

Five new cucurbitane-type triterpenoid glycosides from the rhizomes of *Hemsleya penxianensis* with cytotoxic activities

De-Li Chen^{1, 2†}, Xu-Dong Xu^{2†}, Rong-Tao Li¹, Bo-Wen Wang³, Meng Yu^{1,2}, Yang-Yang Liu^{1,*}, Guo-Xu Ma^{1, 2,*}

¹ Hainan Branch of Institute of Medicinal Plant Development, Chinese Academy of Medicinal Sciences & Peking Union Medical College (Hainan Provincial Key Laboratory of Resources Conservation and Development of Southern Medicine), Haikou, China, 570311; chendeli9999@163.com;

² Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences & Peking Union Medical College, No. 151, Malianwa North Road, Haidian District, Beijing, China, 100193; mgxfl8785@163.com;

³ School of Chemical Engineering and Technology, Hainan University, Haikou, China, 570228 ; jasminewong@hainu.edu.cn

* Correspondence: eadchris@163.com; mgxfl8785@163.com; Tel.: +86-010-57833296

† Contributed equally to this work.

List of Figures S1-S29

Figure S1. ¹H-NMR (600 MHz, pyridine-*d*₅) spectrum of the new compound **1**

Figure S2. ¹³C-APT (150 MHz, pyridine-*d*₅) spectrum of the new compound **1**

Figure S3. HSQC spectrum of the new compound **1**

Figure S4. HMBC spectrum of the new compound **1**

Figure S5. ¹H-¹H COSY spectrum of the new compound **1**

Figure S6. NOESY spectrum of the new compound **1**

Figure S7. ¹H-NMR (600 MHz, pyridine-*d*₅) spectrum of the new compound **2**

Figure S8. ¹³C-APT (150 MHz, pyridine-*d*₅) spectrum of the new compound **2**

Figure S9. HSQC spectrum of the new compound **2**

