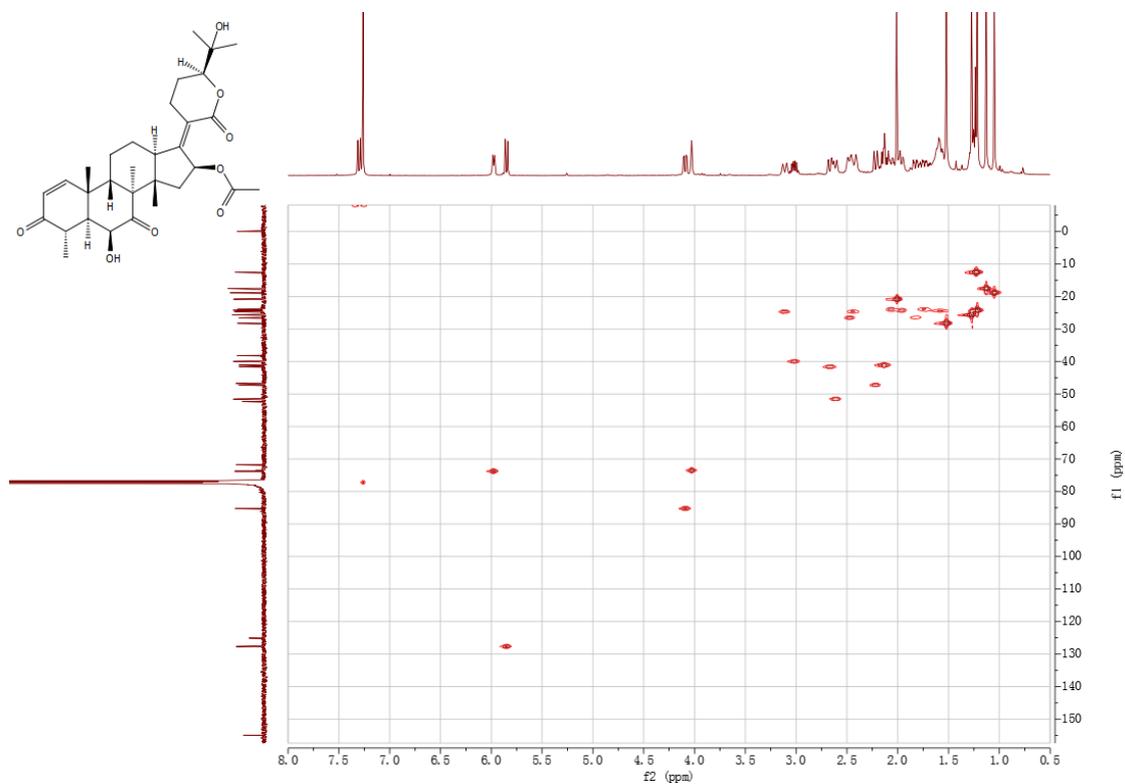


Figure S6. HMBC spectrum of compound **1** in CDCl₃

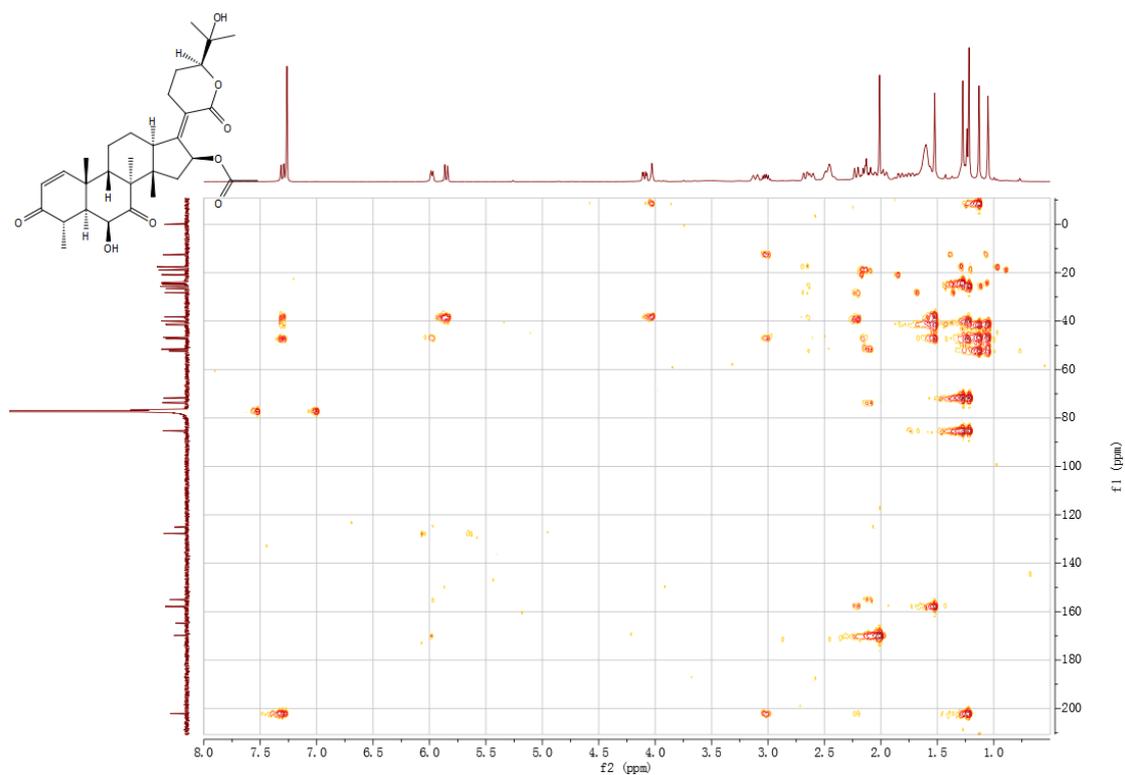


Figure S7. ROESY spectrum of compound **1** in CDCl₃

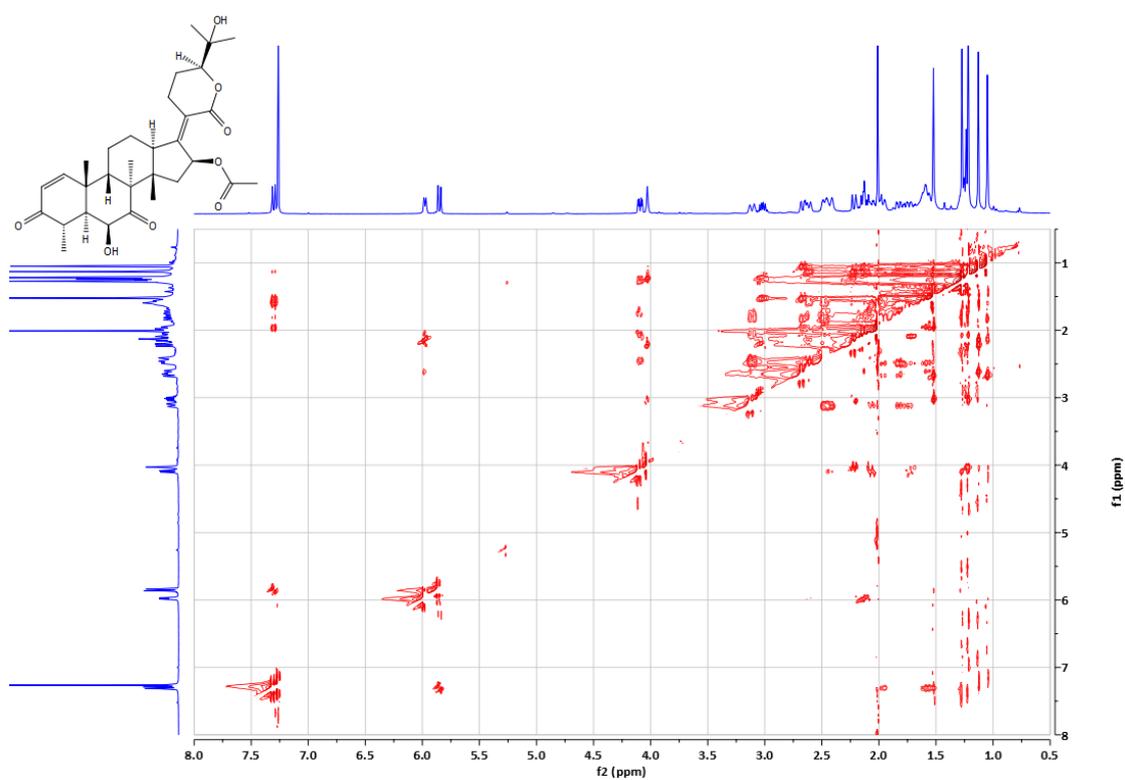
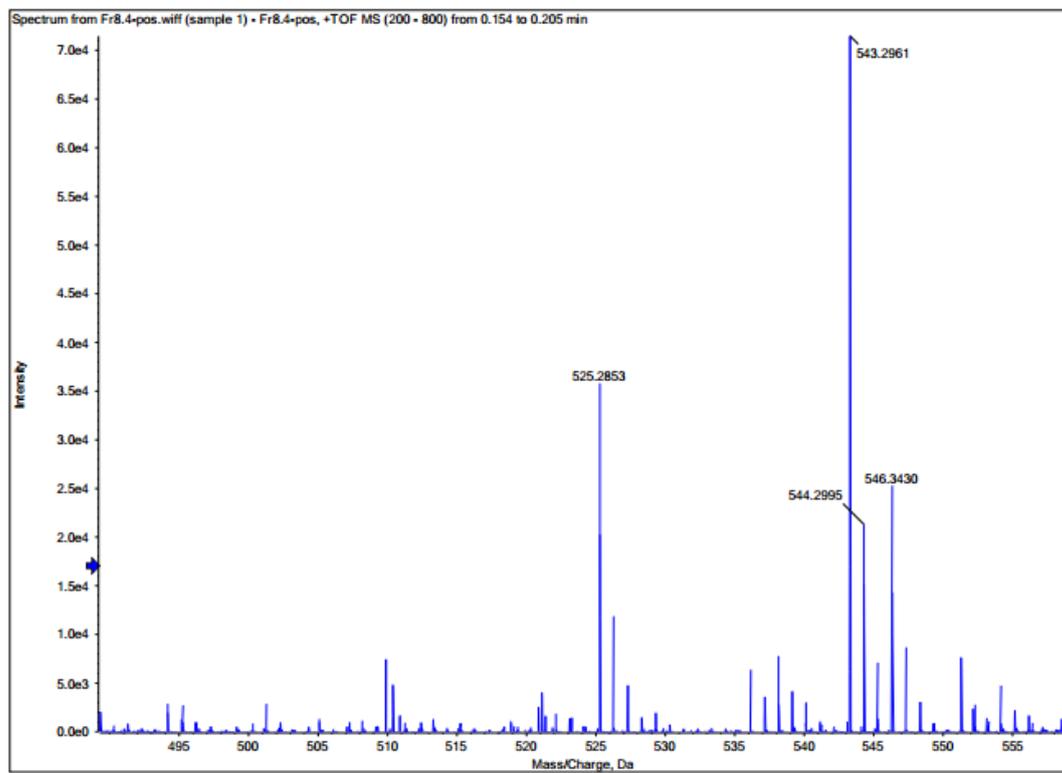


