

Supporting Information

Enantioselective chemoenzymatic synthesis of a key segment of neuronal nitric oxide synthase inhibitors and several related 3-aminopyridinylmethyl-4-hydroxypyrrrolidines

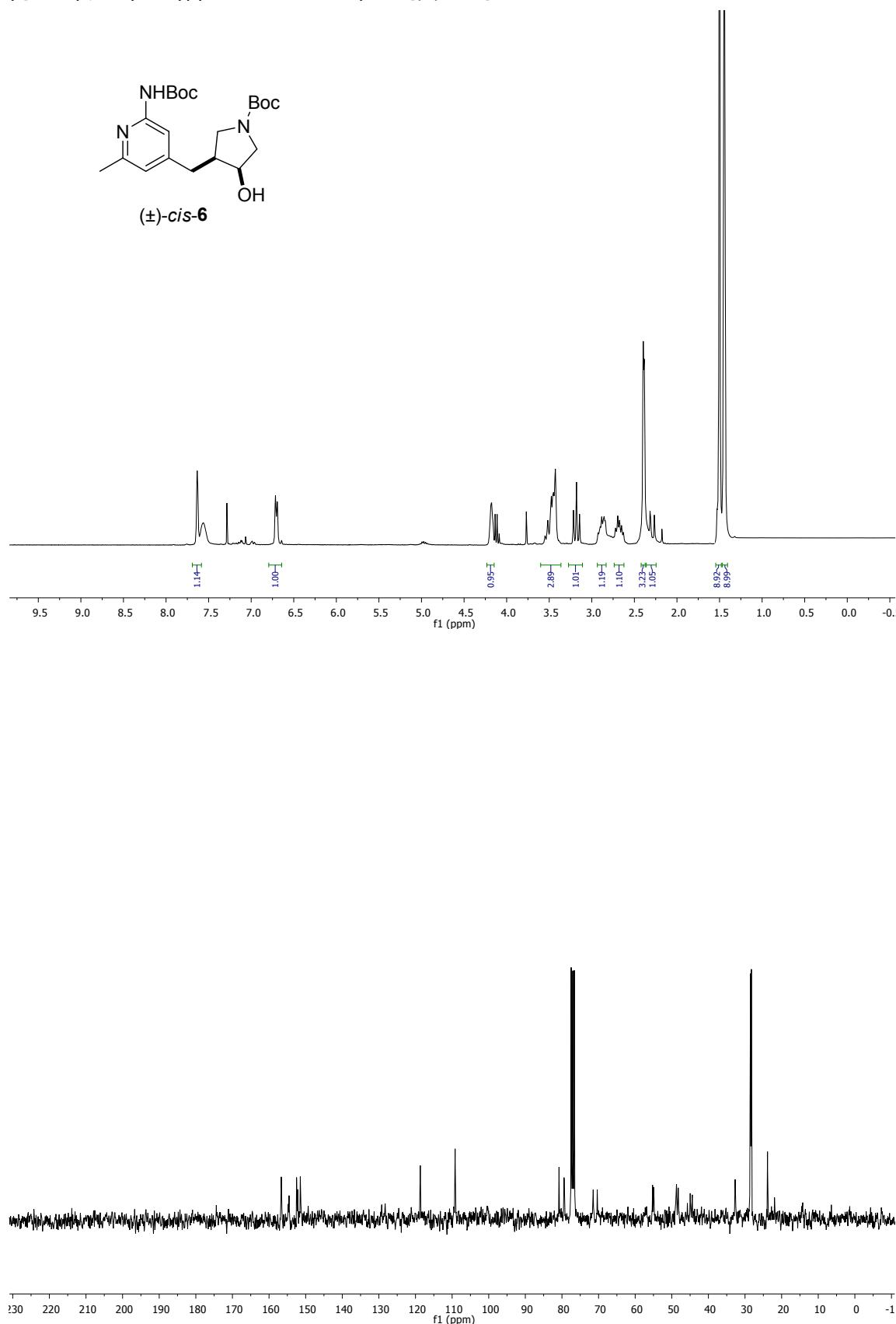
Ángela Villar-Barro, Vicente Gotor* and Rosario Brieva*