Figure S10. HMBC spectrum of the new compound **2**

Figure S11. NOESY spectrum of the new compound **2**

Figure S12. ¹H-¹H COSY spectrum of the new compound **2**

Figure S13. ¹H-NMR (600 MHz, pyridine-*d*₅) spectrum of the new compound **3**

Figure S14. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **3**

Figure S15. HMBC spectrum of the new compound **3**

Figure S16. NOESY spectrum of the new compound **3**

Figure S17. ^1H - ^1H COSY spectrum of the new compound **3**

Figure S18. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound **4**

Figure S19. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **4**

Figure S20. HSQC spectrum of the new compound **4**

Figure S21. HMBC spectrum of the new compound **4**

Figure S22. NOESY spectrum of the new compound **4**

Figure S23. ^1H - ^1H COSY spectrum of the new compound **4**

Figure S24. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound **5**

Figure S25. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **5**

Figure S26. HSQC spectrum of the new compound **5**

Figure S27. HMBC spectrum of the new compound **5**

Figure S28. NOESY spectrum of the new compound **5**

Figure S29. ^1H - ^1H COSY spectrum of the new compound **5**

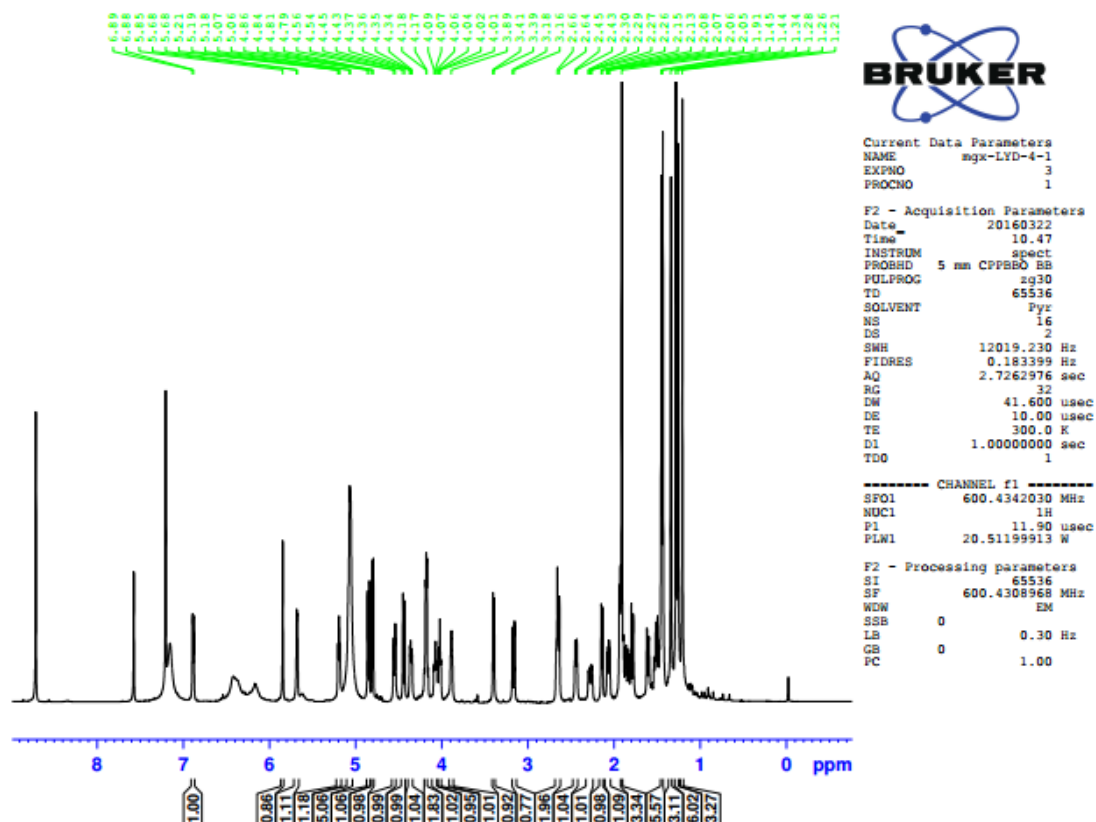


Figure S1. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound **1**

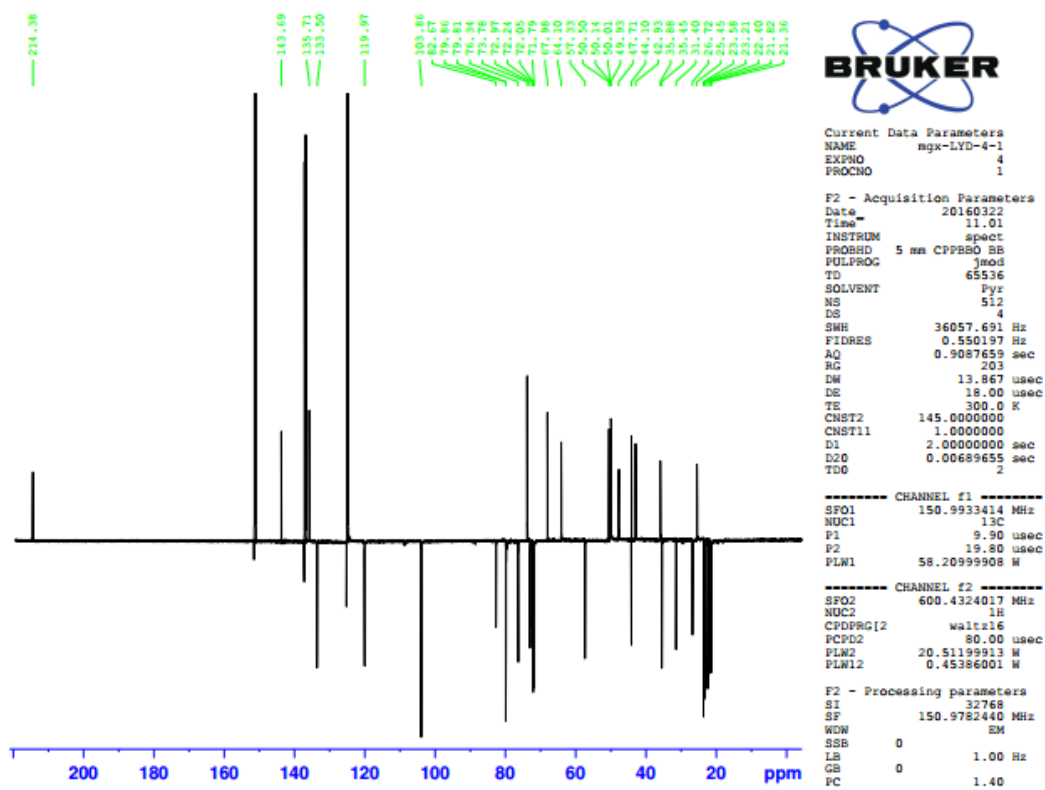


Figure S2. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **1**

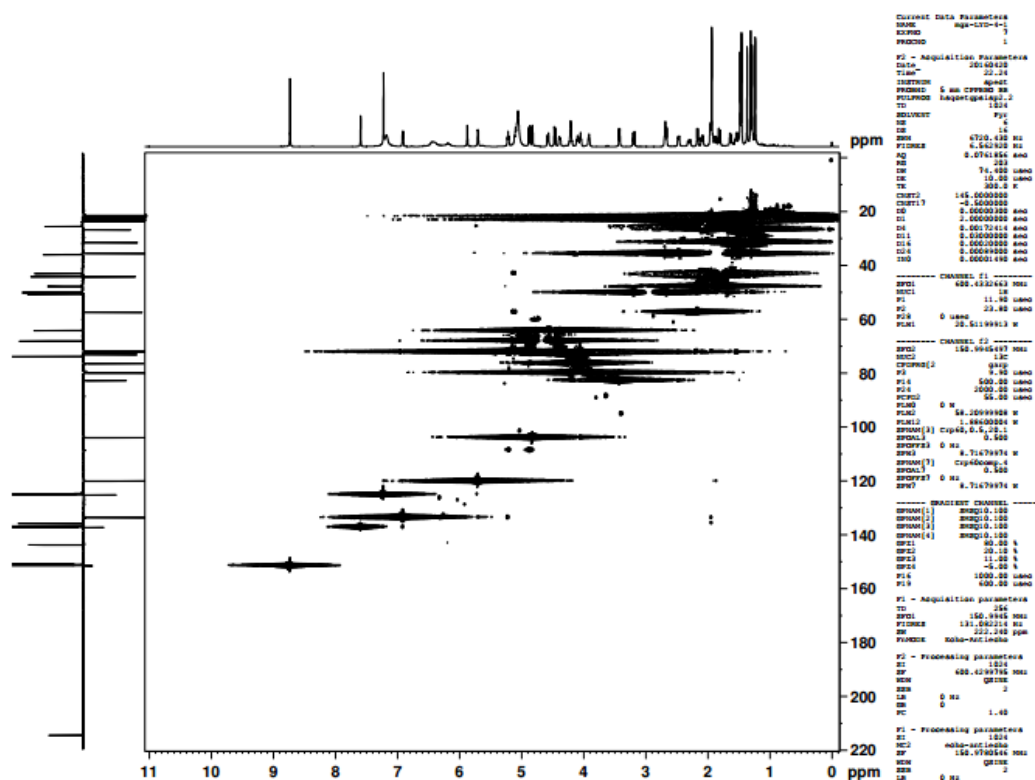


Figure S3. HSQC spectrum of the new compound 1