Figure S8. HRESIMS spectrum of compound **1**



2/28/2018 12:54:00 PM

Figure S9. ^1H NMR spectrum of compound **2** in CD_3OD

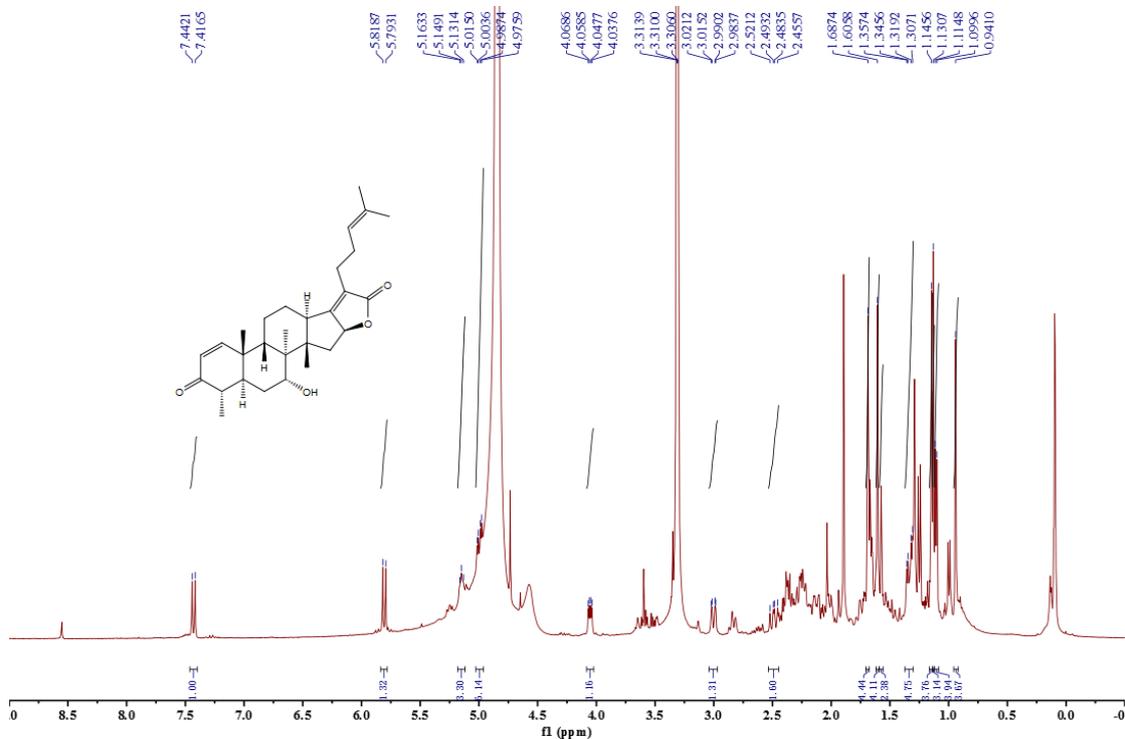


Figure S10. ^{13}C NMR and DEPT spectrum of compound **2** in CD_3OD

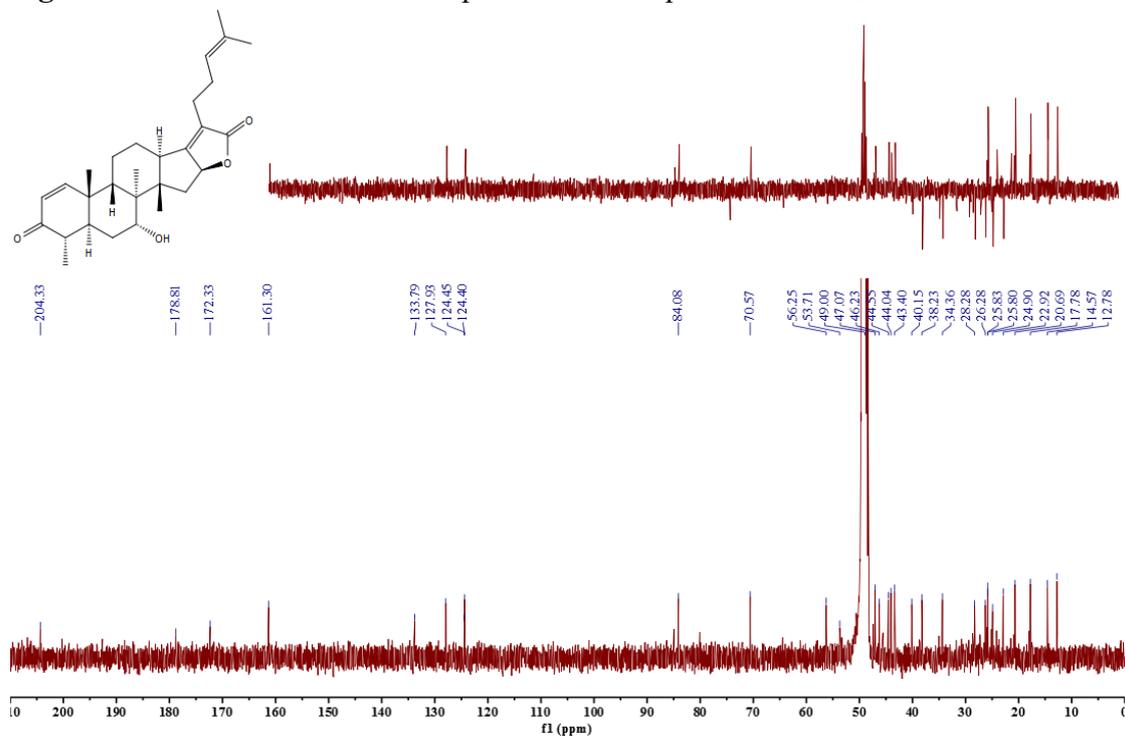


Figure S11. ^1H - ^1H COSY spectrum of compound **2** in CD_3OD

