CONTENTS

General experimental methods. Unless otherwise indicated, all reactions were carried out under an inert atmosphere. For chromatography of amino-pyridinols, the silica gel was deactivated by packing the column with eluent containing 1 % Et3N followed by rinsing with Et3N-free eluent. Column purifications of amino-pyridinols were carried out using nitrogen pressure gas. Spots were visualized by UV light, treatment with I_2 or treatment with phosphomolybdic acid. THF, ether and CH_2Cl_2 were dried using a Solvent Purification System from Solvtek. Hex-5-ynoic acid was purchased from TCI America, all other chemicals were purchased from Sigma-Aldrich Company. Peaks were calibrated on $CHCl_3$. In most cases, the spectrum for an amino-pyridinol is reported in $CDCl_3/D_2O$ (*vide infra*). For 2D NMR spectra, only the indicative couplings are given. Unless stated otherwise, all HRMS spectra were recorded using the electrospray technique. Systematic names for molecules according to IUPAC rules were generated using the Beilstein AutoNom program version 2.02.118 and/or by using the ACD/I-Lab Web service (ACD/IUPAC Name Free 7.06) and adjusted where appropriate.

pH Titration curve. Solution A was prepared by dissolving the appropriate PyrOH in 11 mL of 0.013 M NaOH in MeOH/H2O (1/3) to achieve a ~8 mM solution of PyrOH. To obtain a reasonably clear solution, sonication and vortexing were useful. Solution B was an aq. 0.013 M HCl solution. Solution A was stirred at room temperature and the pH was continuously recorded by a pH electrode that was immersed in the solution. Titration was performed by adding 25-200 μL of solution B, waiting for 5 s

for full mixing and recording of the pH. This was repeated until the pH was approaching 3. The approximated first derivative was obtained by plotting the slope between the two direct neighbors for a certain point. The curve thus obtained for pyridinol **1d** is depicted below.

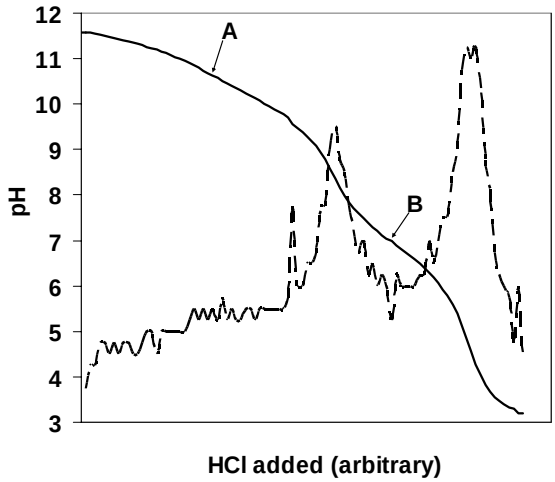

Figure 1: pH titration curve of **1d** with aq. HCl. Solid line: pH curve. Dotted line: approximated first derivative curve. A= pK_a for phenolic hydroxyl group. B=pK_b for pyridine nitrogen.

NMR SPECTRA OF FINAL PRODUCTS

General note about NMR spectra: ^{1}H-NMR analysis of all *p*-amino-pyridinols in $CDCl_3$ displayed significant to extreme broadening of all signals. It was found that the most or all of the broadening could be removed by recording the NMR spectrum in $CDCl_3/D_2O$ or in CD_3CN.

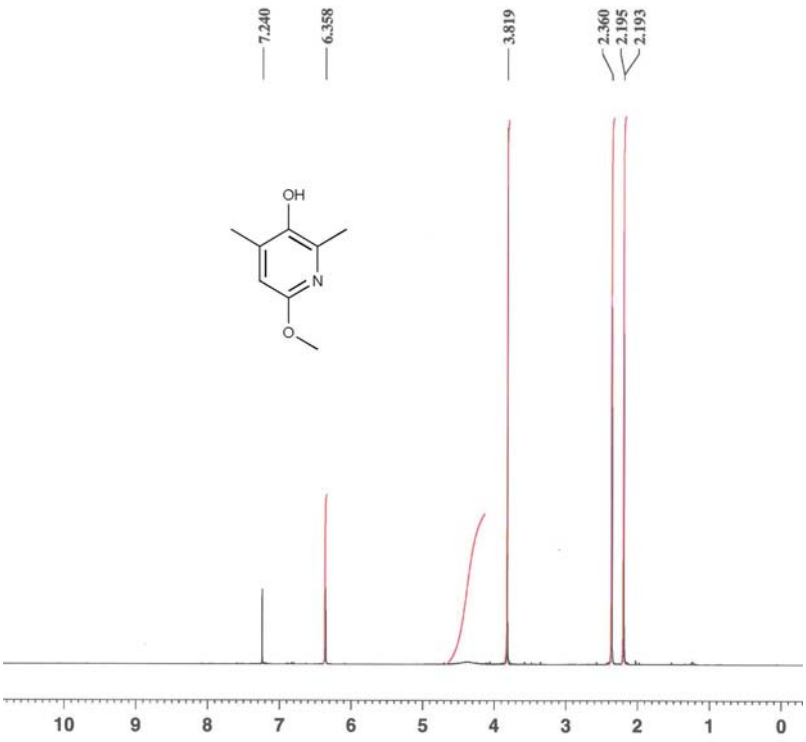

Figure 2. ^{1}H-NMR spectrum of pyridinol **1c** in $CDCl_3$.