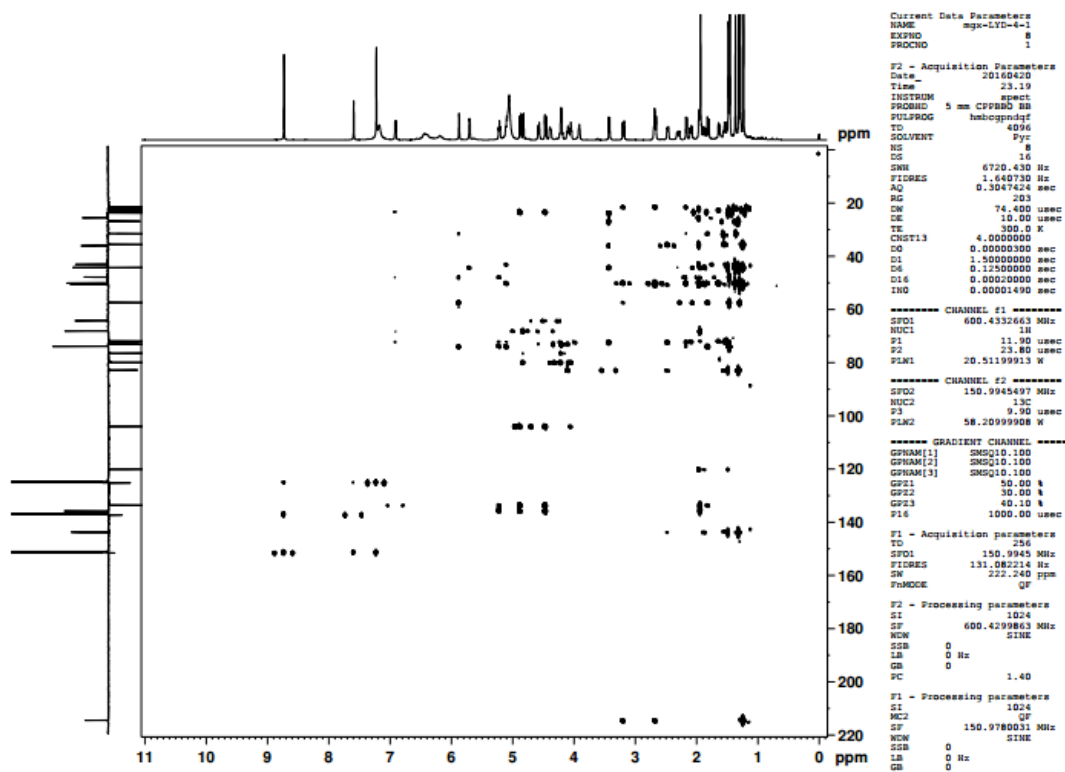


Figure S4. HMBC spectrum of the new compound 1

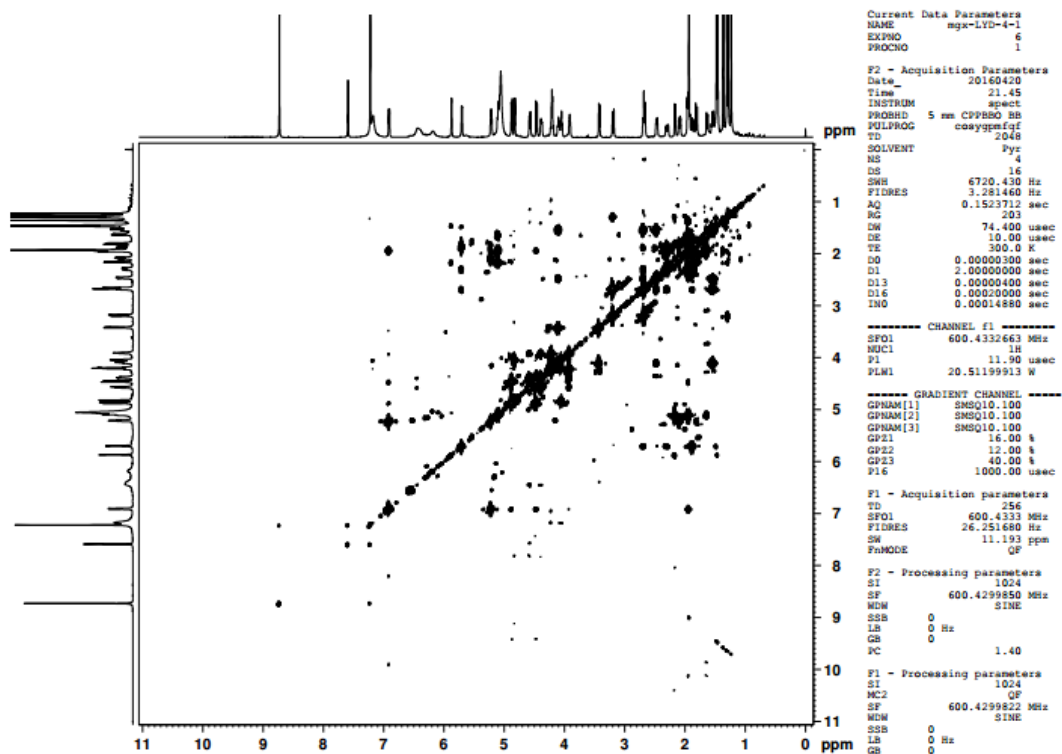


Figure S5. ^1H - ^1H COSY spectrum of the new compound 1

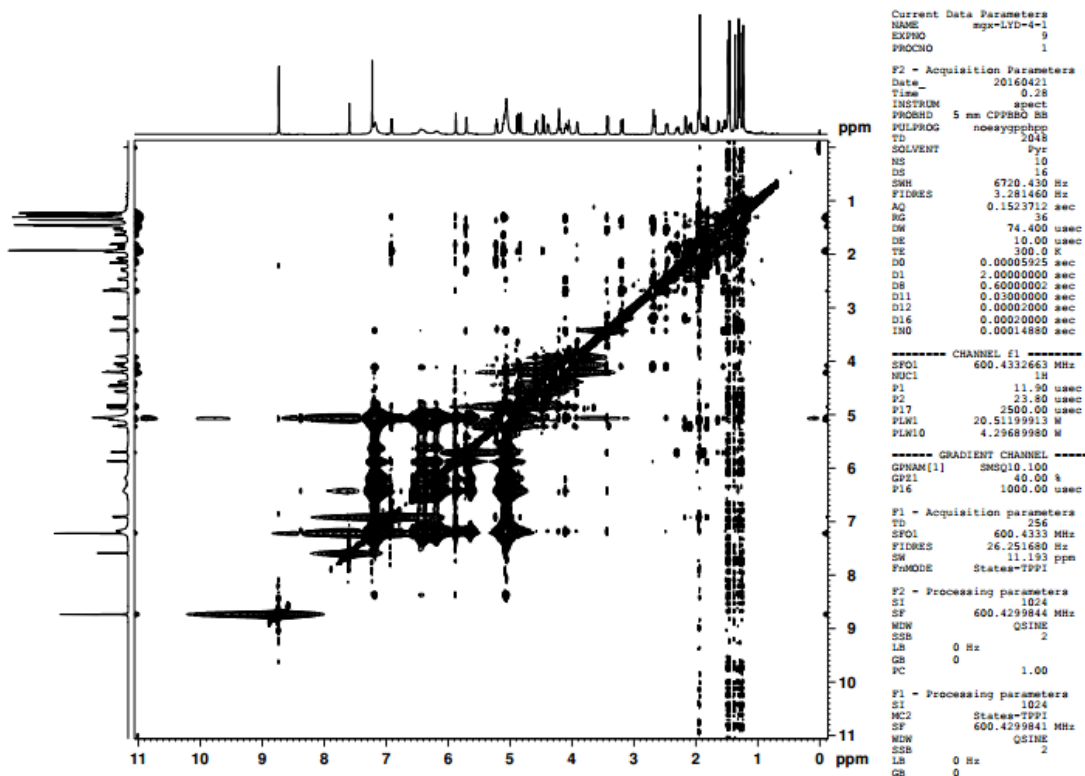


Figure S6. NOESY spectrum of the new compound 1

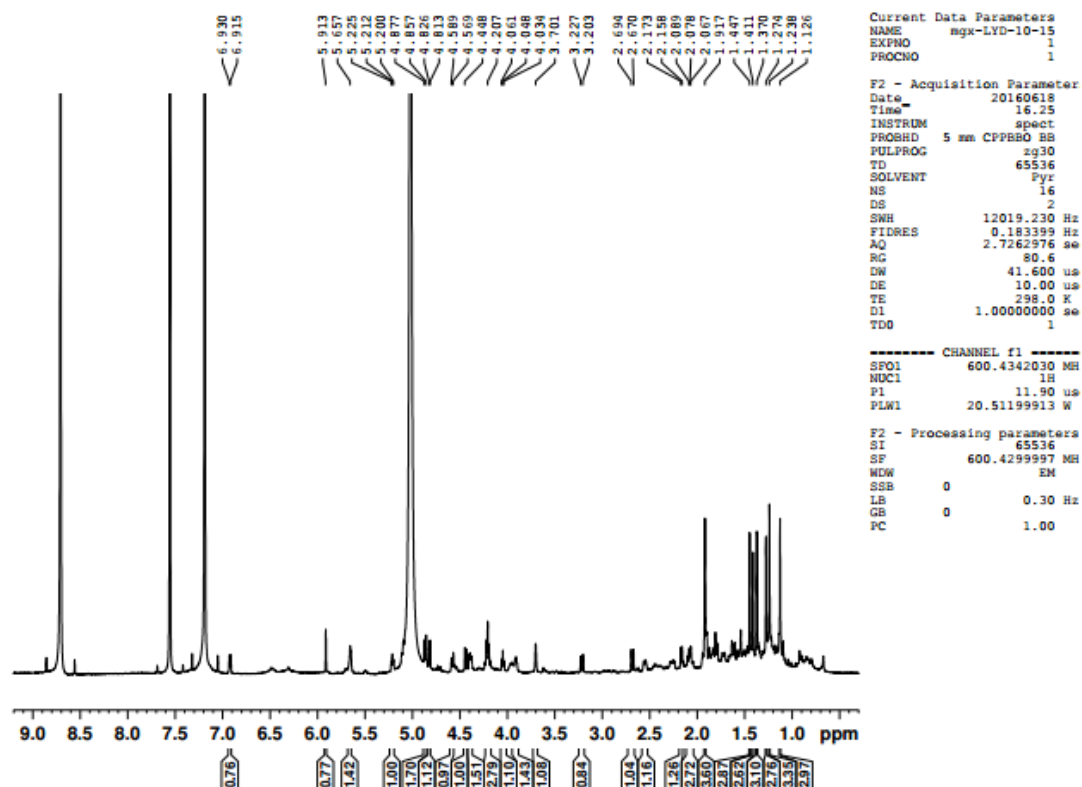


Figure S7. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound **2**

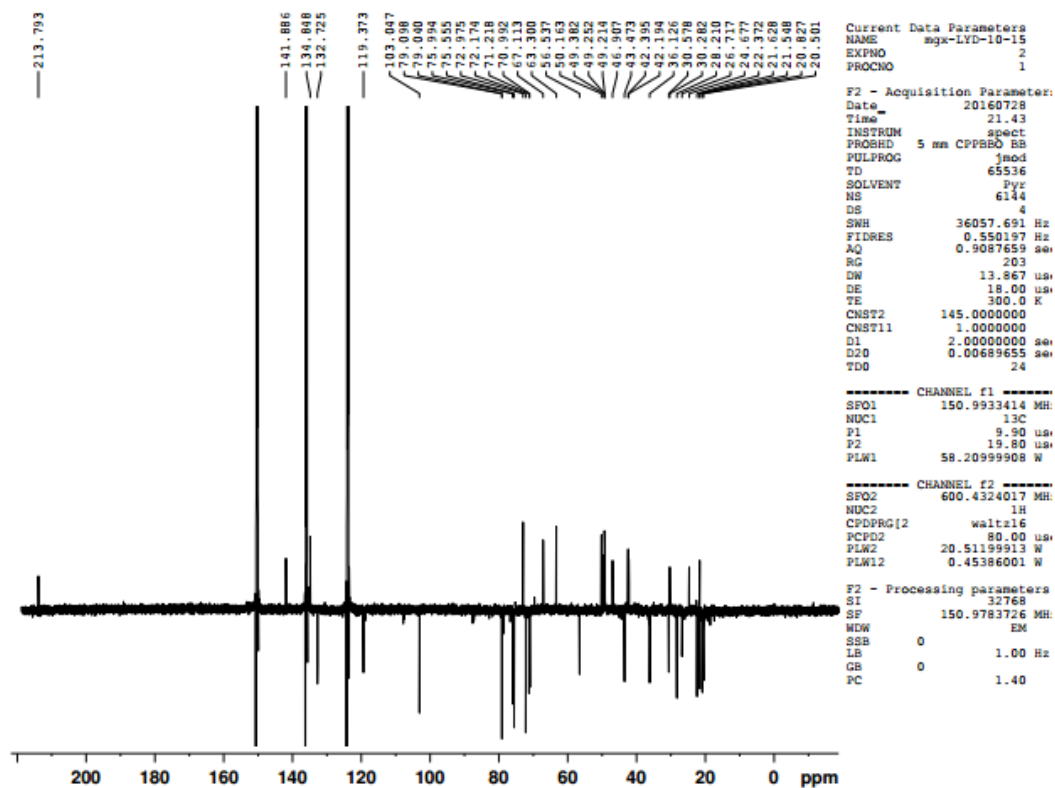


Figure S8. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **2**

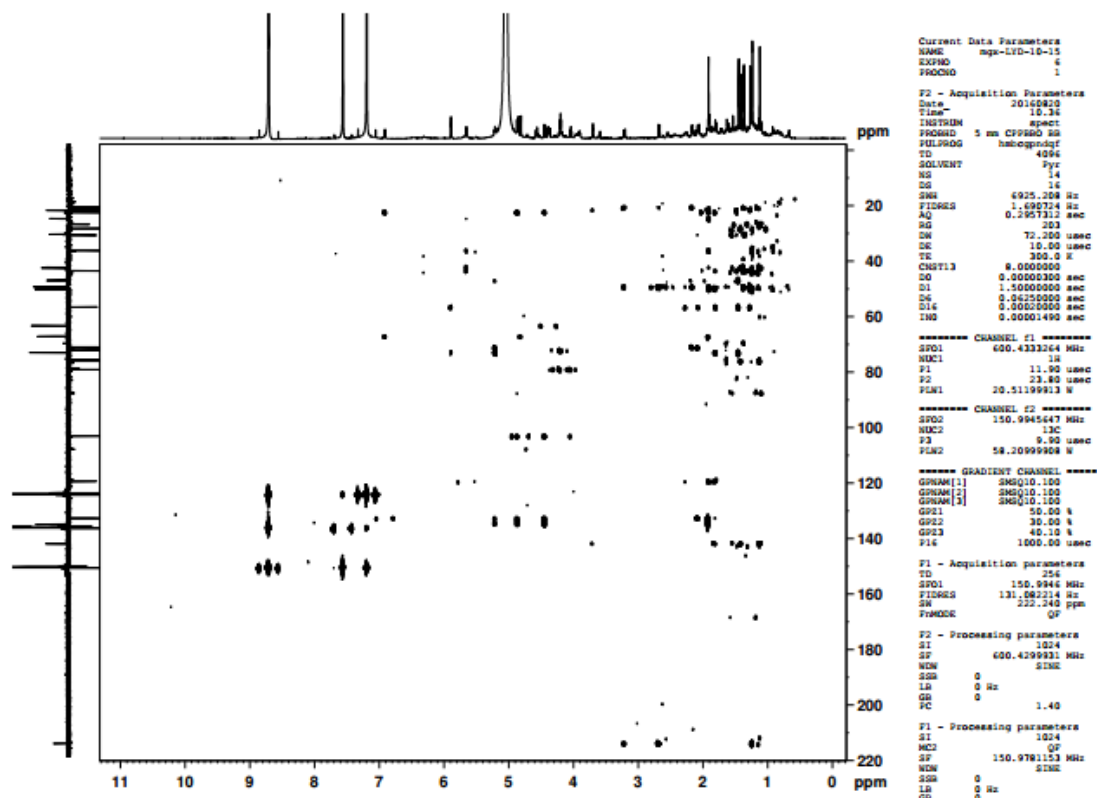


Figure S10. HMBC spectrum of the new compound 2

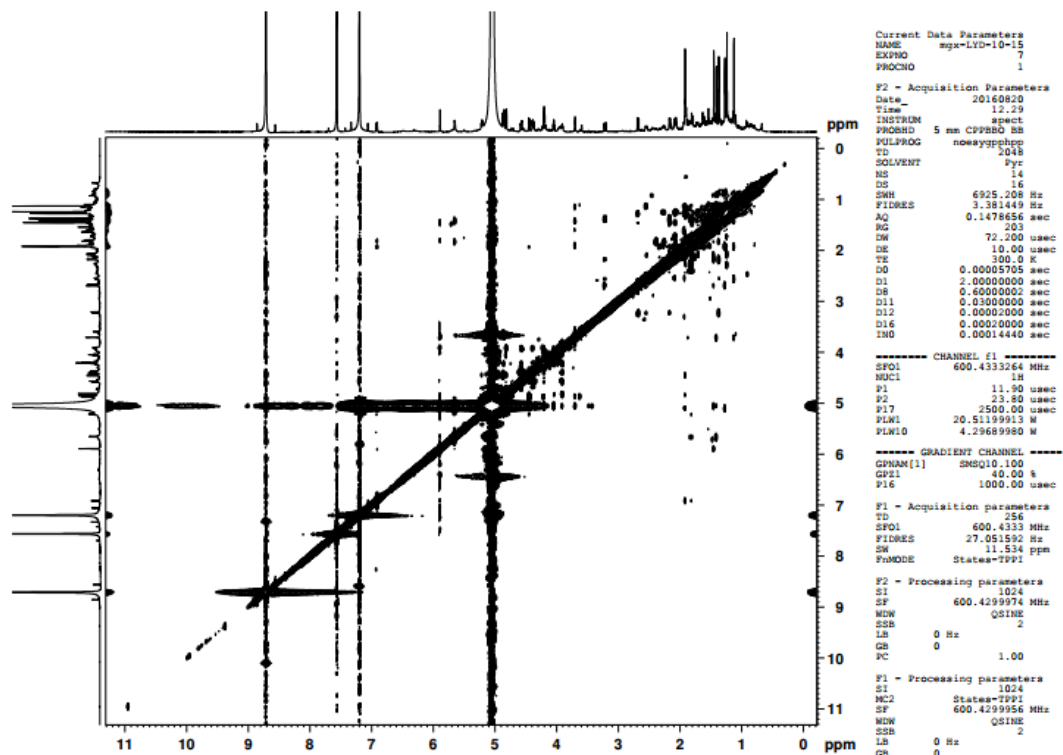


Figure S11. NOESY spectrum of the new compound 2

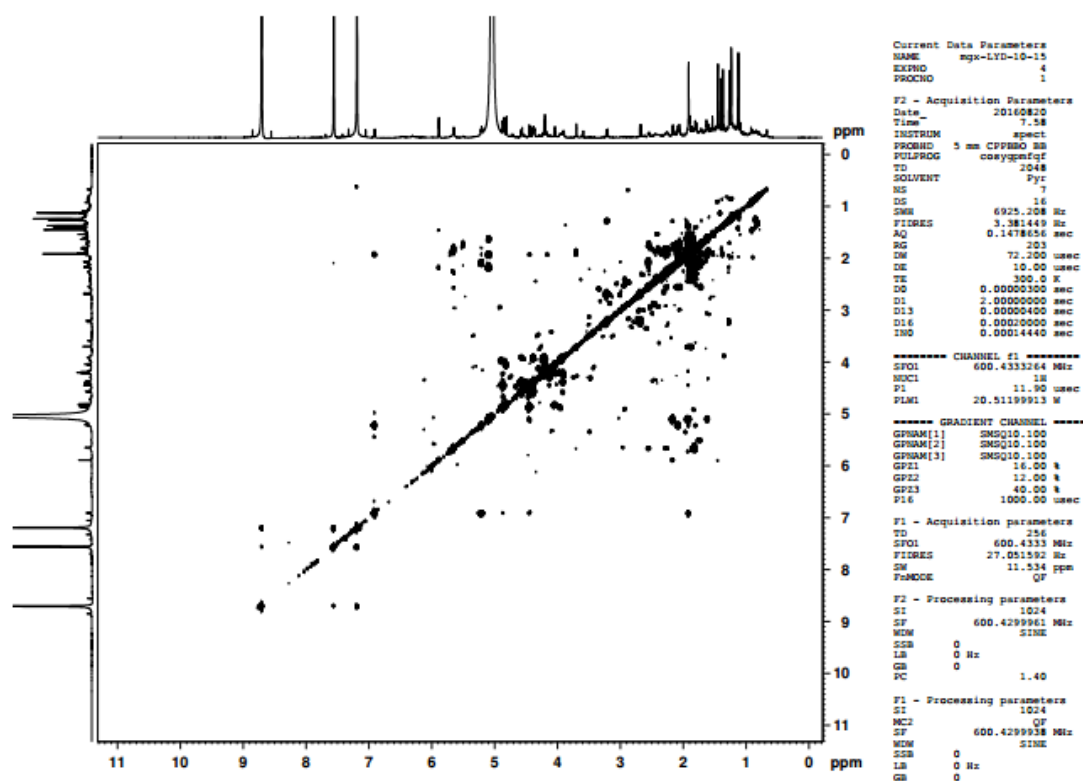


Figure S12. ^1H - ^1H COSY spectrum of the new compound 2