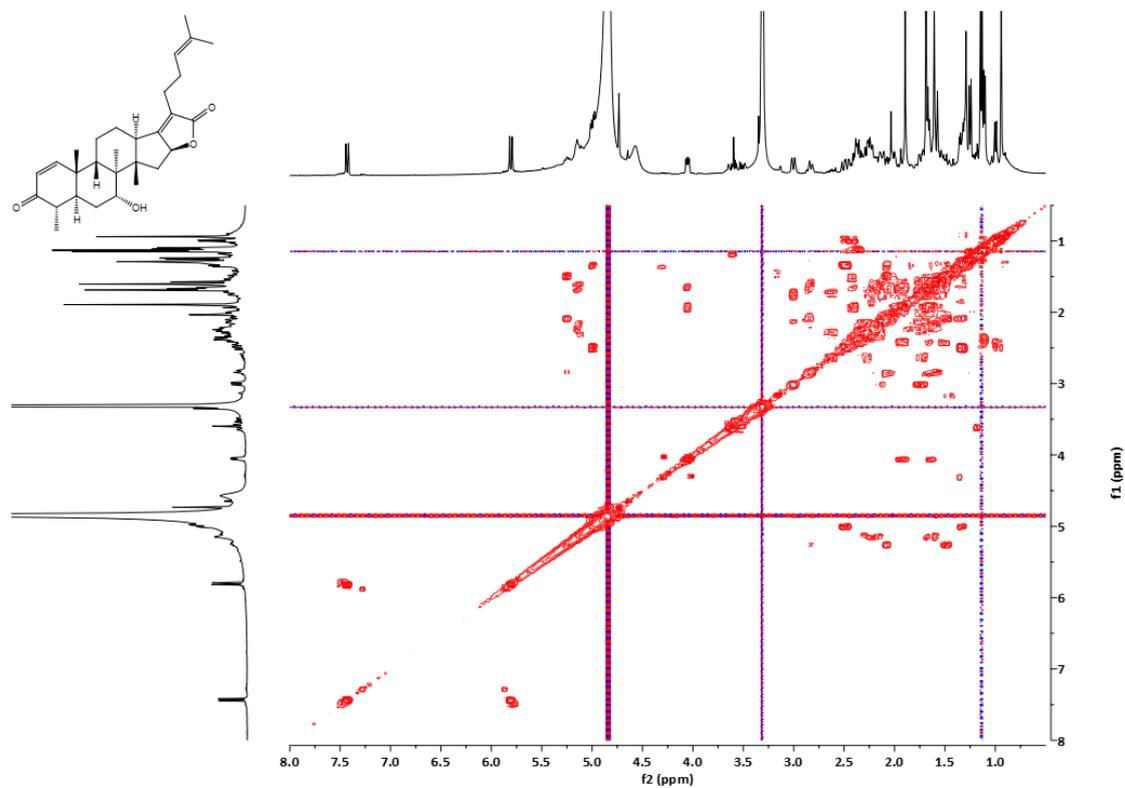


Figure S12. HSQC spectrum of compound **2** in CD_3OD

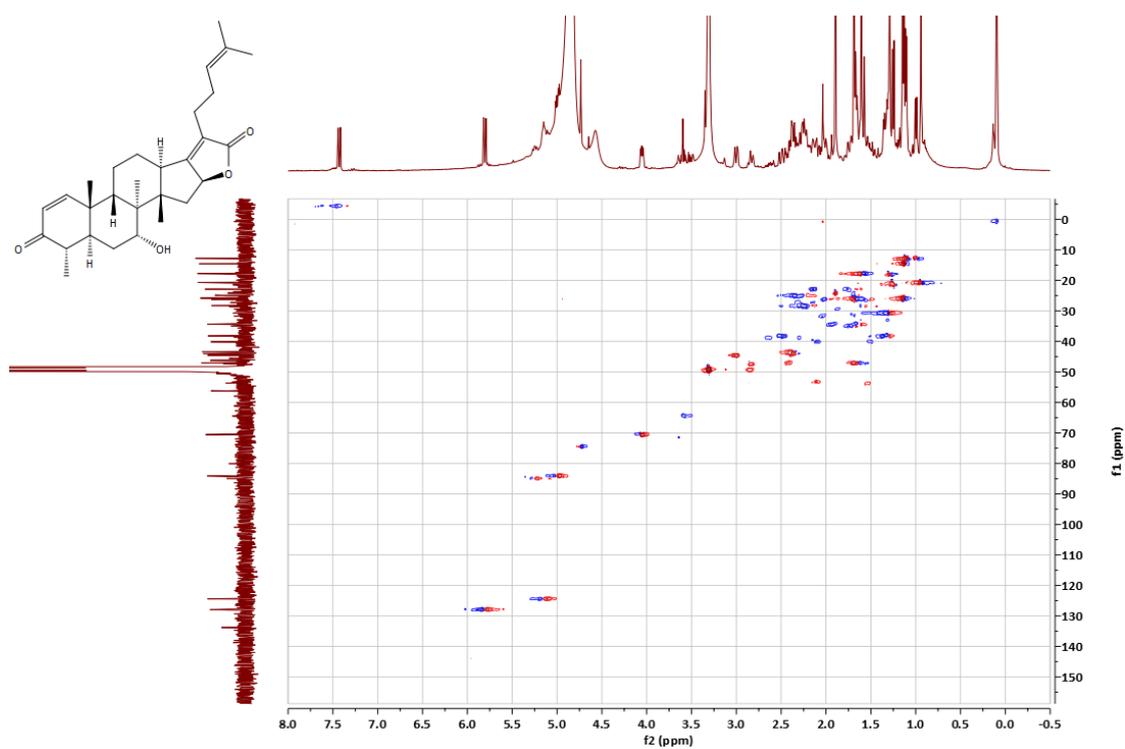


Figure S13. HMBC spectrum of compound **2** in CD₃OD

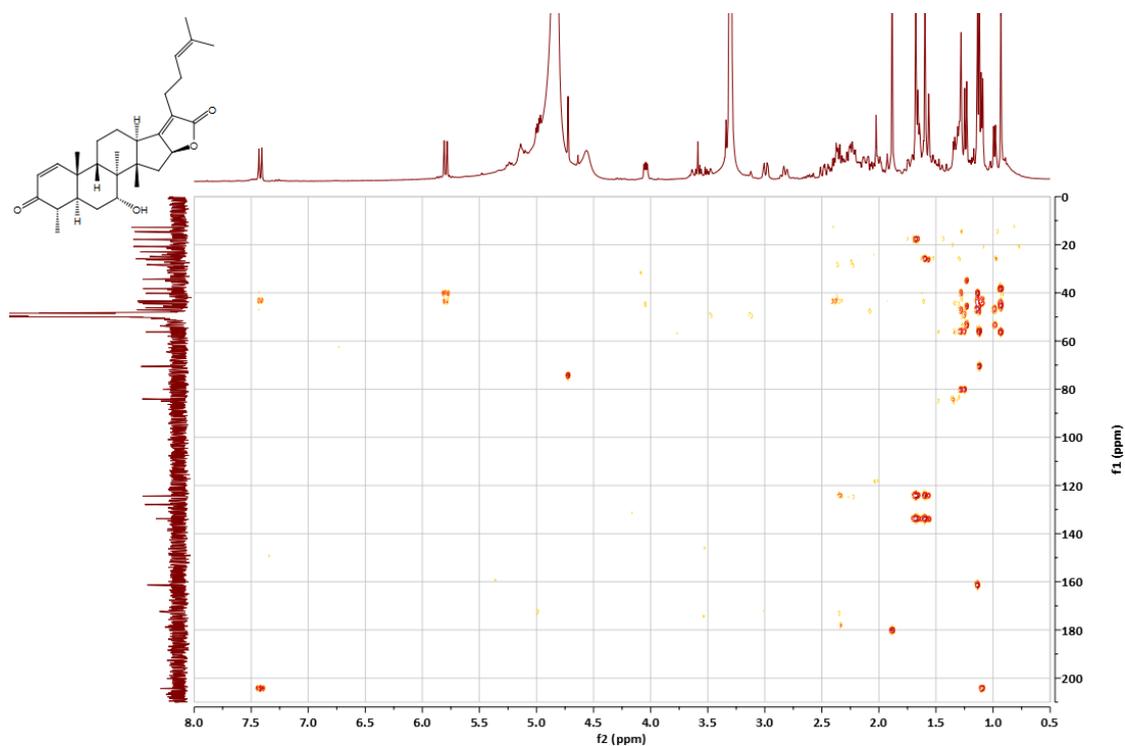


Figure S14. ROESY spectrum of compound **2** in CD₃OD

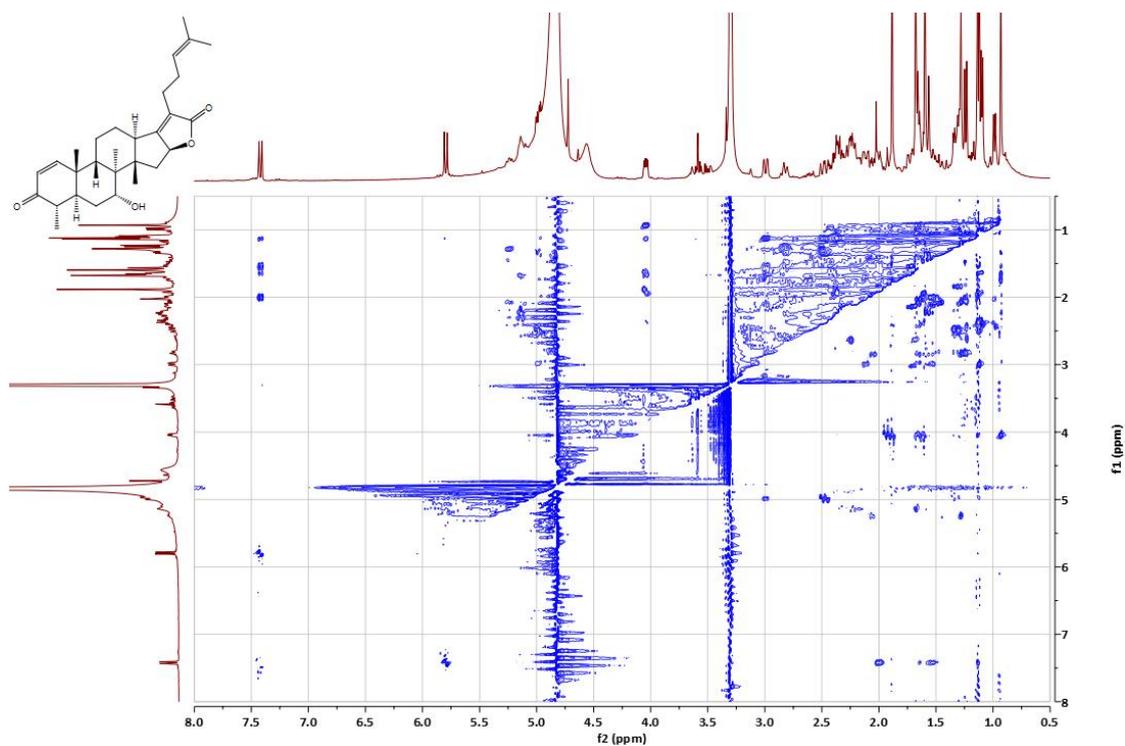
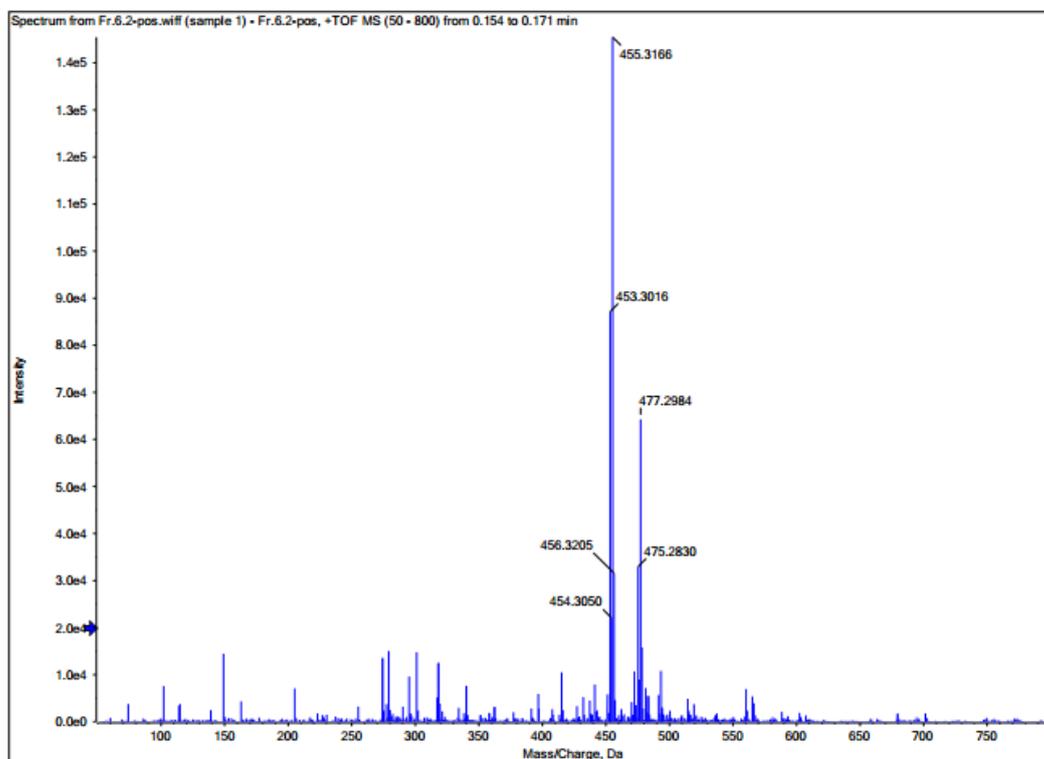