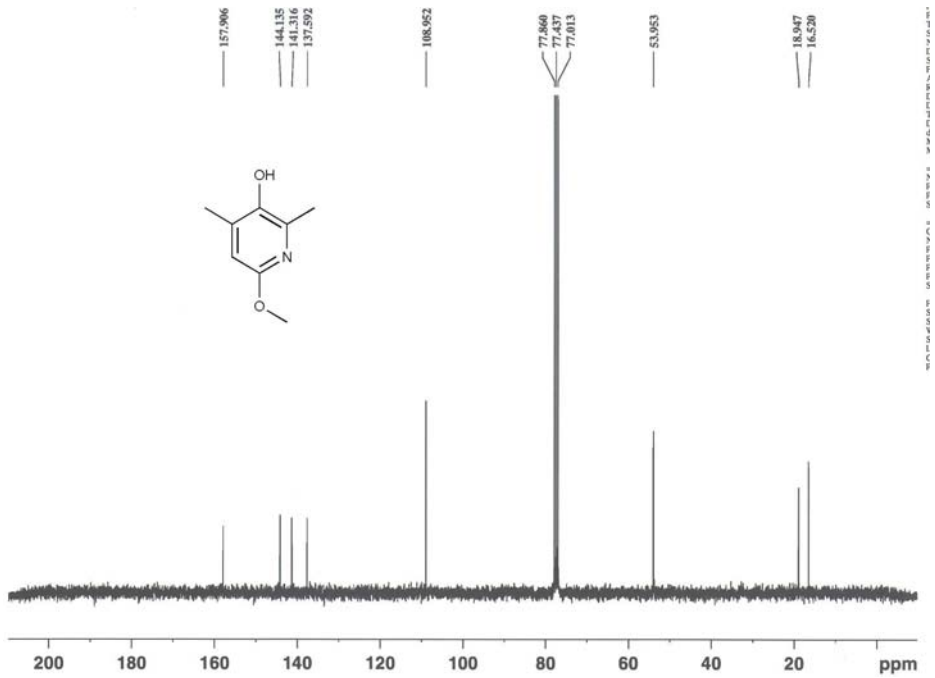

Figure 3. ^{13}C-NMR spectrum of pyridinol **1c** in $CDCl_3$.

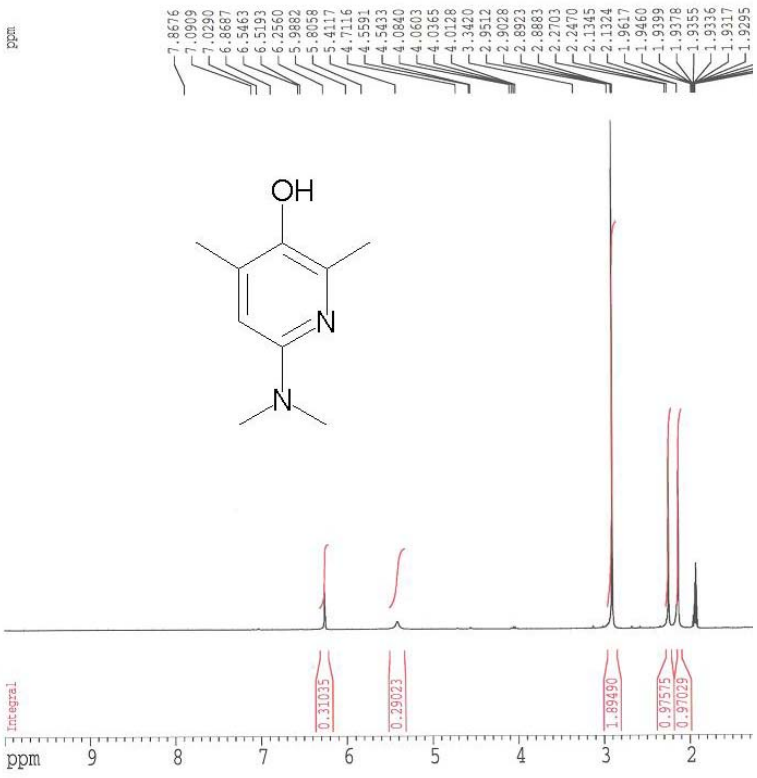

Figure 4. ^{1}H-NMR spectrum of pyridinol **1d** in CD_3CN.

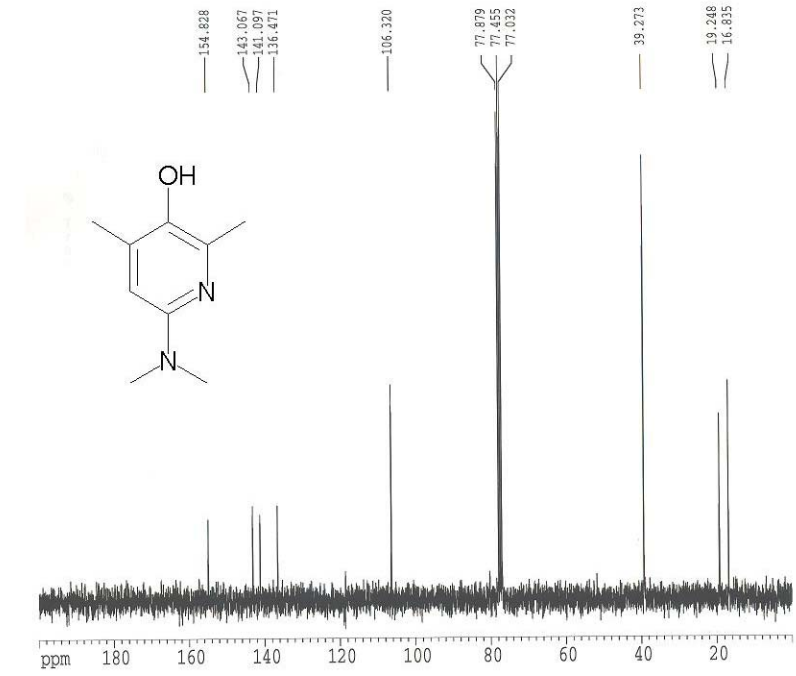

Figure 5. ^{13}C-NMR spectrum of pyridinol **1d** in $CDCl_3/D_2O$.