^1H (300.13 MHz, CDCl_3) and ^{13}C NMR spectra for compounds (S2 to S28)

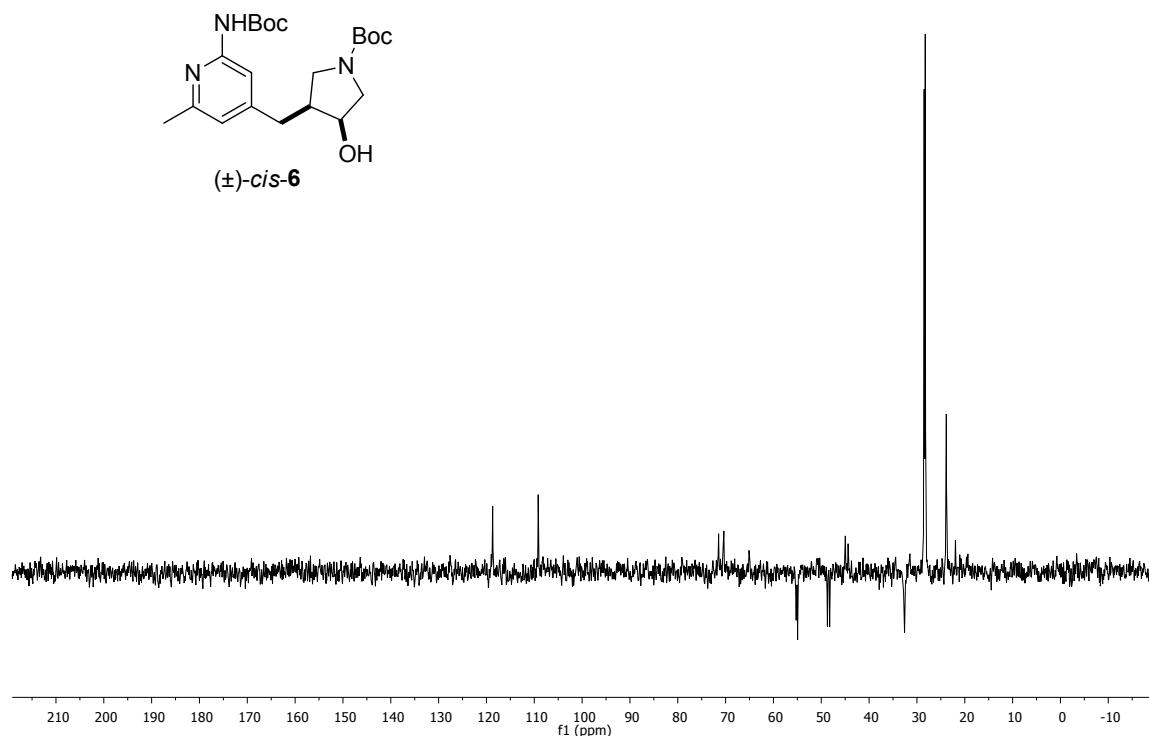
General Remarks ^1H -NMR, ^{13}C -NMR, DEPT and RQC spectra were recorded in a Bruker AC-300 or Bruker AC-300 DPX using CDCl_3 as solvent. The chemical shift values (δ) are given in ppm.