Figure S15. HRESIMS spectrum of compound **2**



2/28/2018 12:46:43 PM

Figure S17. ^{13}C NMR and DEPT spectrum of compound **3a** and **3b** in CD_3OD

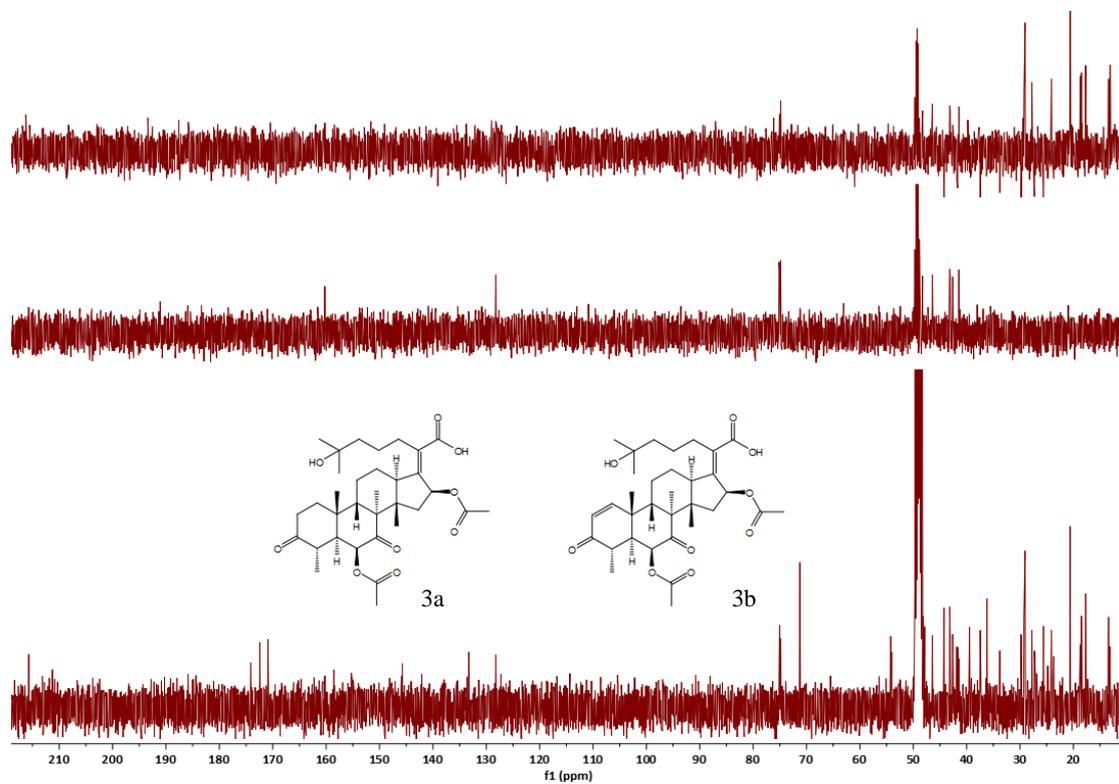


Figure S17. Expansion ^{13}C NMR and DEPT spectrum of compound **3a** and **3b** in CD_3OD

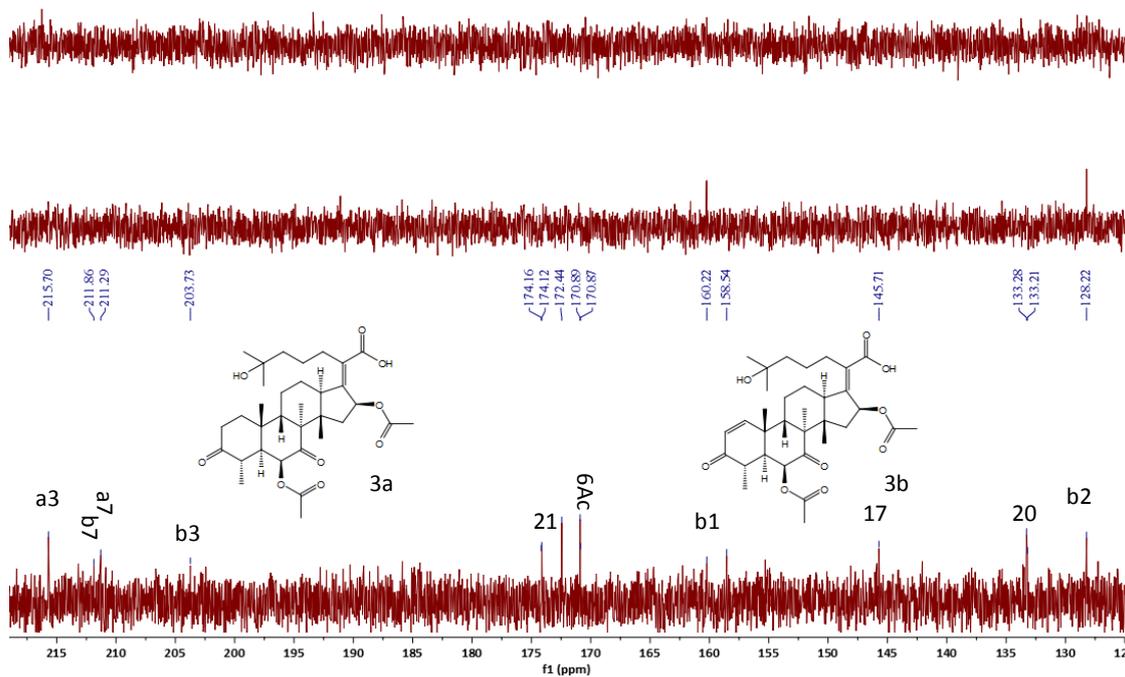
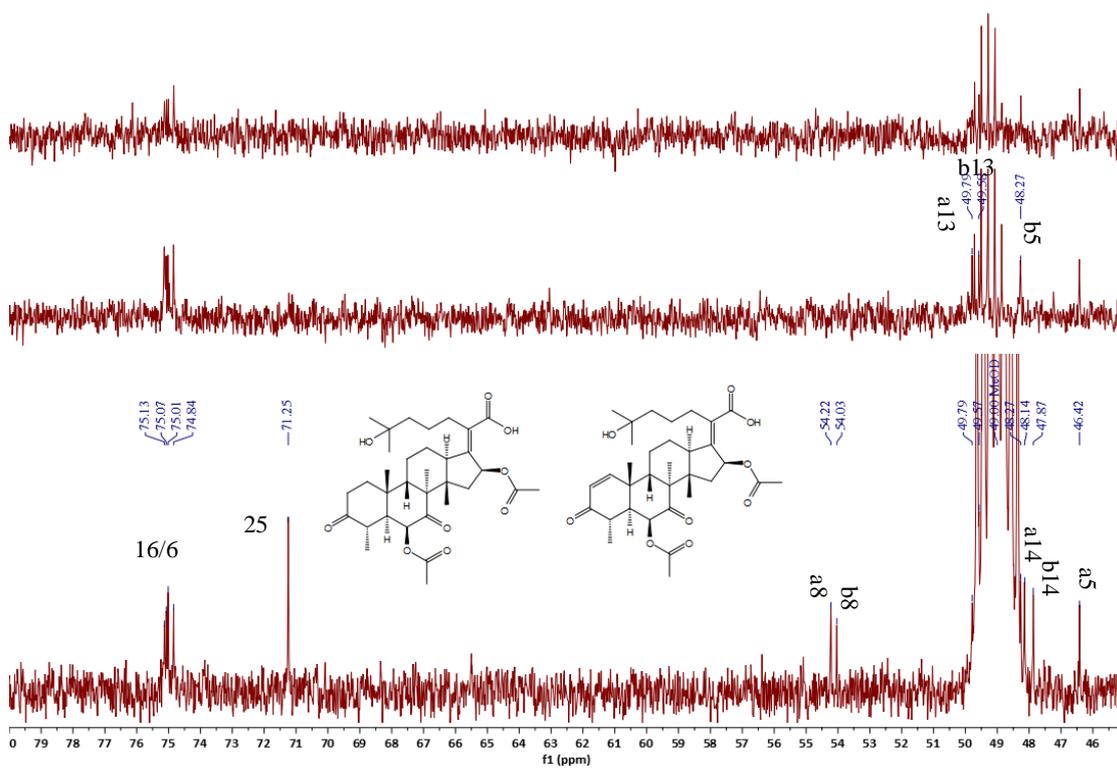