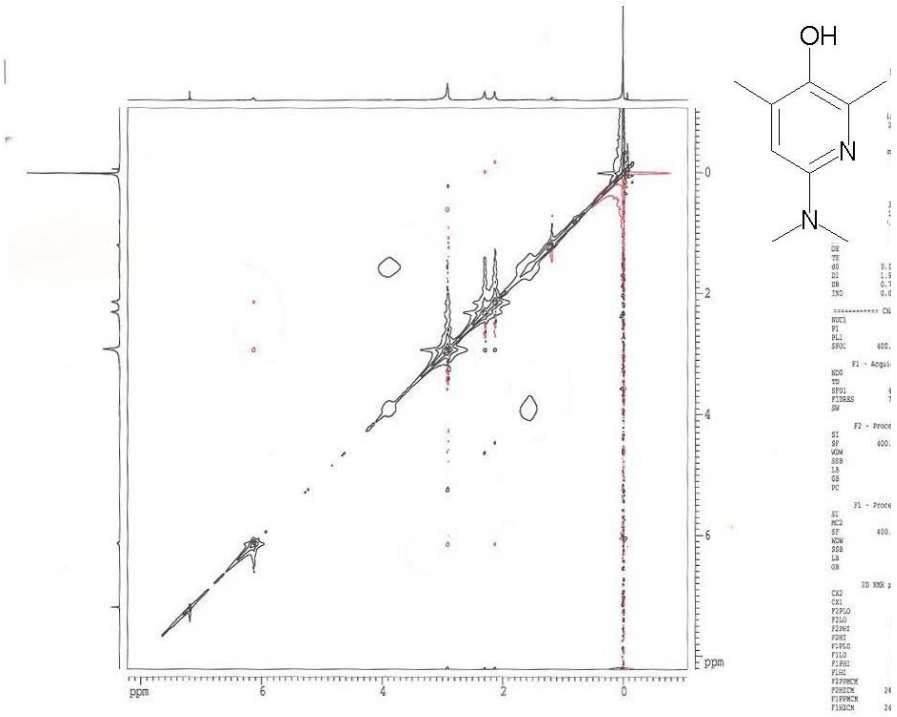

Figure 6. 2D-NOESY correlation spectrum of pyridinol **1d** in $CDCl_3/D_2O$.

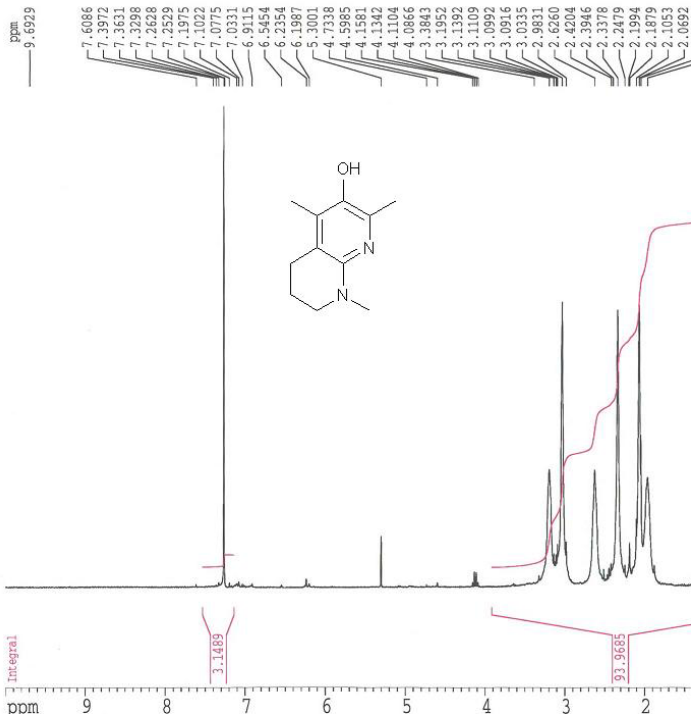

Figure 7. ^{1}H-NMR spectrum of pyridinol **2** in $CDCl_3/D_2O$. Despite the D_2O, the peaks would not sharpen. Therefore, very small traces of CH_2Cl_2 and EtOAc are visible even after extensive drying.

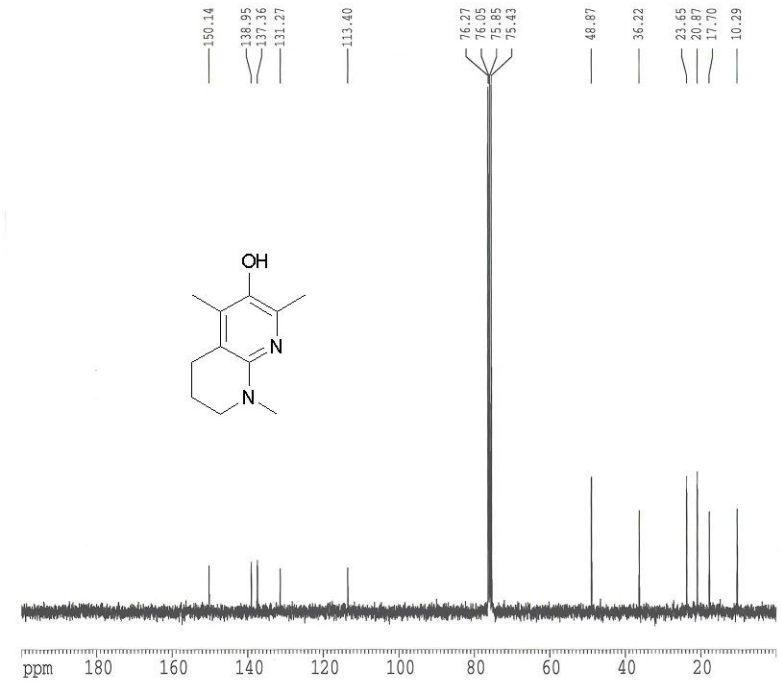

Figure 8. ^{13}C-NMR spectrum of pyridinol **2** in $CDCl_3/D_2O$.