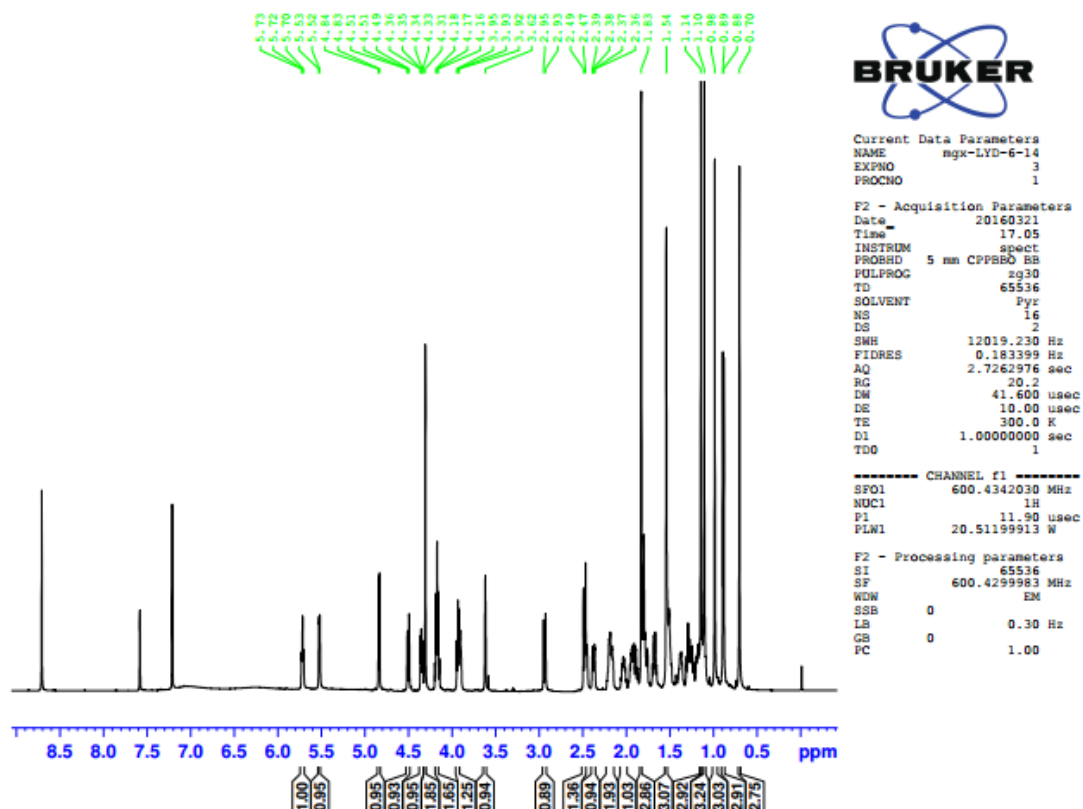


Figure S13. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound 3

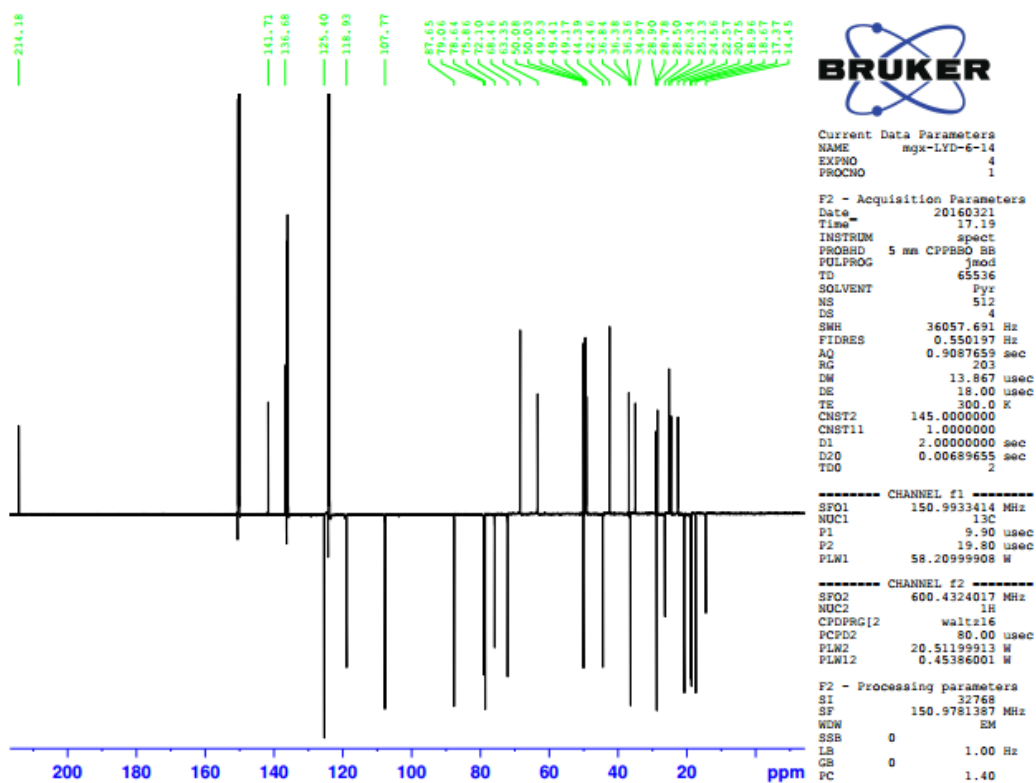


Figure S14. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound 3

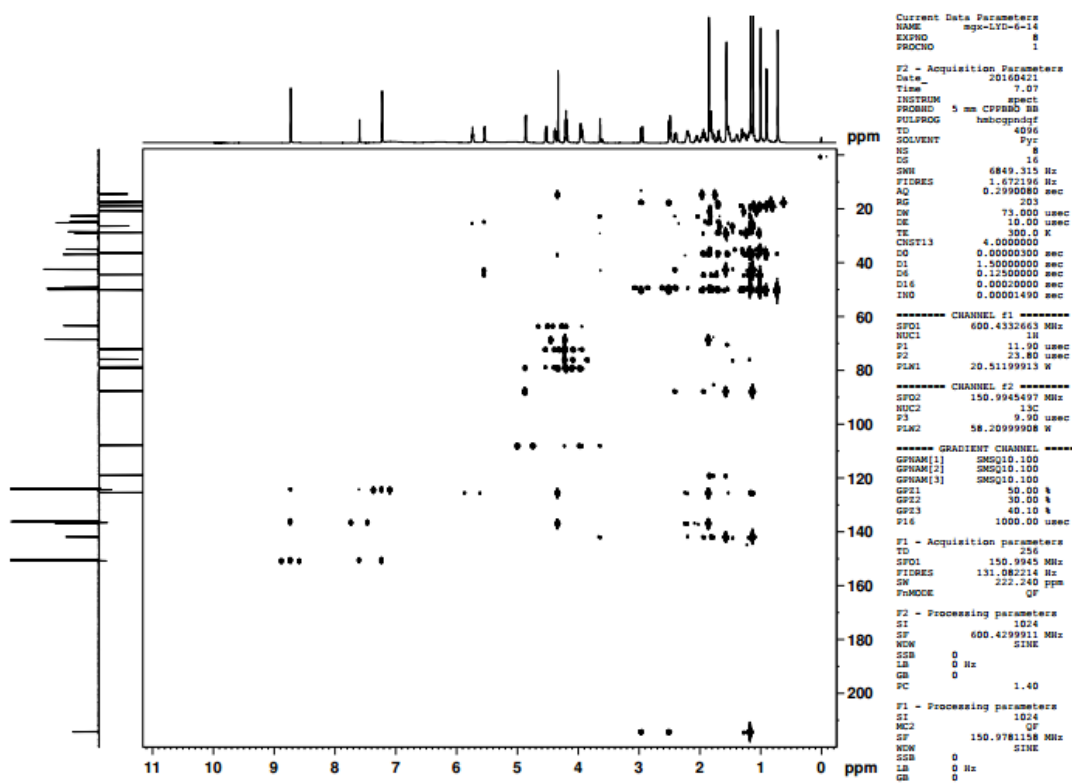


Figure S15. HMBC spectrum of the new compound 3

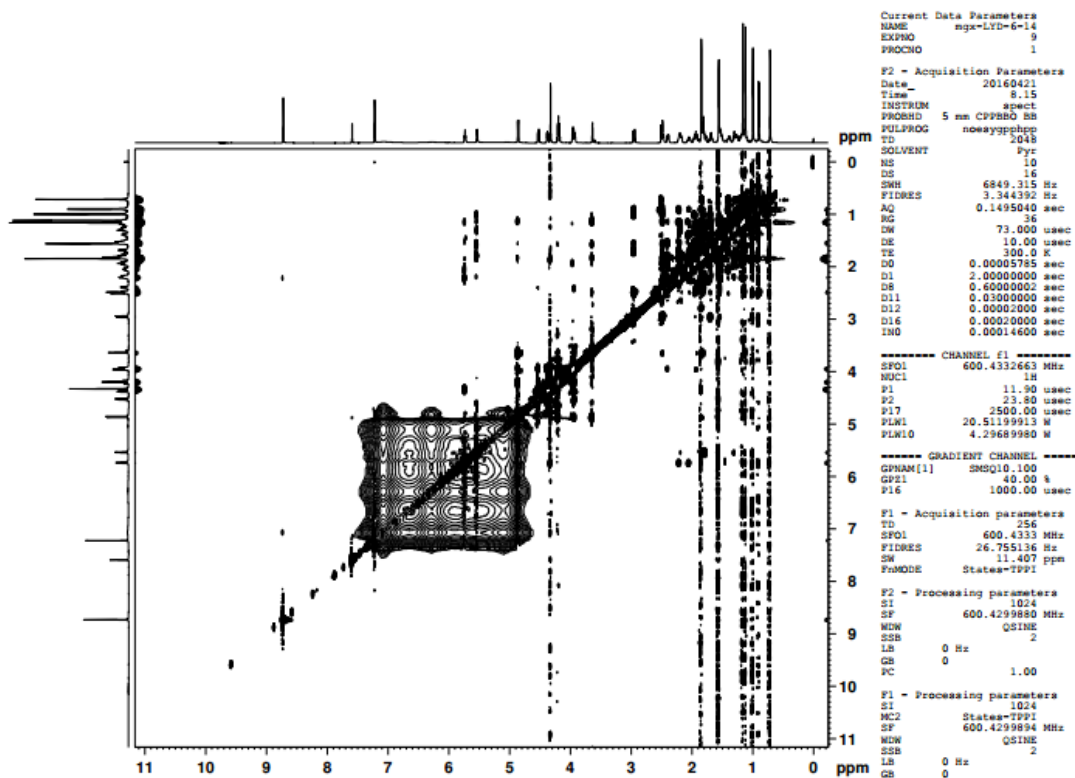


Figure S16. NOESY spectrum of the new compound 3

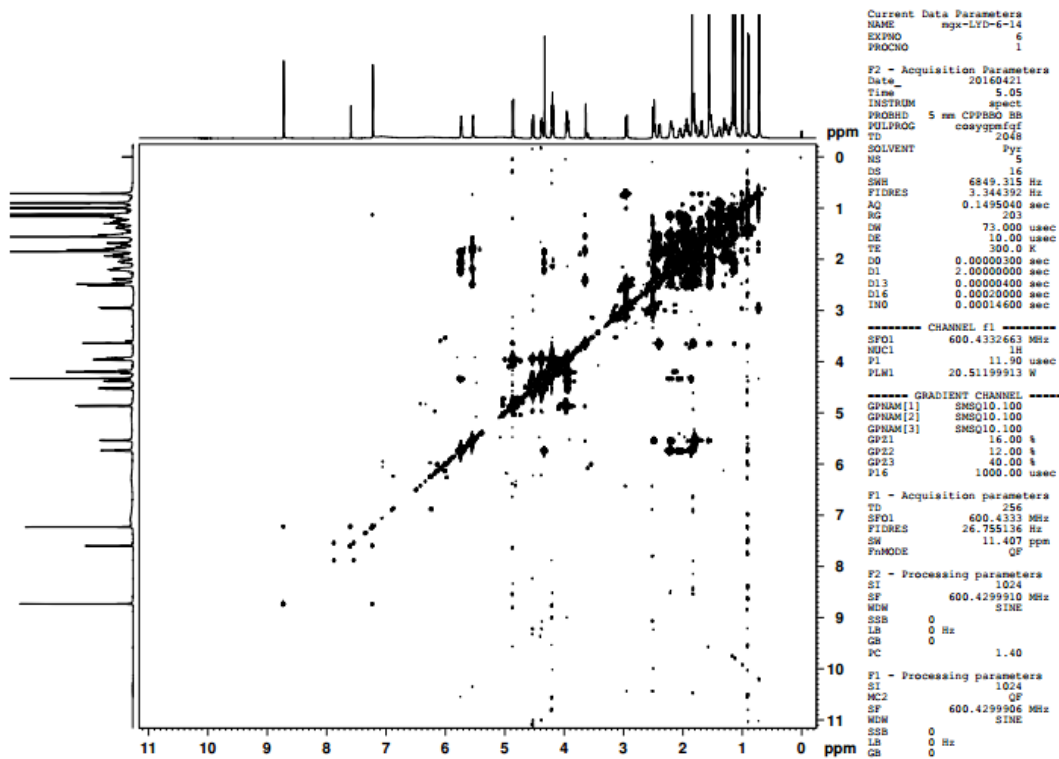


Figure S17. ^1H - ^1H COSY spectrum of the new compound 3

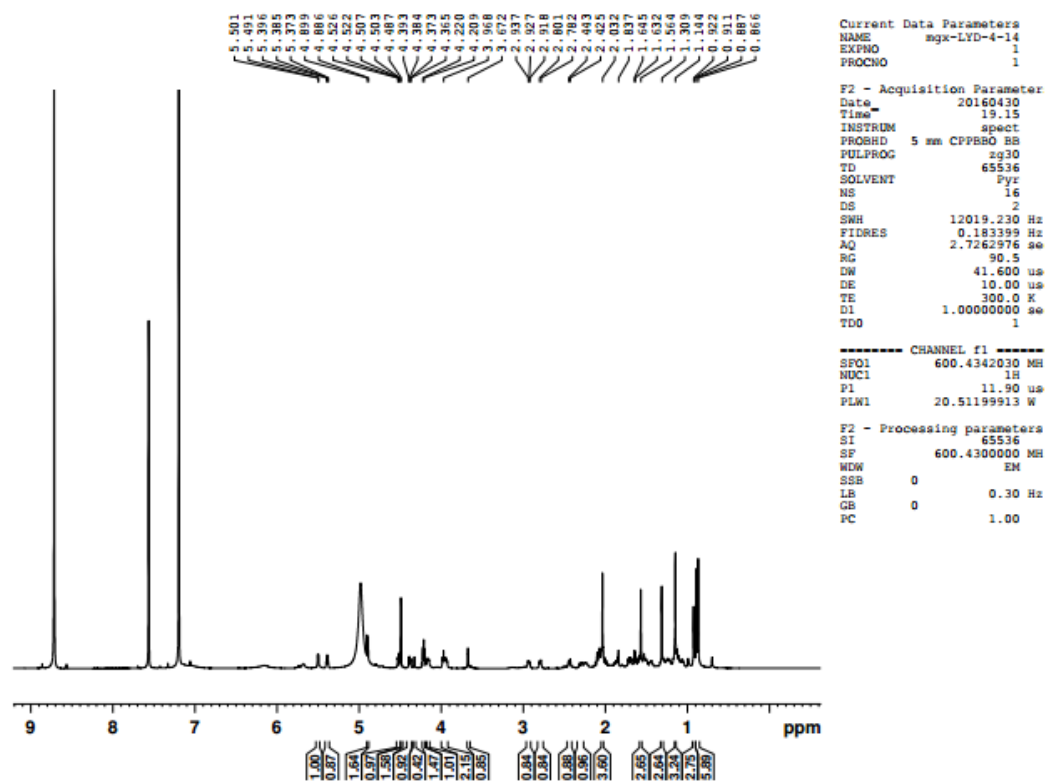


Figure S18. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound **4**

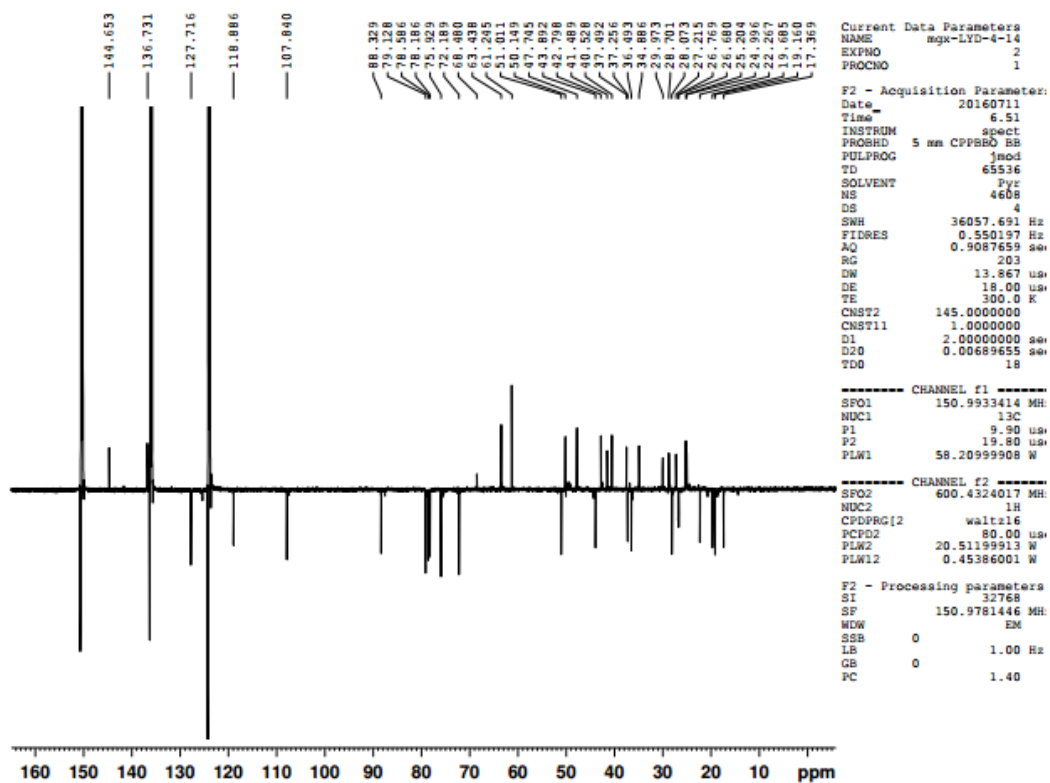


Figure S19. ^{13}C -APT (150 MHz, pyridine- d_5) spectrum of the new compound **4**