Figure S17. Expansion ^{13}C NMR and DEPT spectrum of compound **3a** and **3b** in CD_3OD



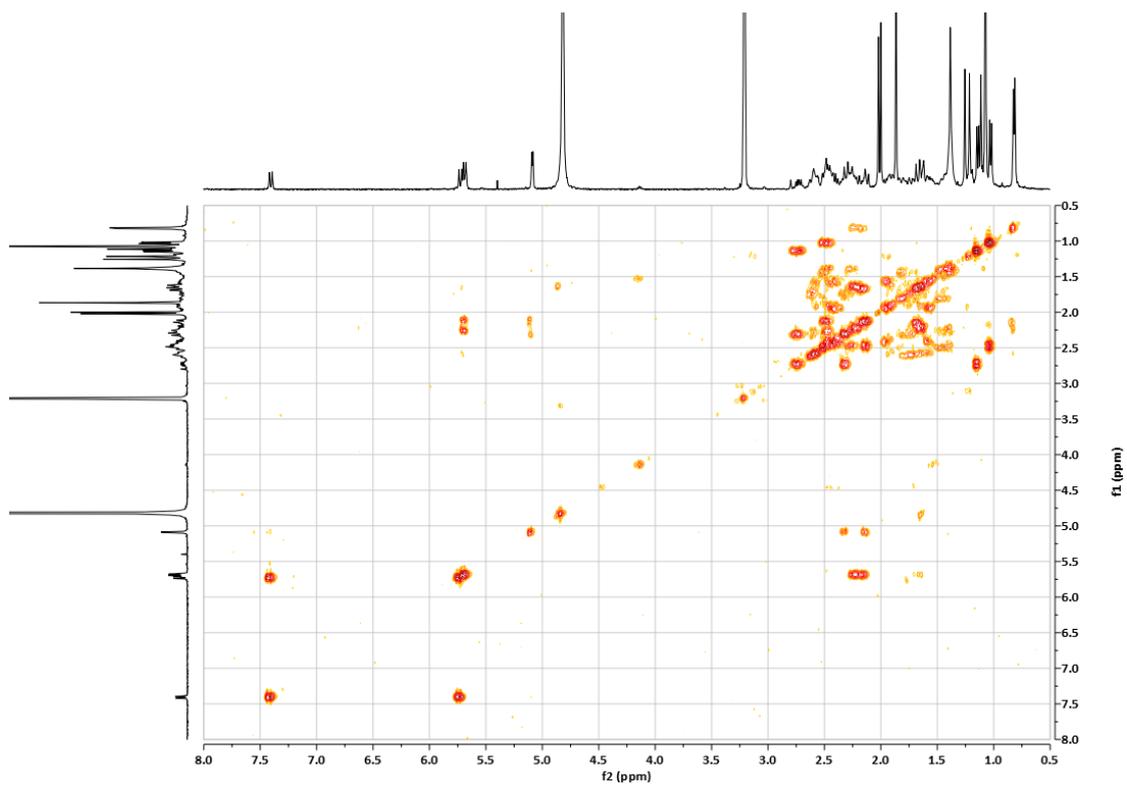


Figure S19. HSQC spectrum of compound **3a** and **3b** in CD₃OD

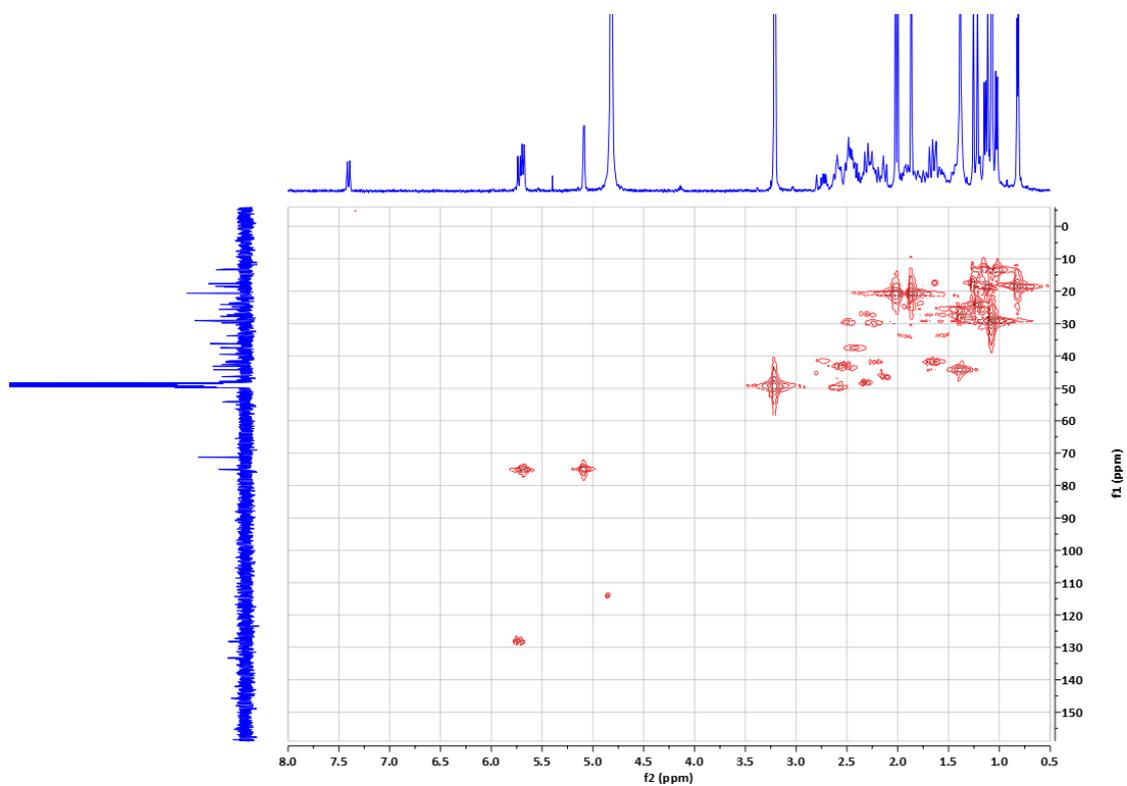


Figure S20. HMBC spectrum of p compound **3a** and **3b** in CD₃OD

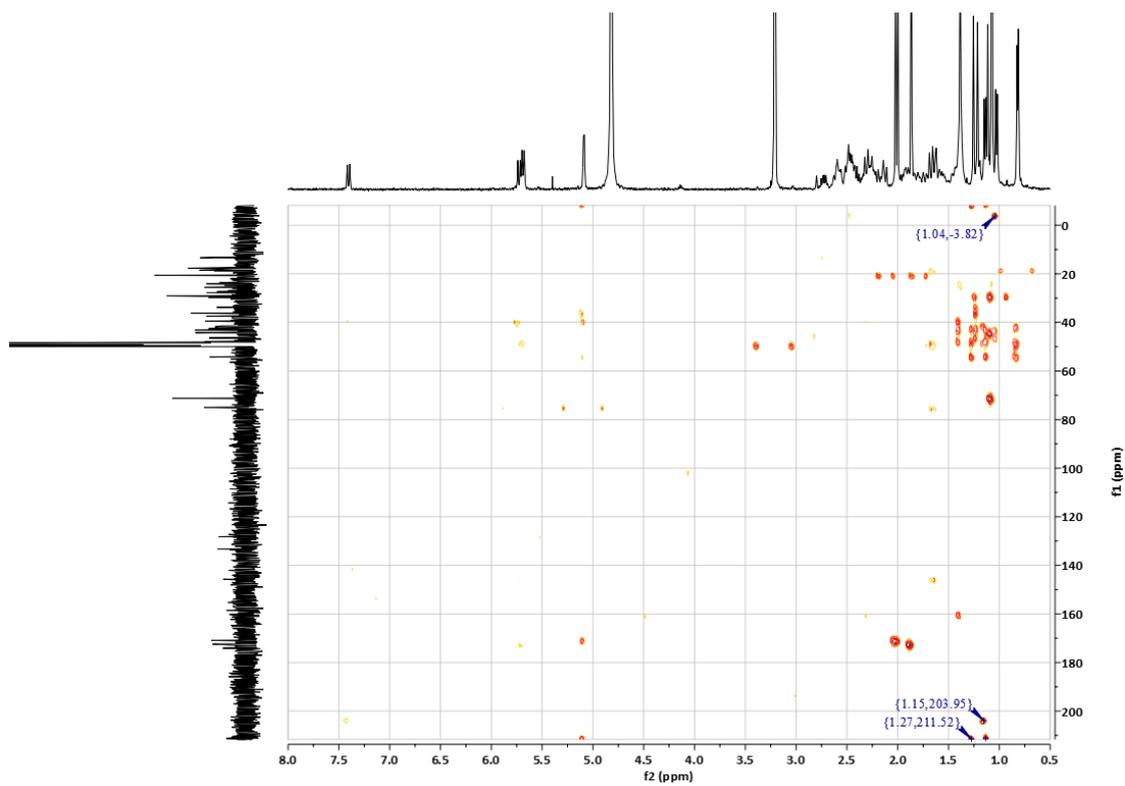
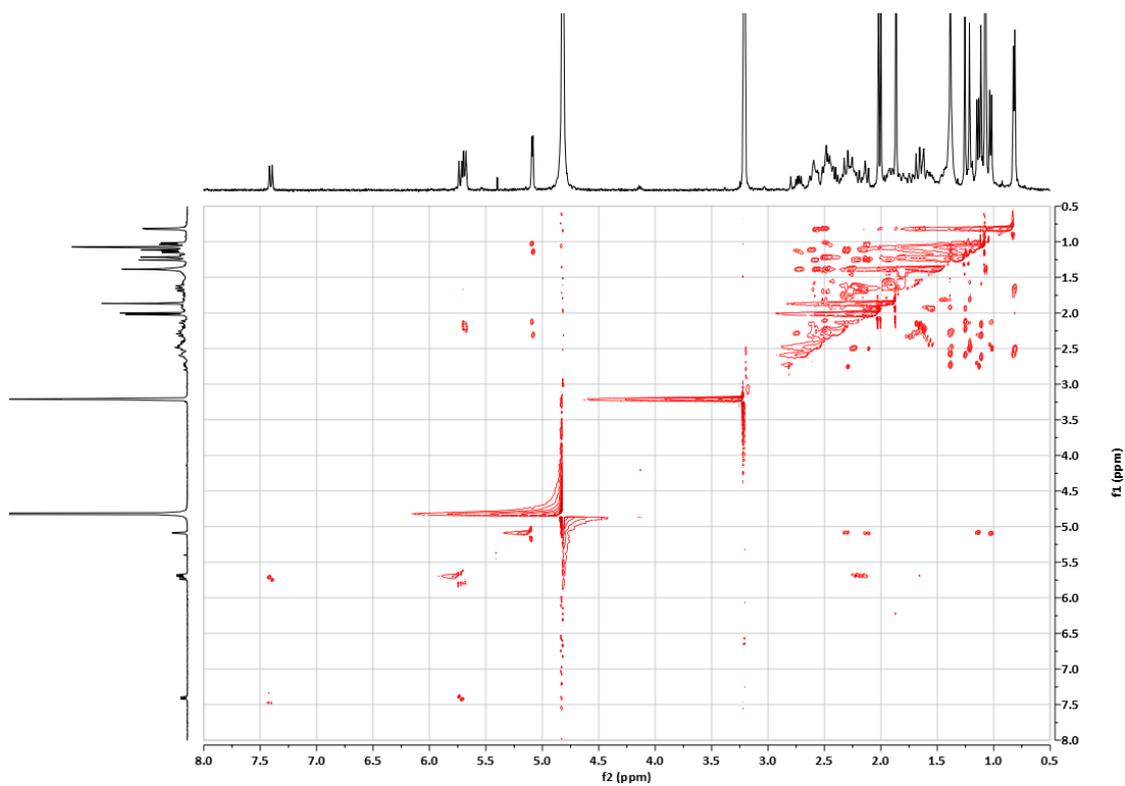