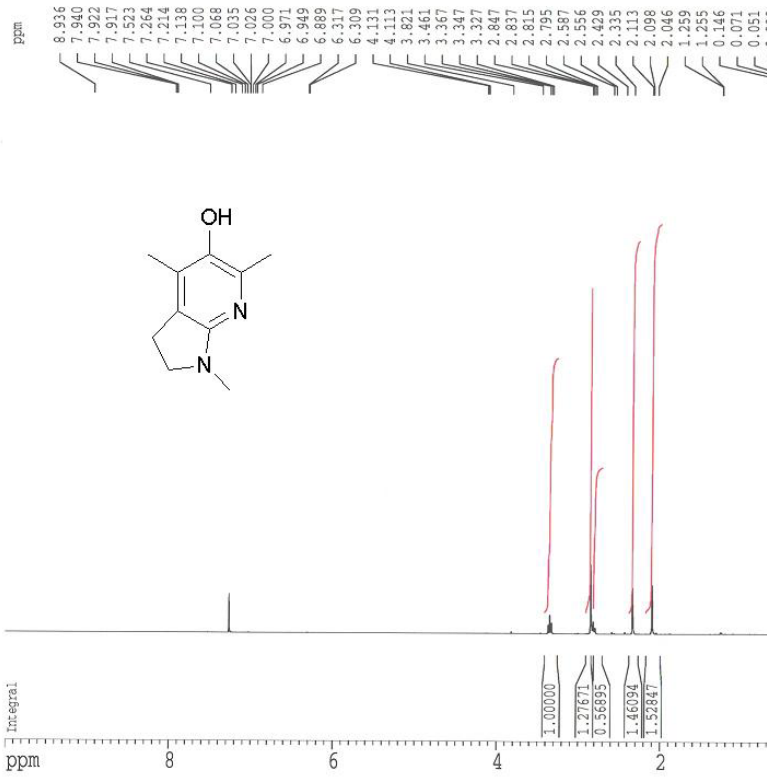

Figure 9. ^{1}H-NMR spectrum of pyridinol **3** in $CDCl_3/D_2O$.

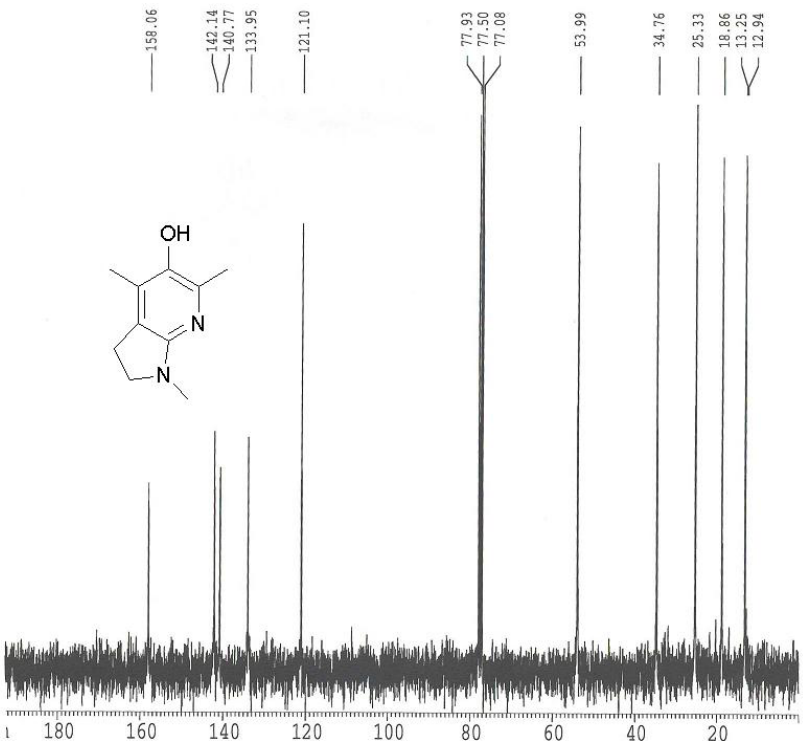

Figure 10. ^{13}C-NMR spectrum of pyridinol **3** in $CDCl_3/D_2O$.

NMR SPECTRA OF SELECTED INTERMEDIATES

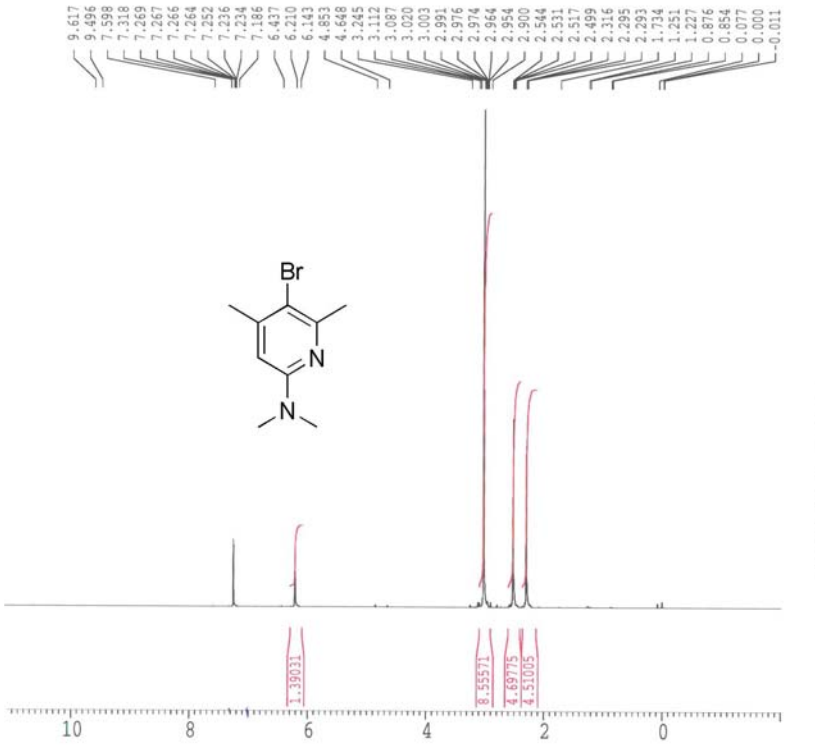

Figure 11. ^{1}H-NMR spectrum of bromide **5** in $CDCl_3$.