- ^1H and ^{13}C NMR spectra of (\pm)-*cis*-*tert*-butyl 3-{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}-4-hydroxypyrrrolidine-1-carboxylate, [(\pm)-*cis*-6].....(S2, S3)
- ^1H and ^{13}C NMR spectra of (\pm)-*trans*-*tert*-butyl 3-{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}-4-(*tert*-butyldimethylsilyloxy)pyrrolidine-1-carboxylate, [(\pm)-*trans*-7].....(S4,S5)
- ^1H and ^{13}C NMR spectra of (\pm)-*trans*-*tert*-butyl 3-{[2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}-4-(*tert*-butyldimethylsilyloxy)pyrrolidine-1-carboxylate, [(\pm)-*trans*-8].....(S6,S7)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-butyl 3-{[2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}-4-hydroxypyrrrolidine-1-carboxylate, [(\pm)-*trans*-9].....(S8,S9)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*cis*-*tert*-Butyl 3-{[2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}-4-hydroxypyrrrolidine-1-carboxylate, [(\pm)-*cis*-9].....(S10,S11)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-Butyl 3-acetoxy-4-{{[6-(*tert*-butoxycarbonylamino)-4-methylpyridin-2-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*trans*-10]....(S12,S13)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-Butyl 3-acetoxy 4-{{[6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*trans*-11a].(S14,S15)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*cis*-*tert*-Butyl 3-acetoxy 4-{{[6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*cis*-11a]....(S16,S17)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-Butyl 3-{{[6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl]methyl}-4-methoxyacetoxypyrrolidine-1-carboxylate, [(\pm)-*trans*-11b].....(S18,S19)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*cis*-*tert*-Butyl 3-{{[6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl]methyl}-4-methoxyacetoxypyrrolidine-1-carboxylate, [(\pm)-*cis*-11b].....(S20,S21)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-Butyl 3-acetoxy-4-{{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*trans*-12]....(S22,S23)