Figure S21. NOESY spectrum of compound 3a and 3b in CD₃OD



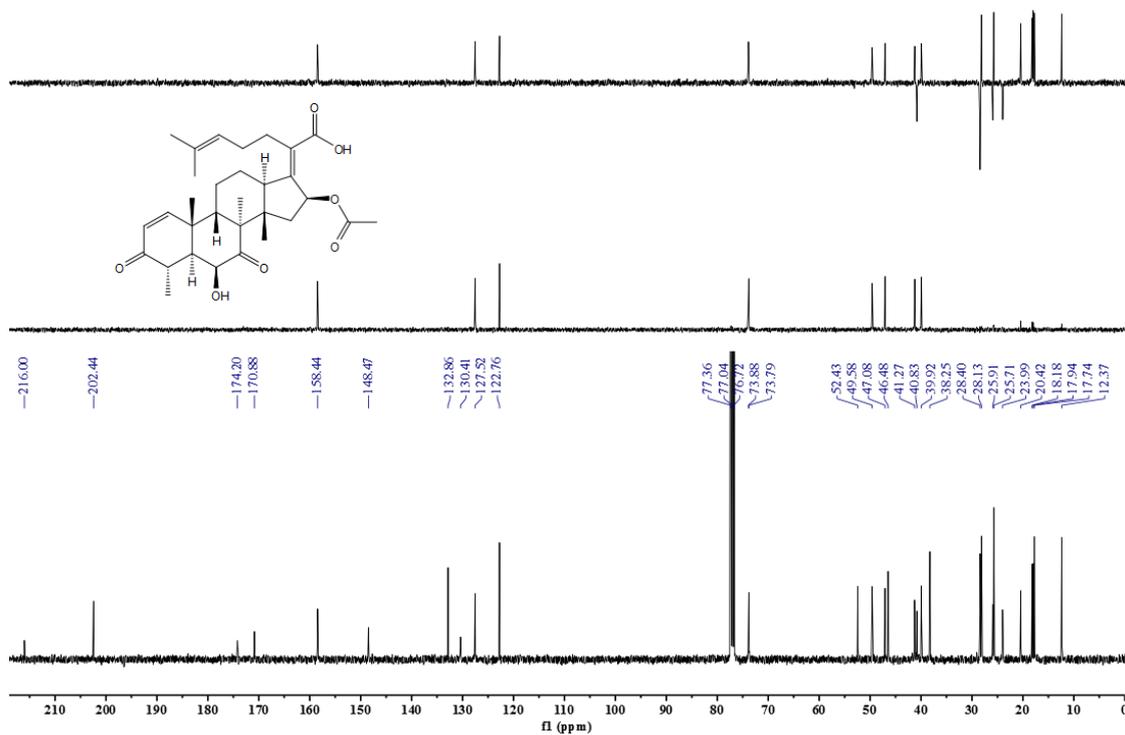


Figure S25. ^1H - ^1H COSY spectrum of compound **5** in CDCl_3

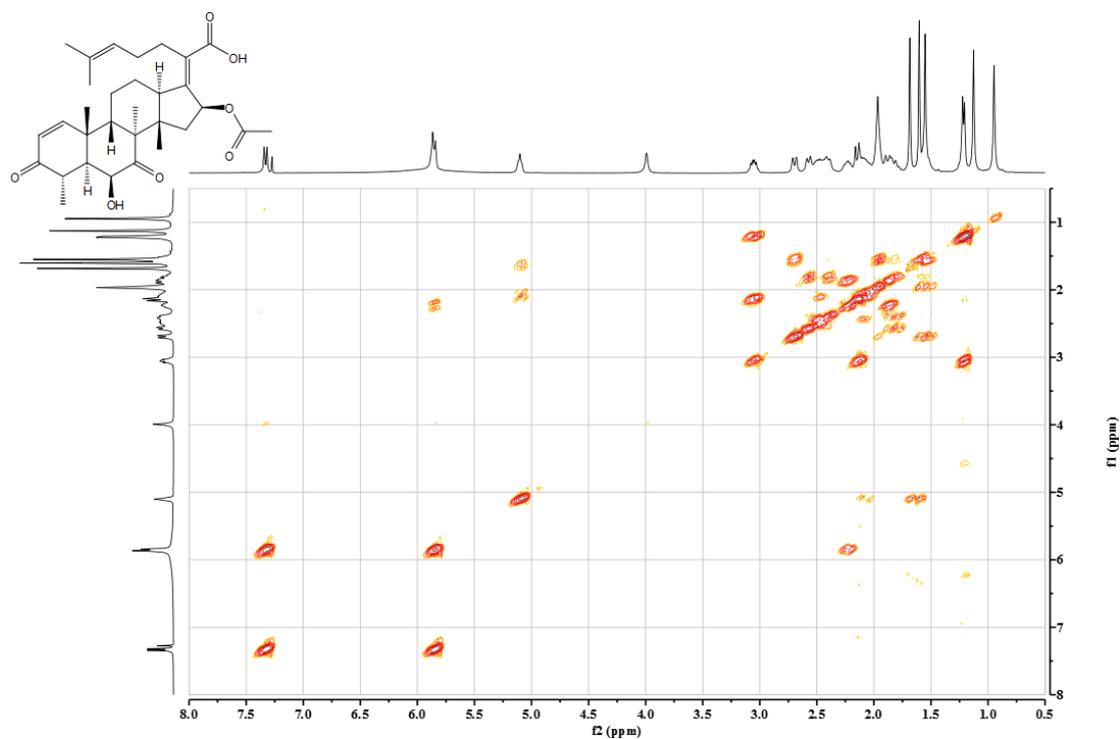


Figure S26. HSQC spectrum of compound **5** in CDCl_3

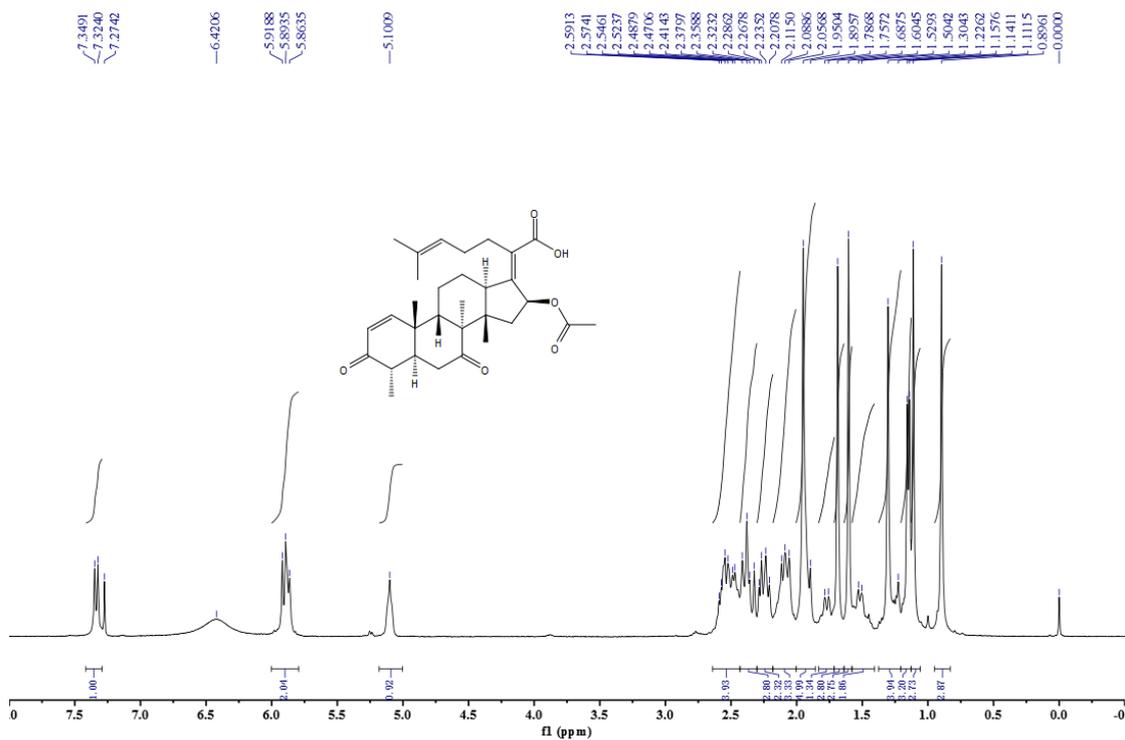