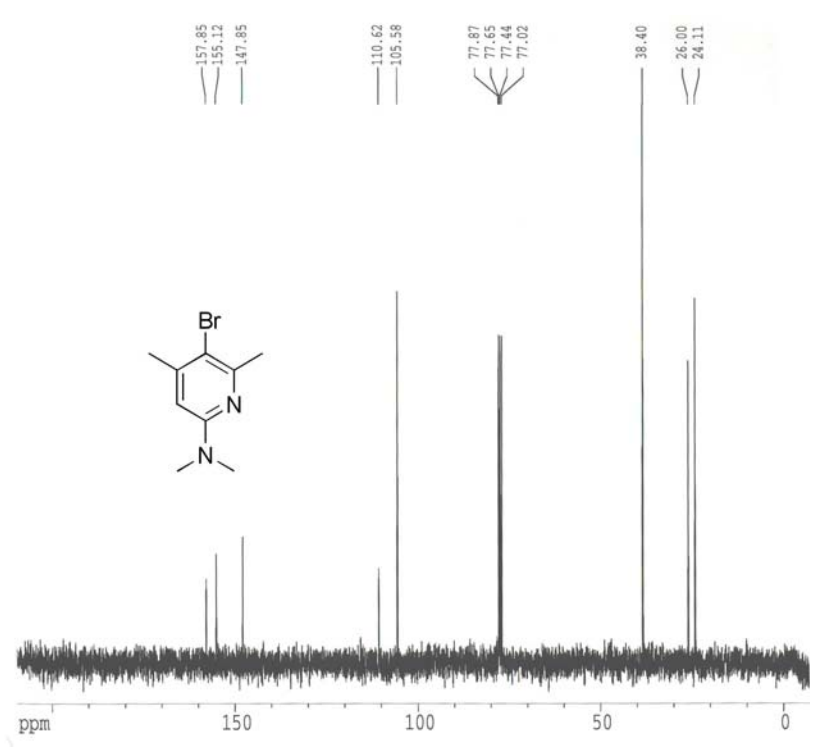

Figure 12. ^{13}C-NMR spectrum of bromide **5** in $CDCl_3$.

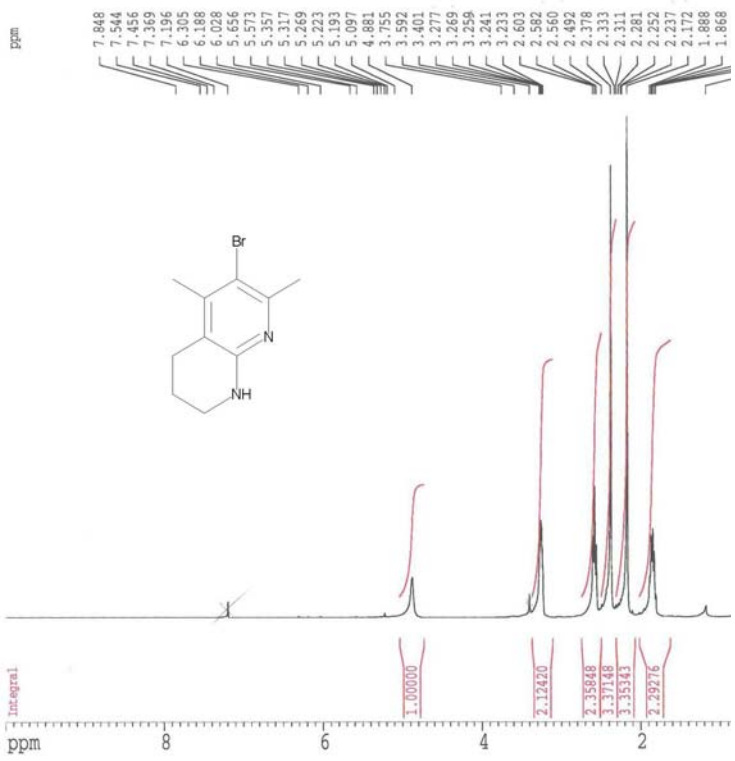

Figure 13. ^{1}H-NMR spectrum of bromide **13** as a MeOH-solvate in $CDCl_3$.