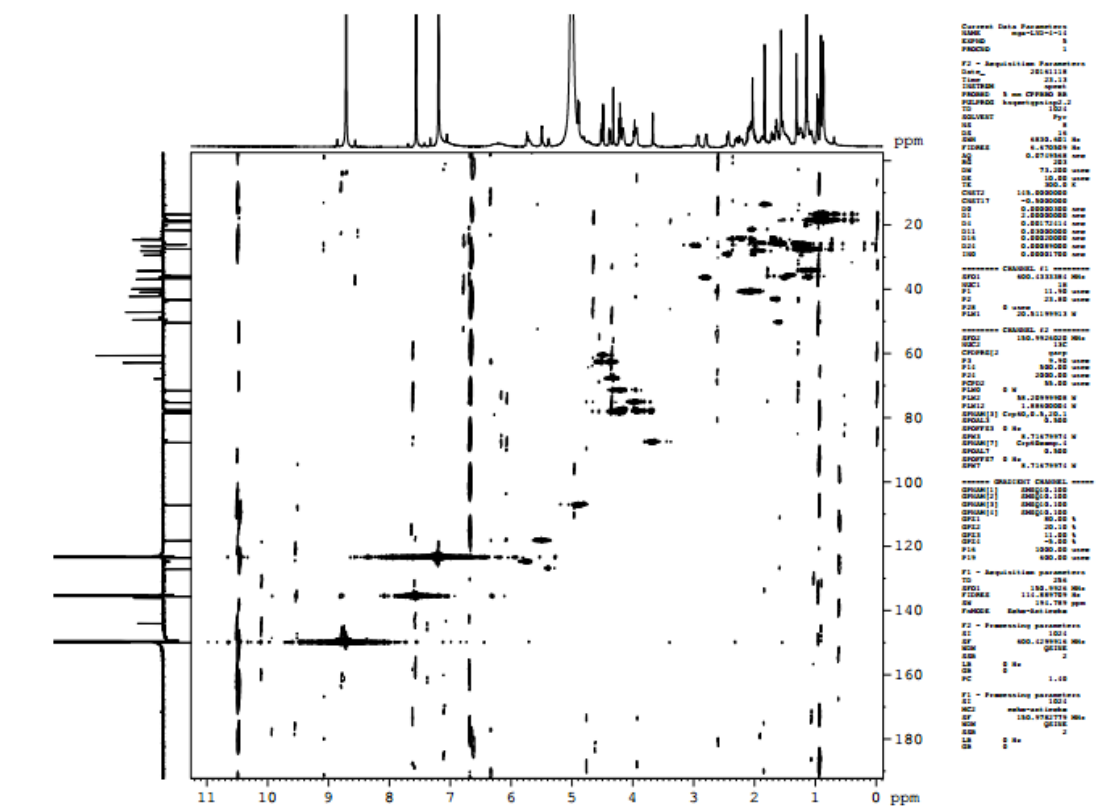


Figure S20. HSQC spectrum of the new compound 4

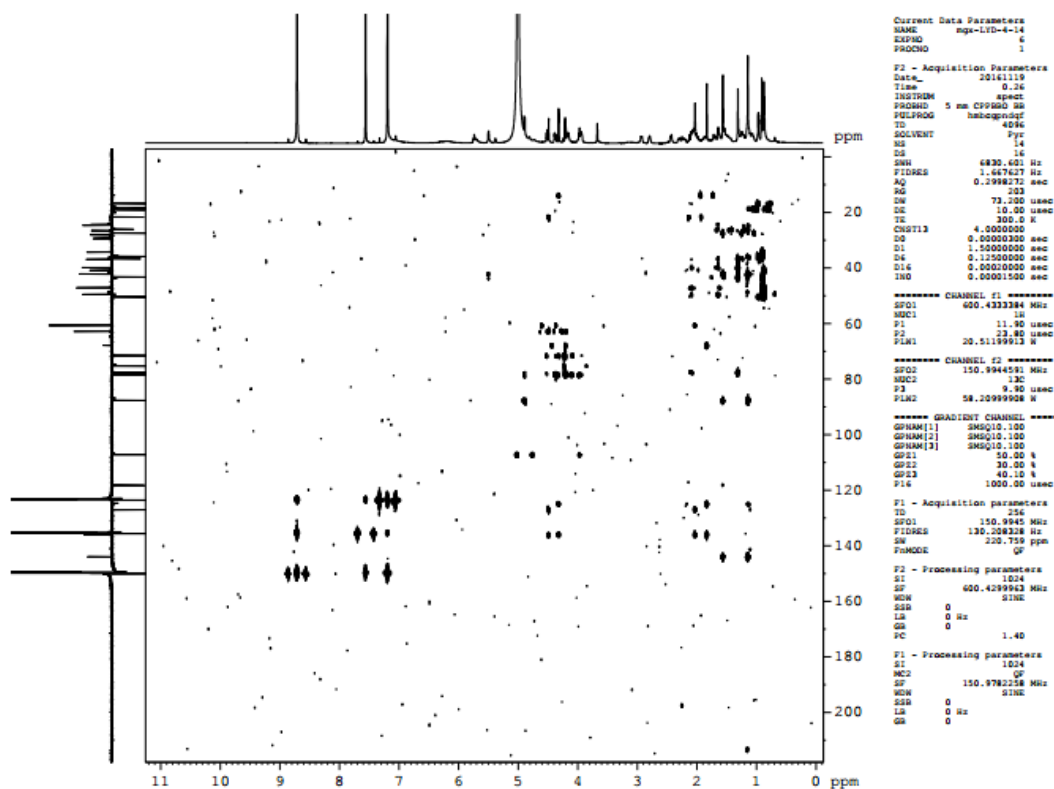


Figure S21. HMBC spectrum of the new compound 4

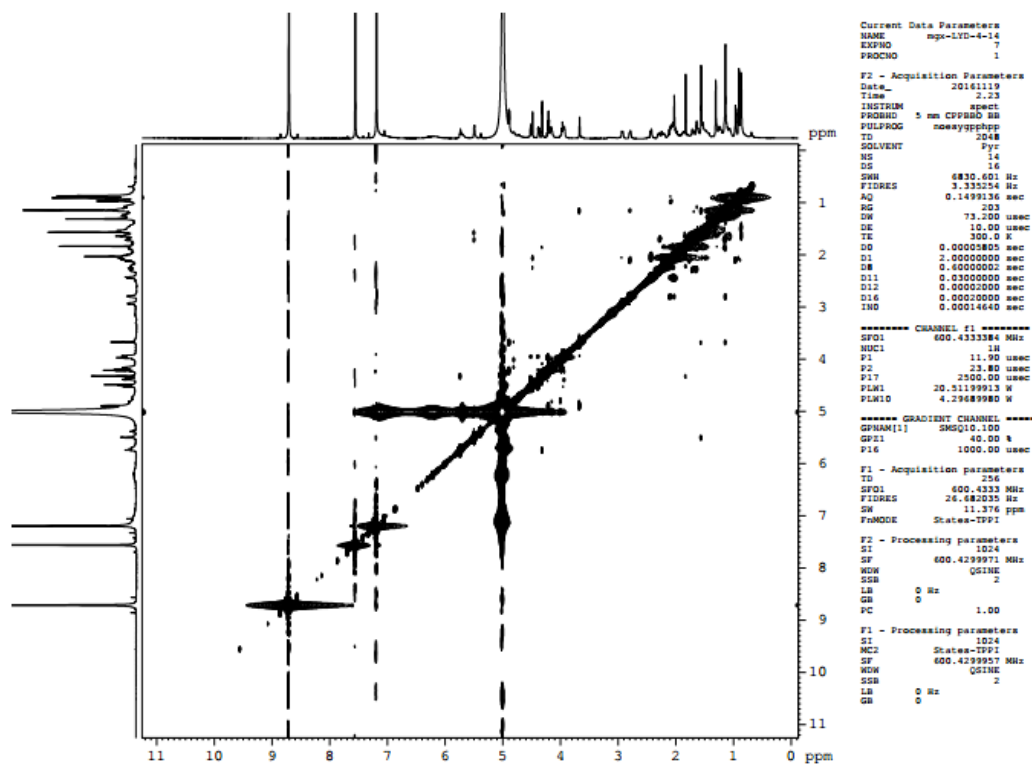


Figure S22. NOESY spectrum of the new compound 4

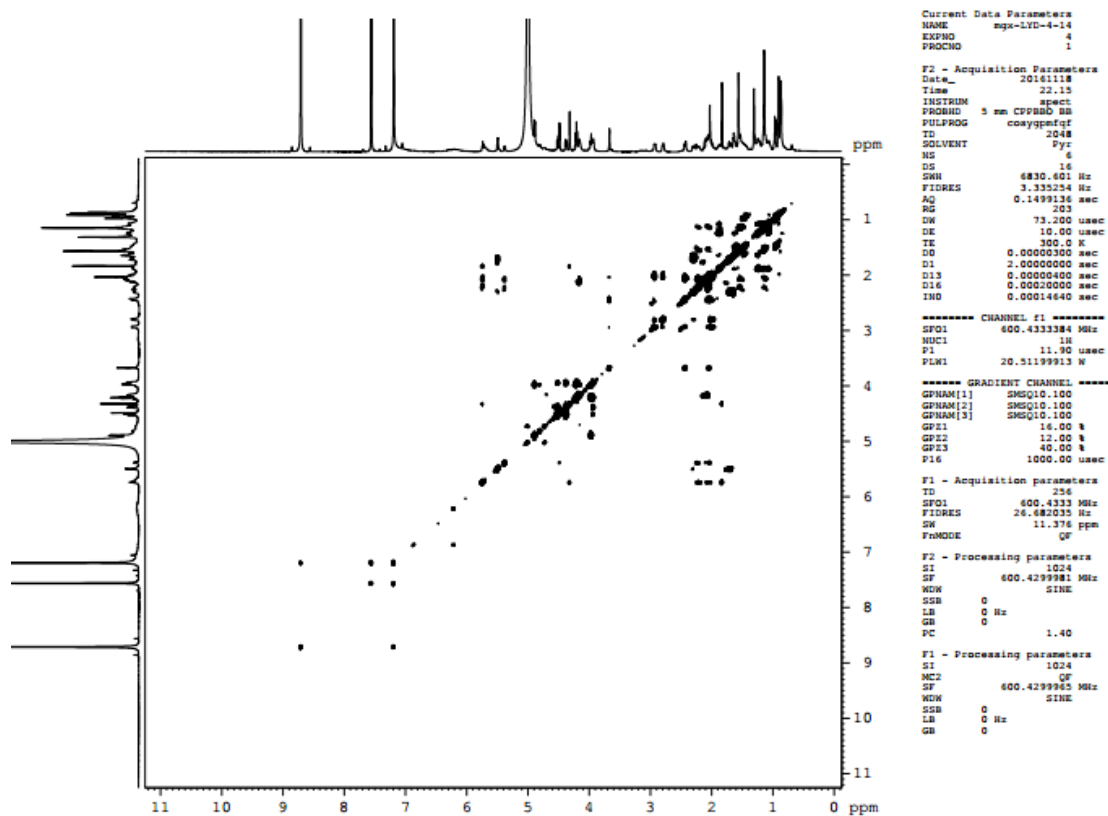


Figure S23. ^1H - ^1H COSY spectrum of the new compound 4