Figure S29. ¹³C NMR and DEPT spectrum of compound **6** in CDCl₃

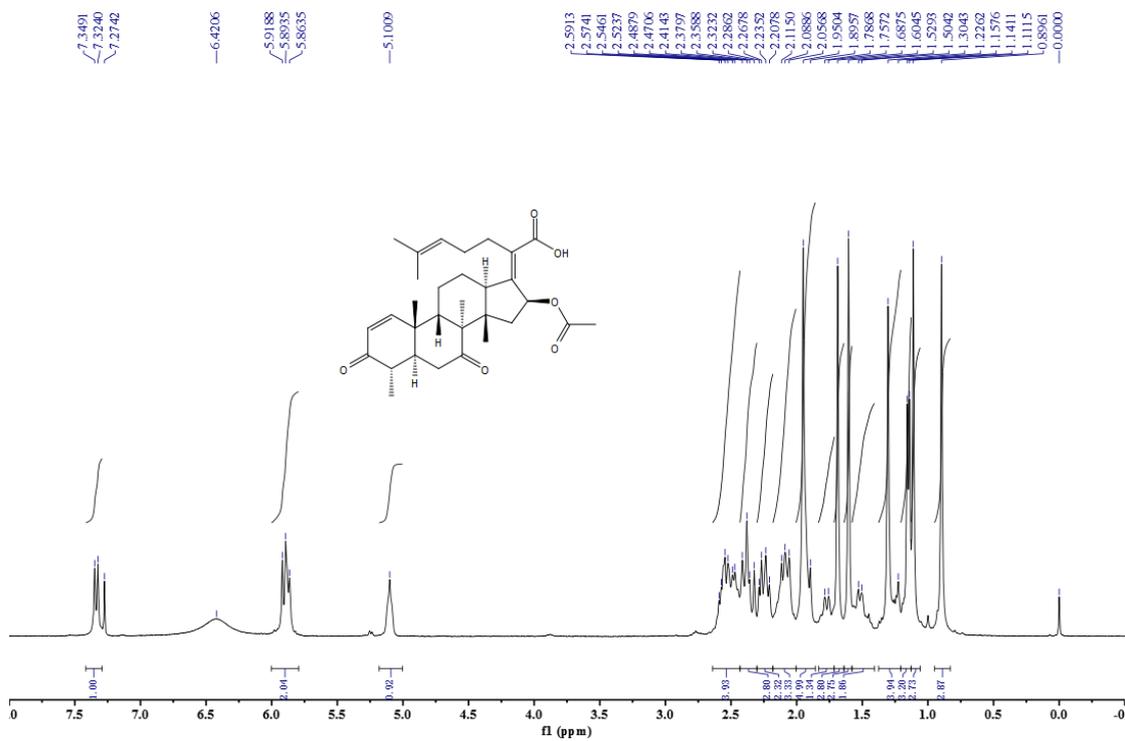


Figure S30. ^1H - ^1H COSY spectrum of compound **6** in CDCl_3

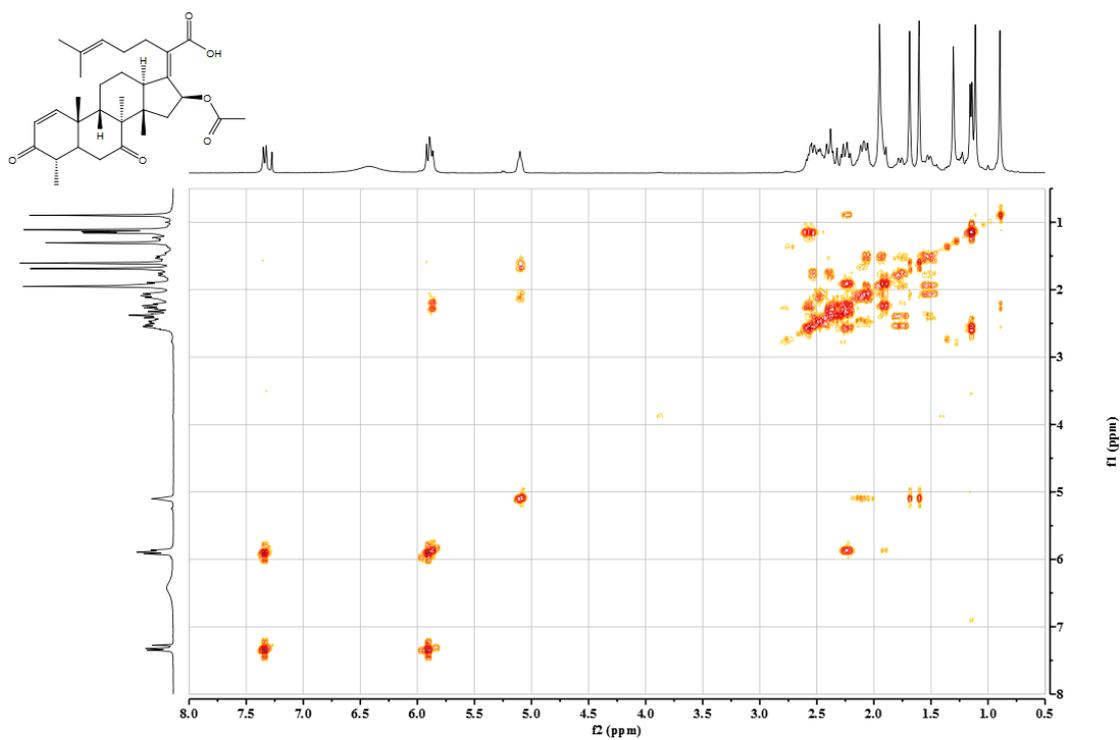


Figure S31. HSQC spectrum of compound **6** in CDCl_3