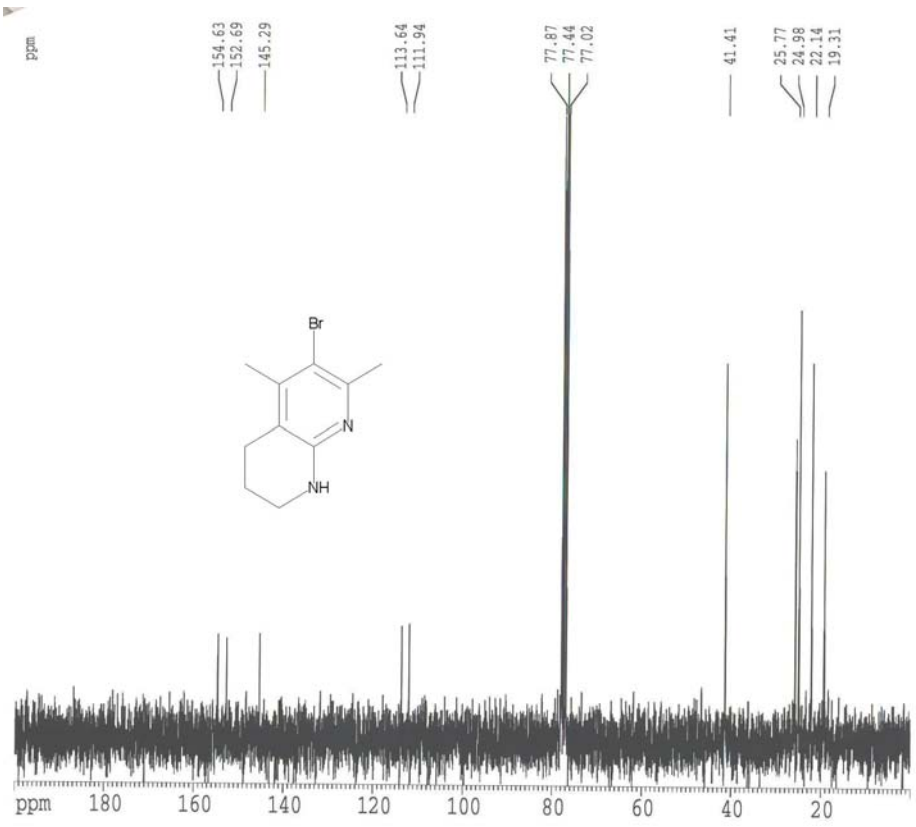

Figure 14. ^{13}C-NMR spectrum of bromide **13** in $CDCl_3$.

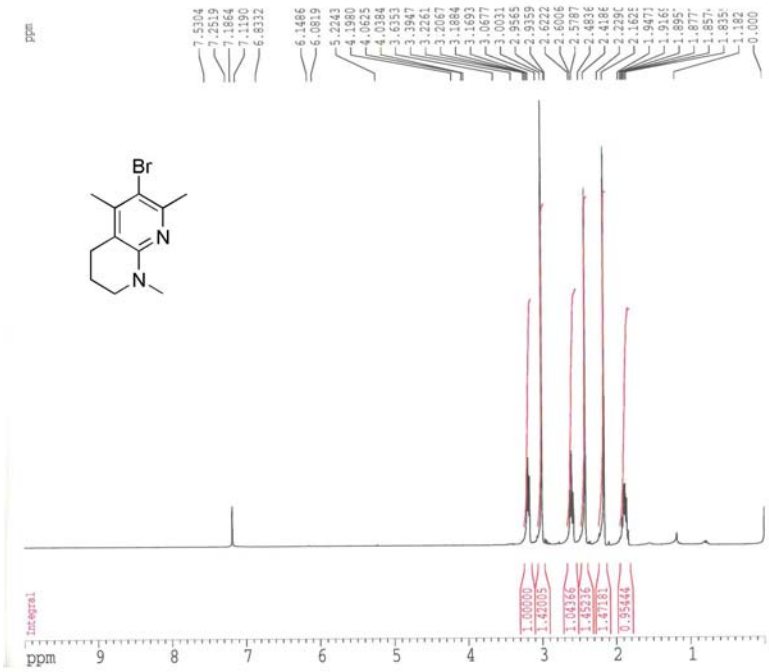

Figure 15. ^{1}H-NMR spectrum of bromide **14** in $CDCl_3$.