- ^1H and ^{13}C NMR spectra of (\pm)-*cis*-*tert*-Butyl 3-acetoxy-4-{{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*cis*-12].....(S24,S25)
- ^1H , ^{13}C NMR and 2D NMR HSQC spectra of (\pm)-*trans*-*tert*-Butyl 3-acetoxy-4-{{[2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*trans*-13]....(S26,S27)
- ^1H and ^{13}C NMR spectra of (\pm)-*cis*-*tert*-Butyl 3-acetoxy-4-{{[2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*cis*-13].....(S28)

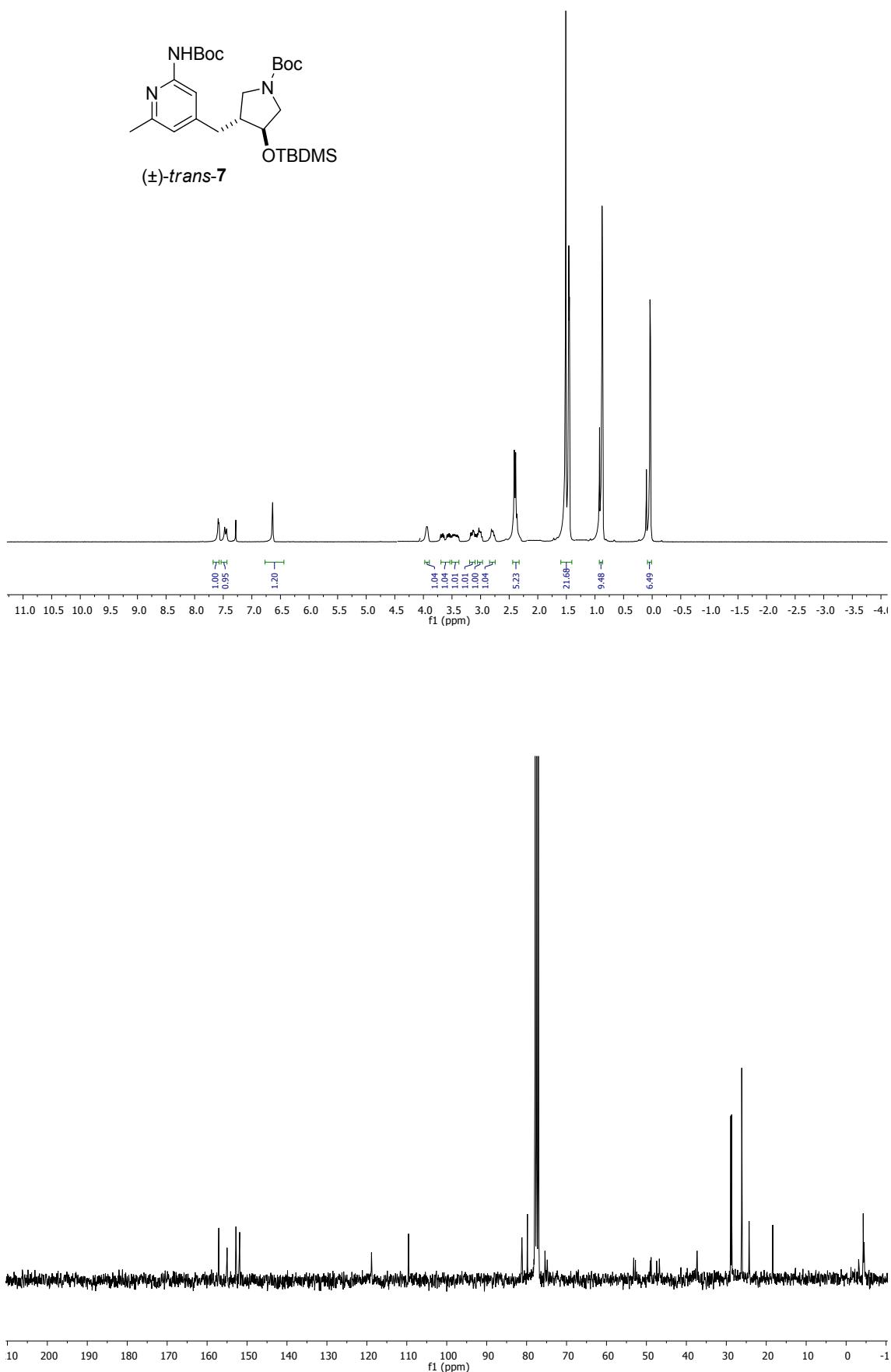
^1H and ^{13}C NMR spectra of (\pm) -*cis*-tert-butyl 3-{{[2-(tert-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}-4-hydroxypyrrolidine-1-carboxylate, $[(\pm)\text{-}c\text{i}s\text{-}6]$.



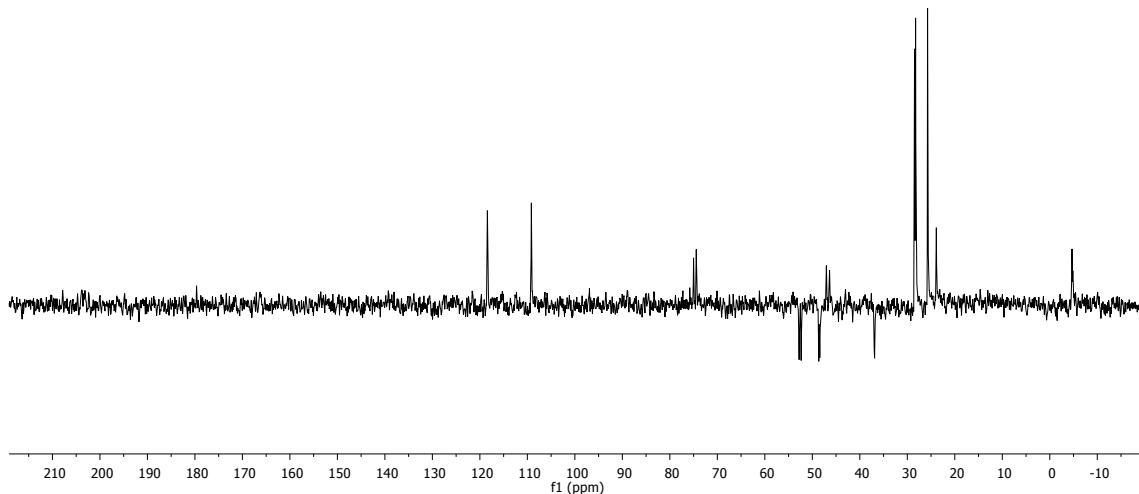
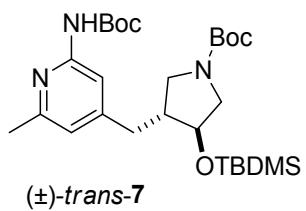
¹³C-DEPT135-RMN (75.5 MHz, CDCl₃)



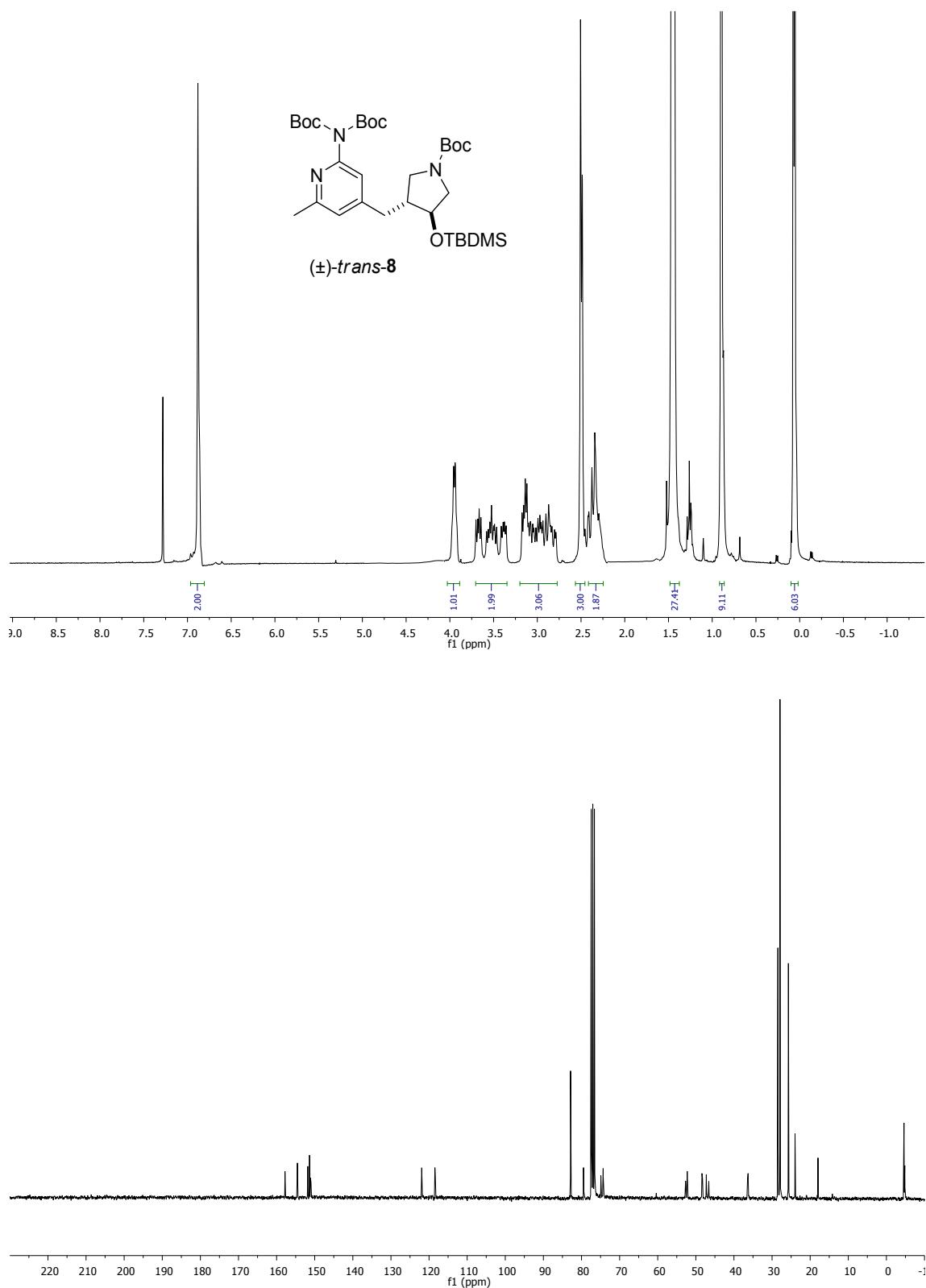
¹H and ¹³C NMR spectra of (\pm)-*trans*-*tert*-butyl 3-{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}-4-(*tert*-butyldimethylsilyloxy)pyrrolidine-1-carboxylate, [(\pm)-*trans*-7].