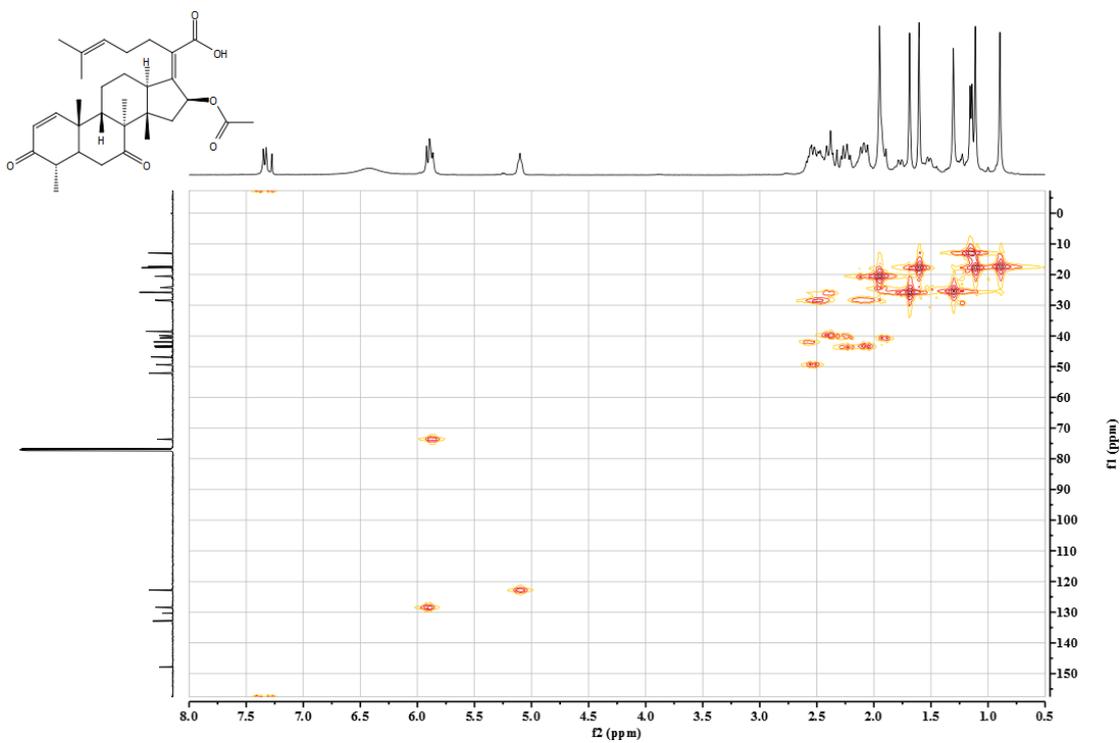


Figure S32. HMBC spectrum of compound **6** in CDCl₃

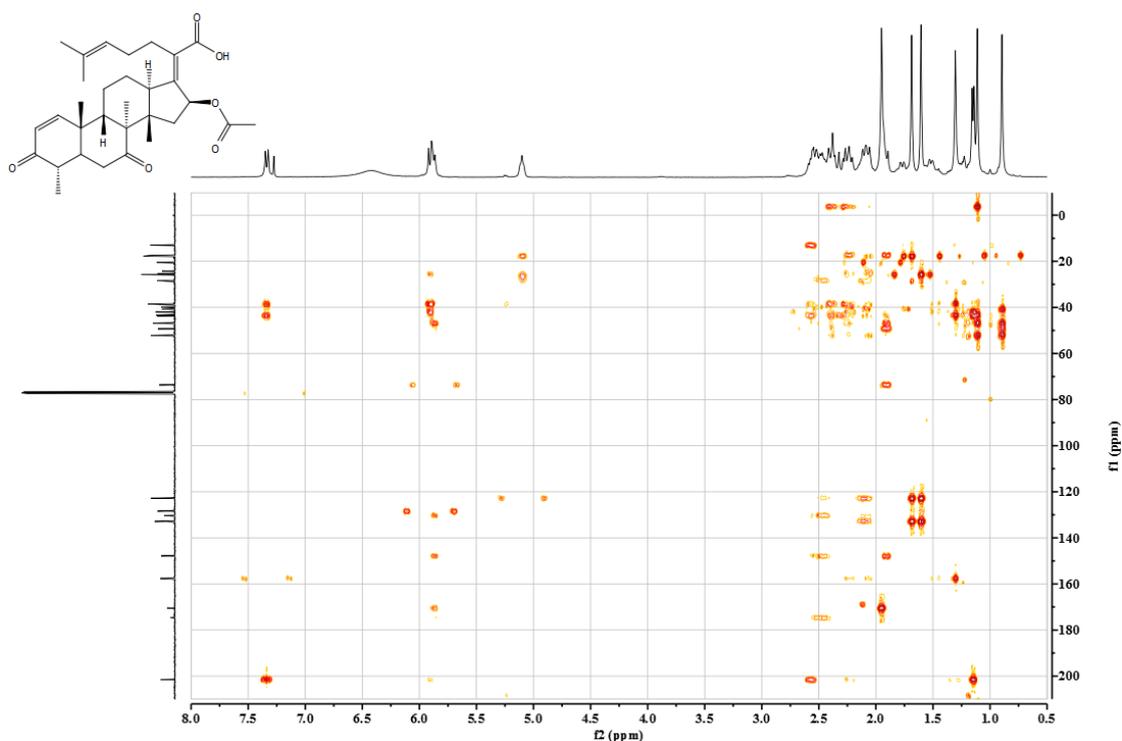


Figure S33. ¹H NMR spectrum of compound **7** in CD₃OD

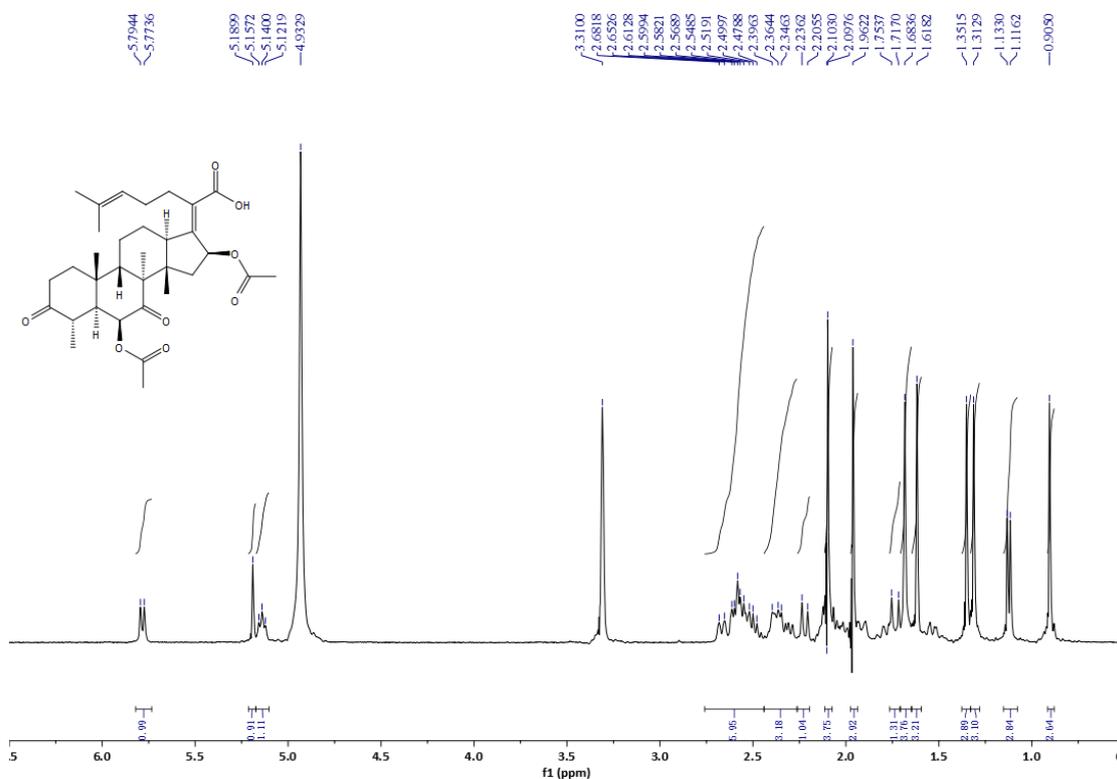


Figure S34. ¹³C NMR and DEPT spectrum of compound **7** in CD₃OD