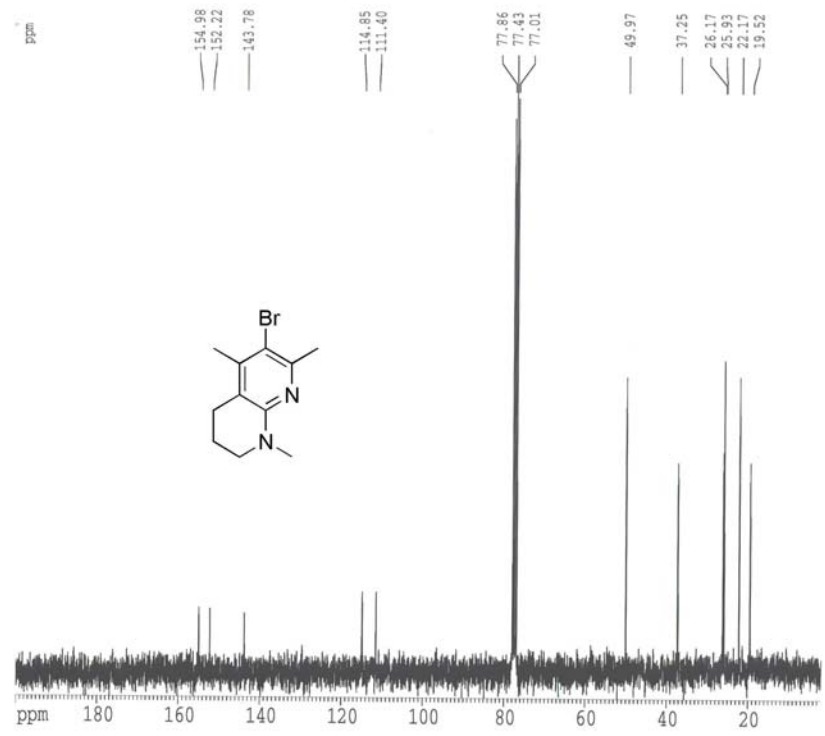

Figure 16. ^{13}C-NMR spectrum of bromide **14** in $CDCl_3$

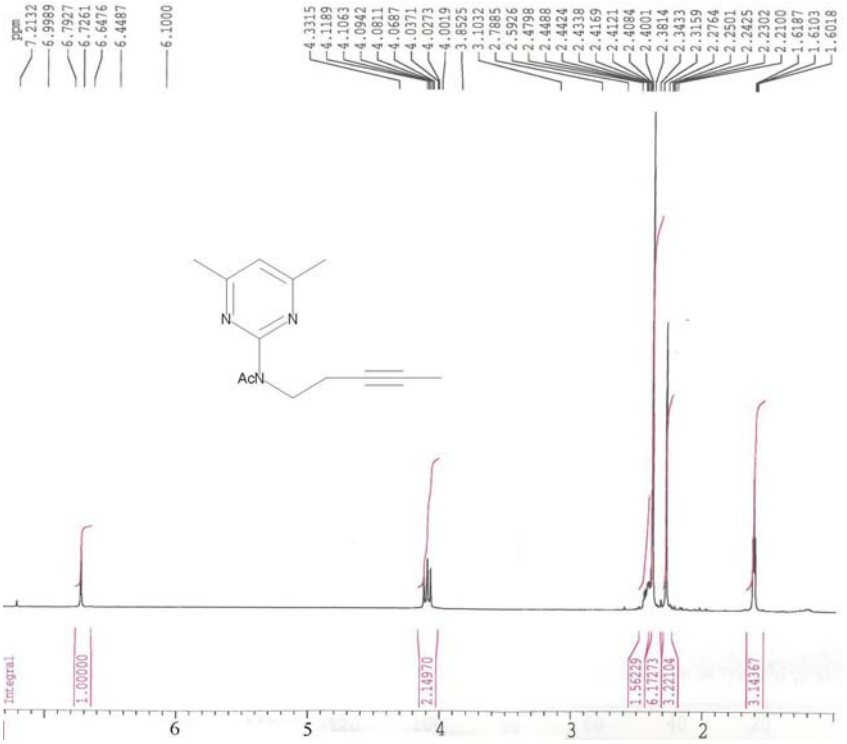

Figure 17. ^{1}H-NMR spectrum of acetamide **20** in $CDCl_3$.

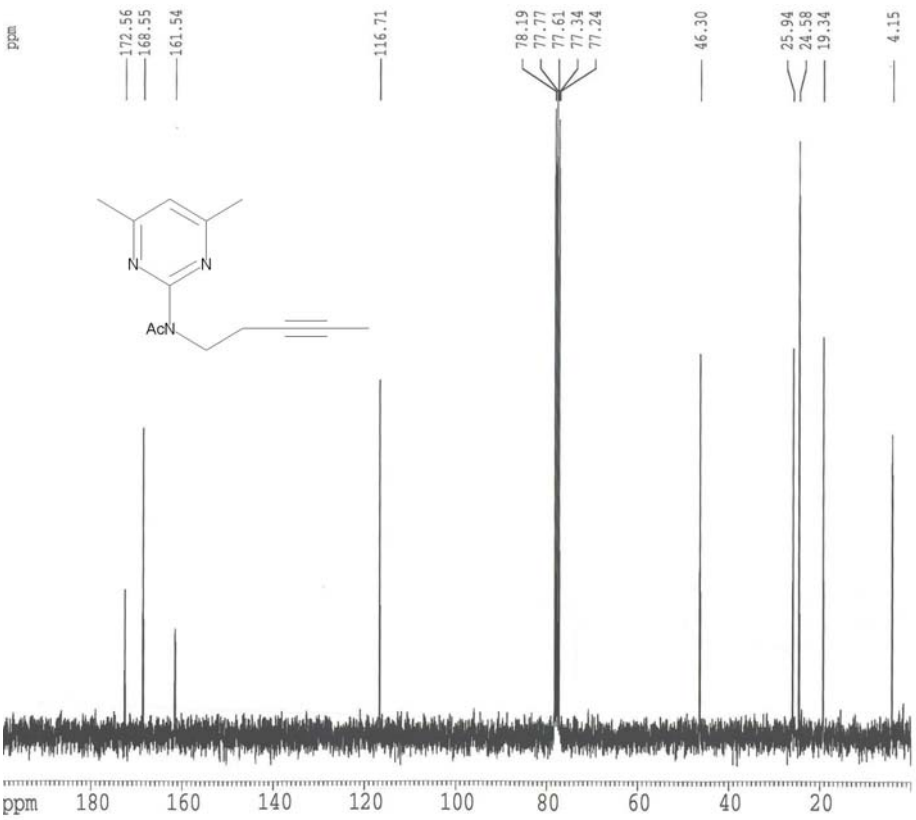

Figure 18. ^{13}C-NMR spectrum of acetamide **20** in $CDCl_3$.

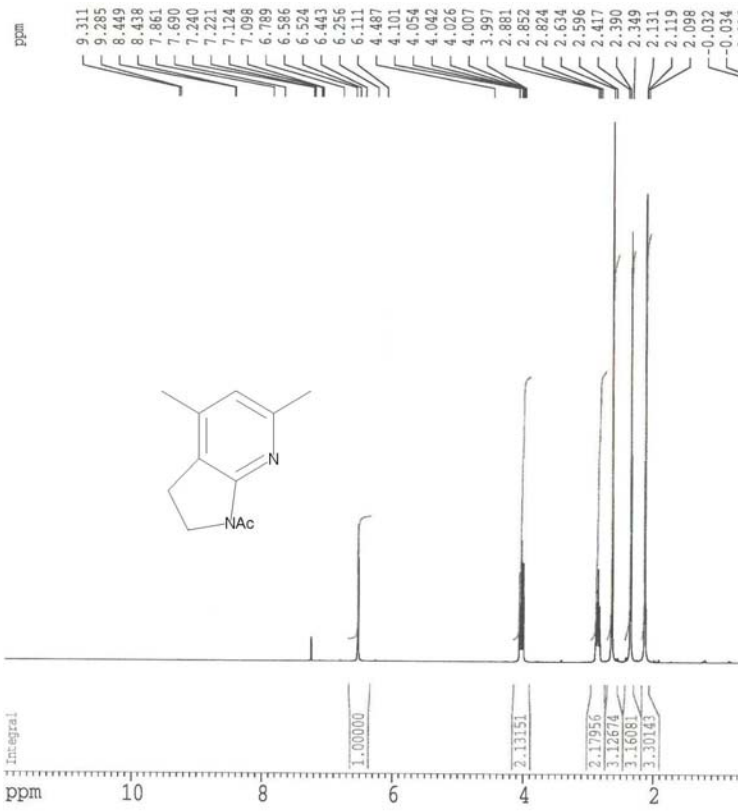

Figure 19. ^{1}H-NMR spectrum of acetamide **21** in $CDCl_3$.