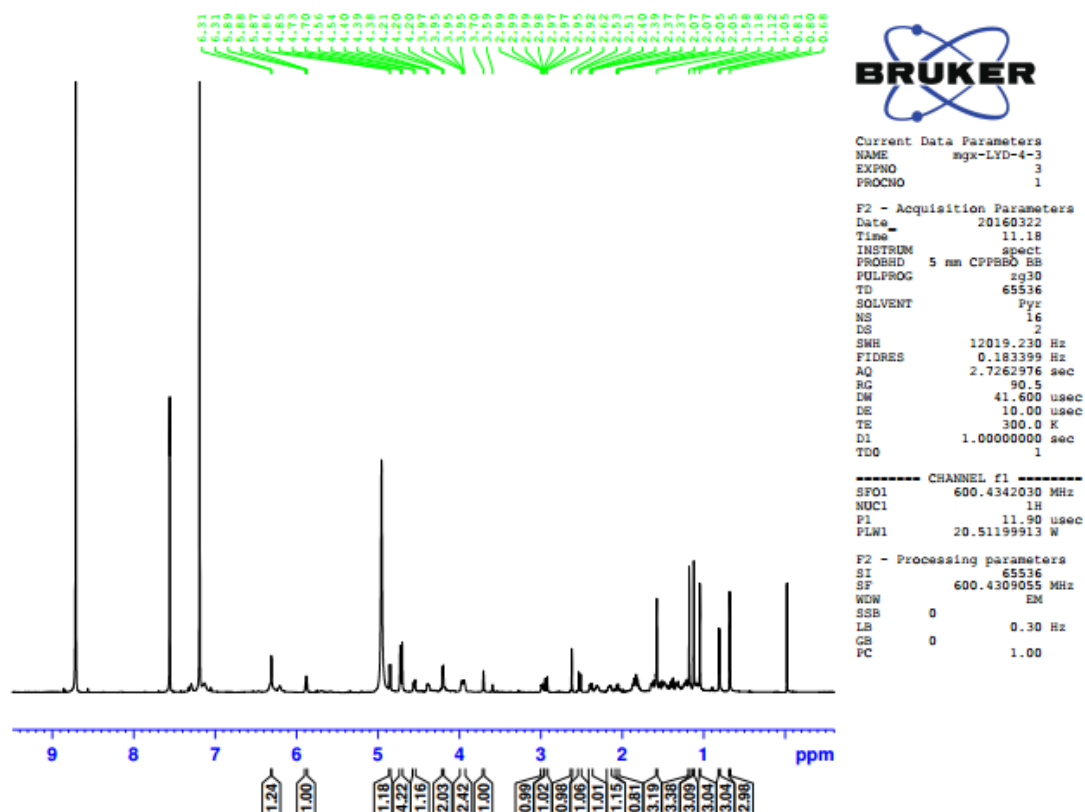


Figure S24. ^1H -NMR (600 MHz, pyridine- d_5) spectrum of the new compound 5

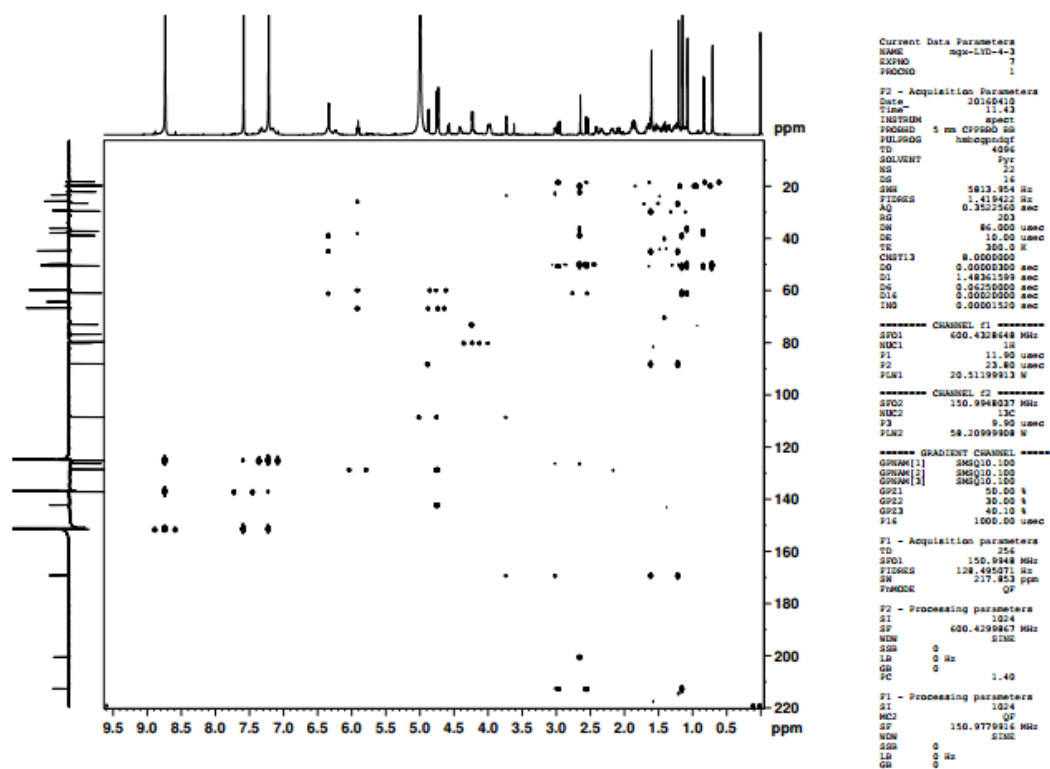


Figure S27. HMBC spectrum of the new compound 5

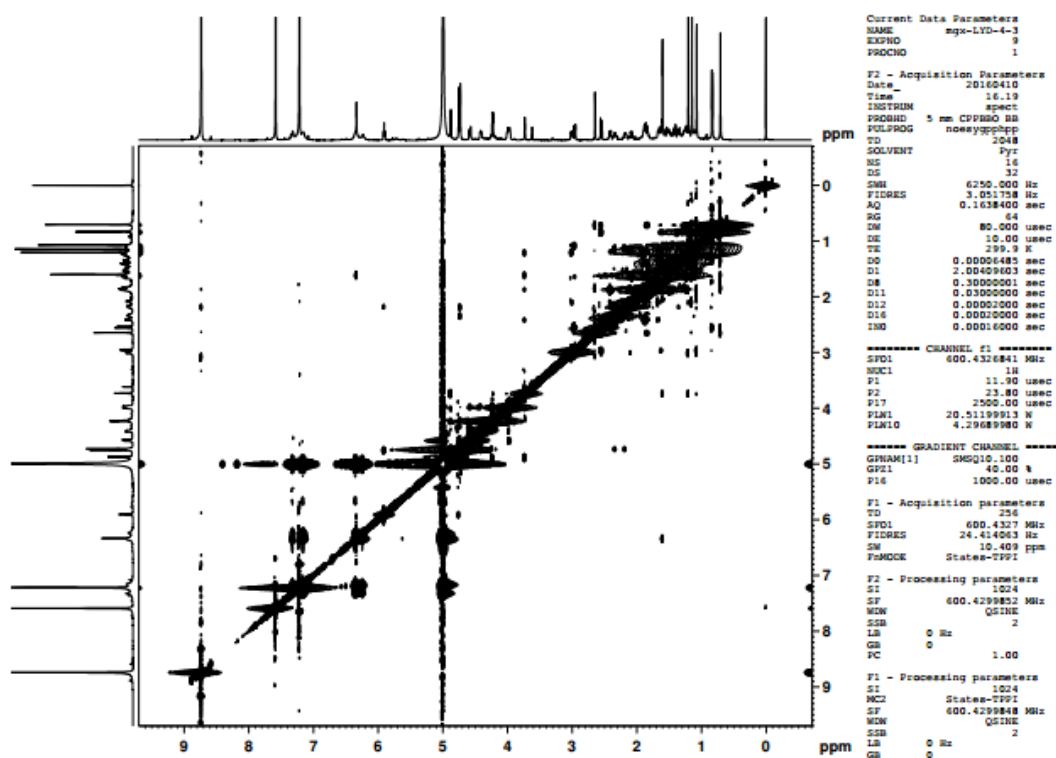


Figure S28. NOESY spectrum of the new compound 5

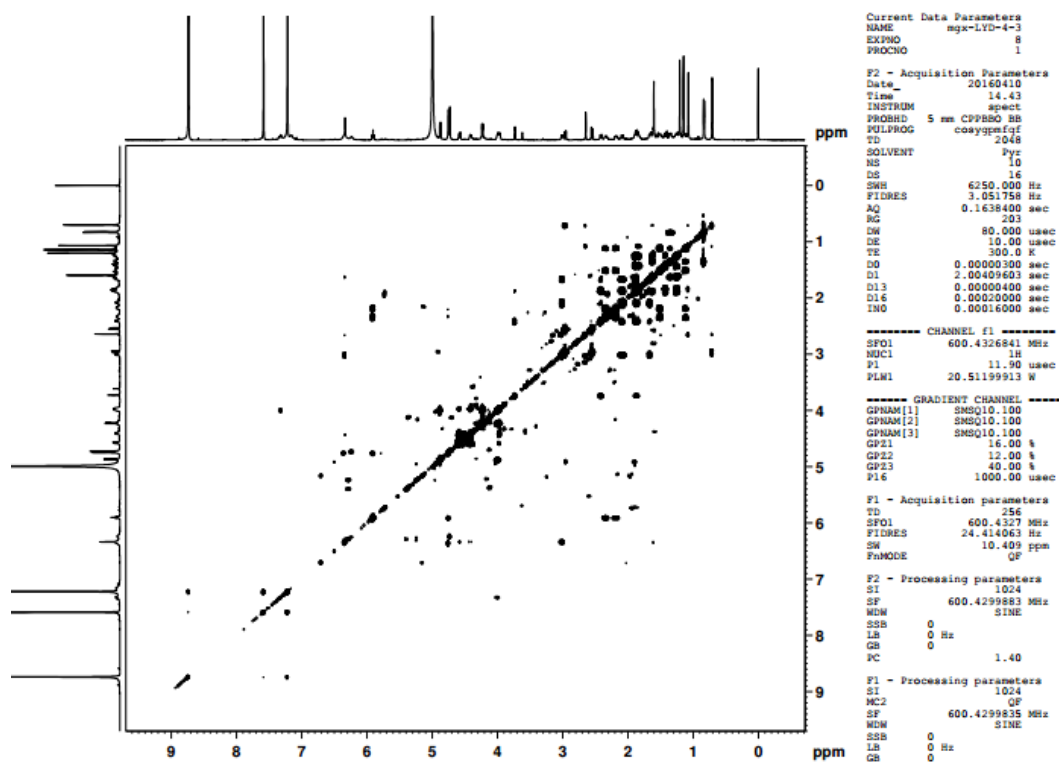


Figure S29. ^1H - ^1H COSY spectrum of the new compound **5**