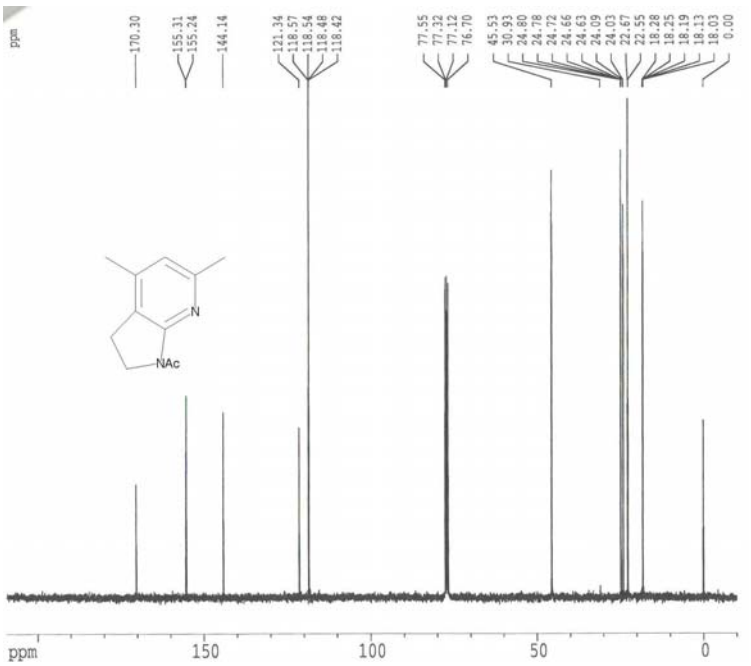

Figure 20. ^{13}C-NMR spectrum of acetamide **21** in $CDCl_3$.

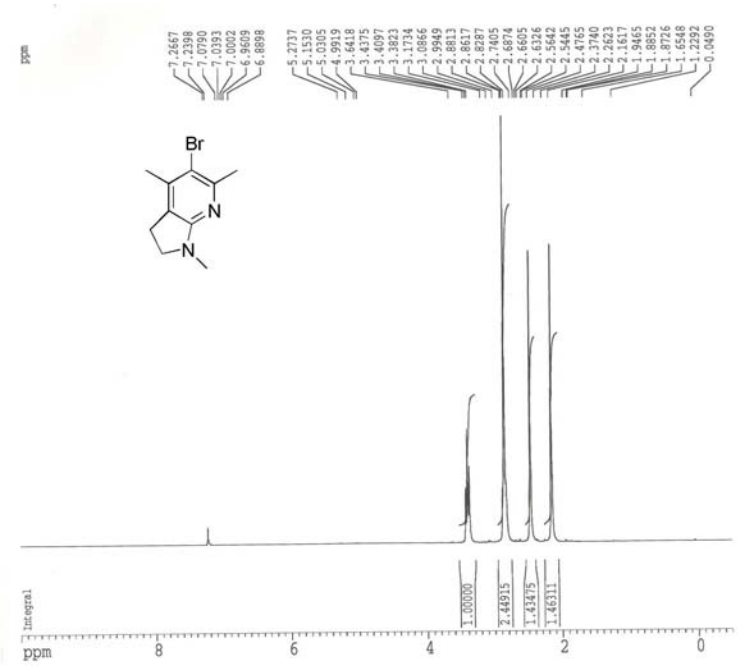

Figure 21. ^{1}H-NMR spectrum of bromide **24** in $CDCl_3$

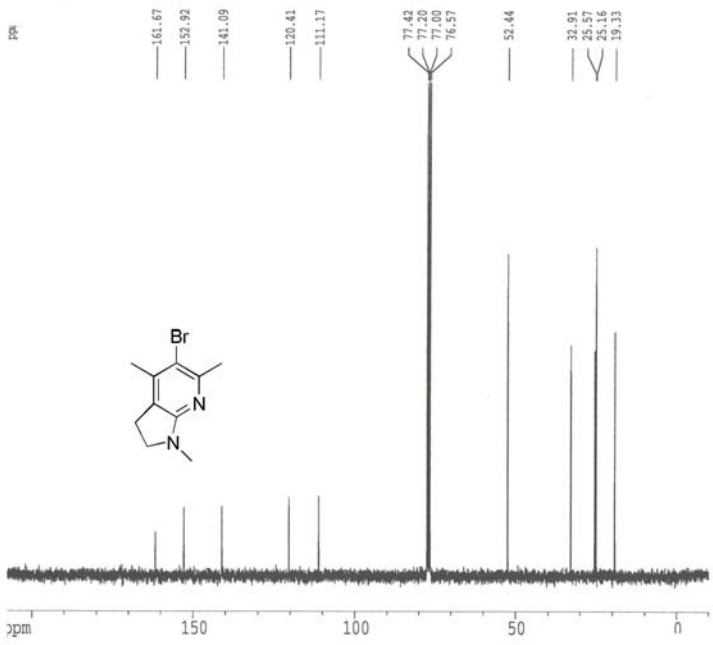

Figure 22. ^{13}C-NMR spectrum of bromide **24** in $CDCl_3$