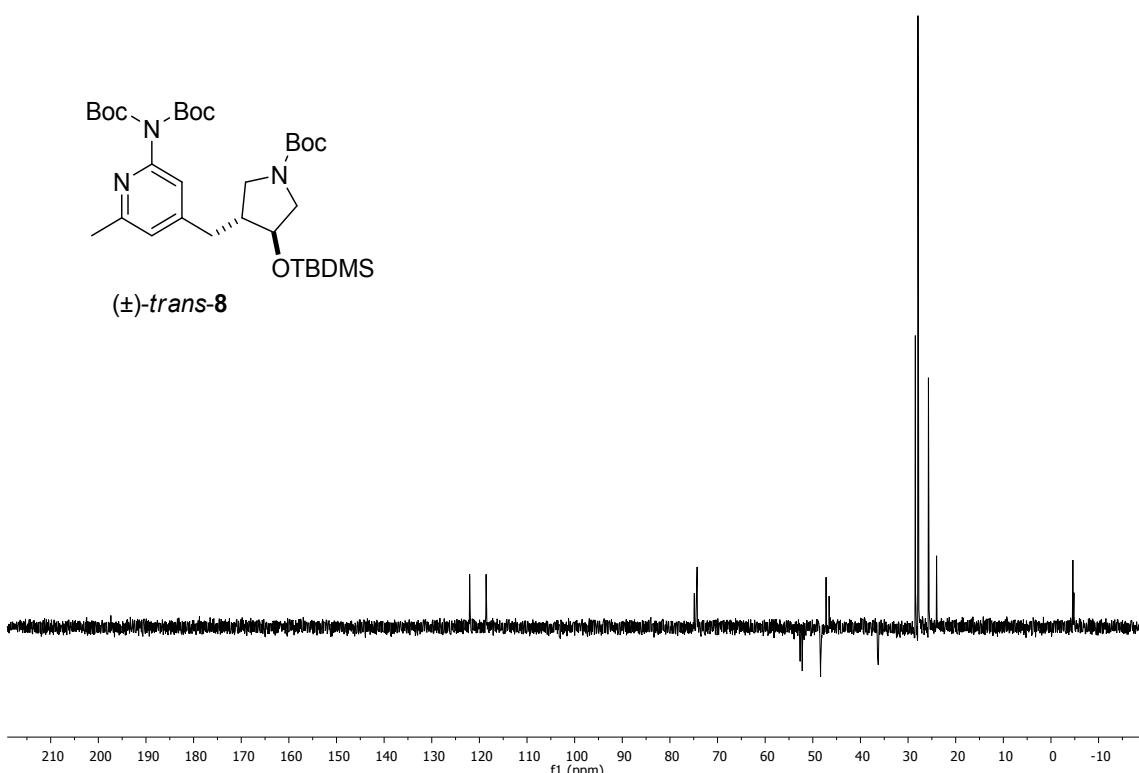
¹³C-DEPT135-RMN (75.5 MHz, CDCl₃)



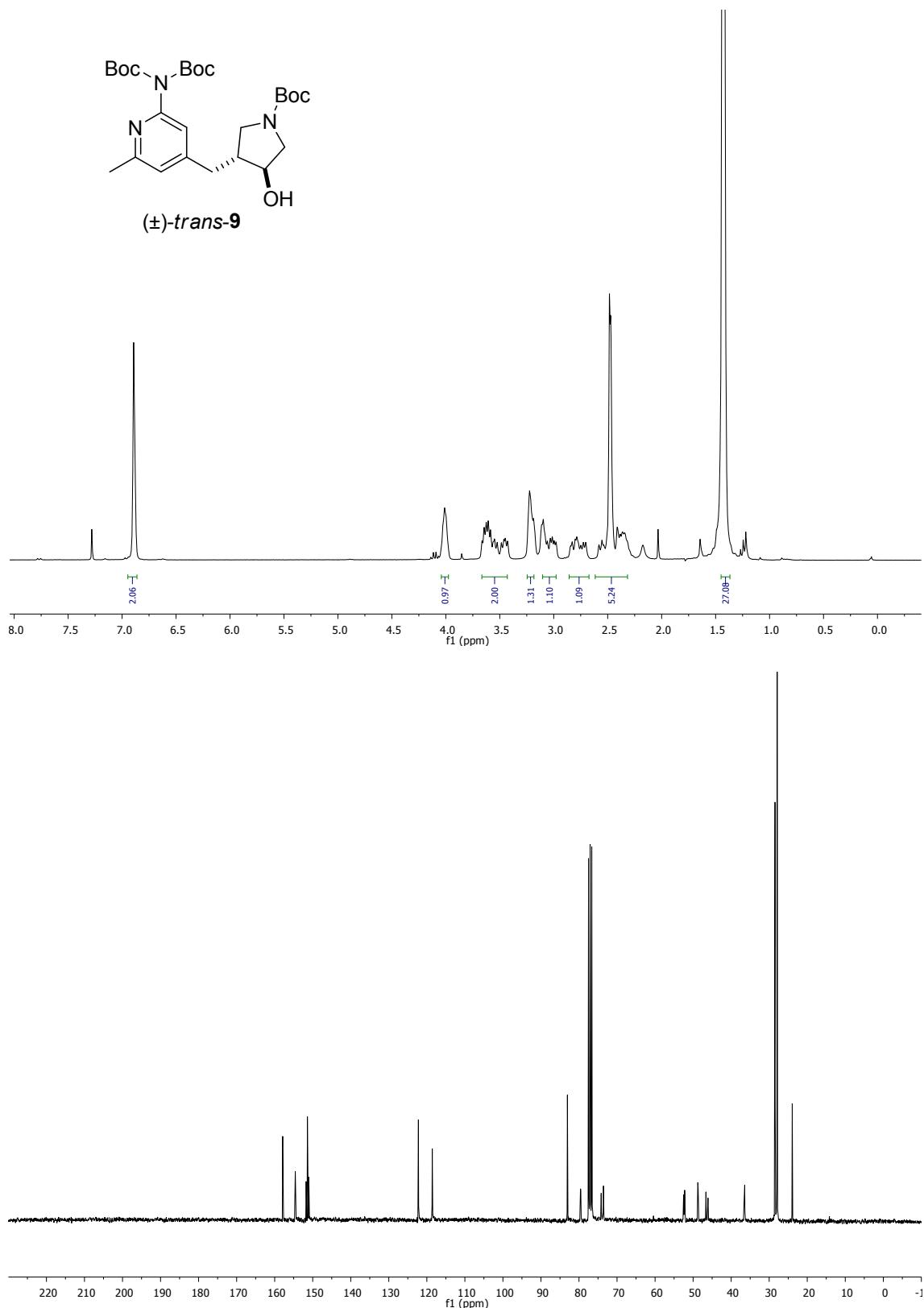
^1H and ^{13}C NMR spectra of (\pm)-*trans*-tert-butyl 3-{2-[bis(tert-butoxycarbonyl)amino]-6-methylpyridin-4-yl}methyl}-4-(tert-butyldimethylsilyloxy)pyrrolidine-1-carboxylate, [(\pm) -*trans*-8]



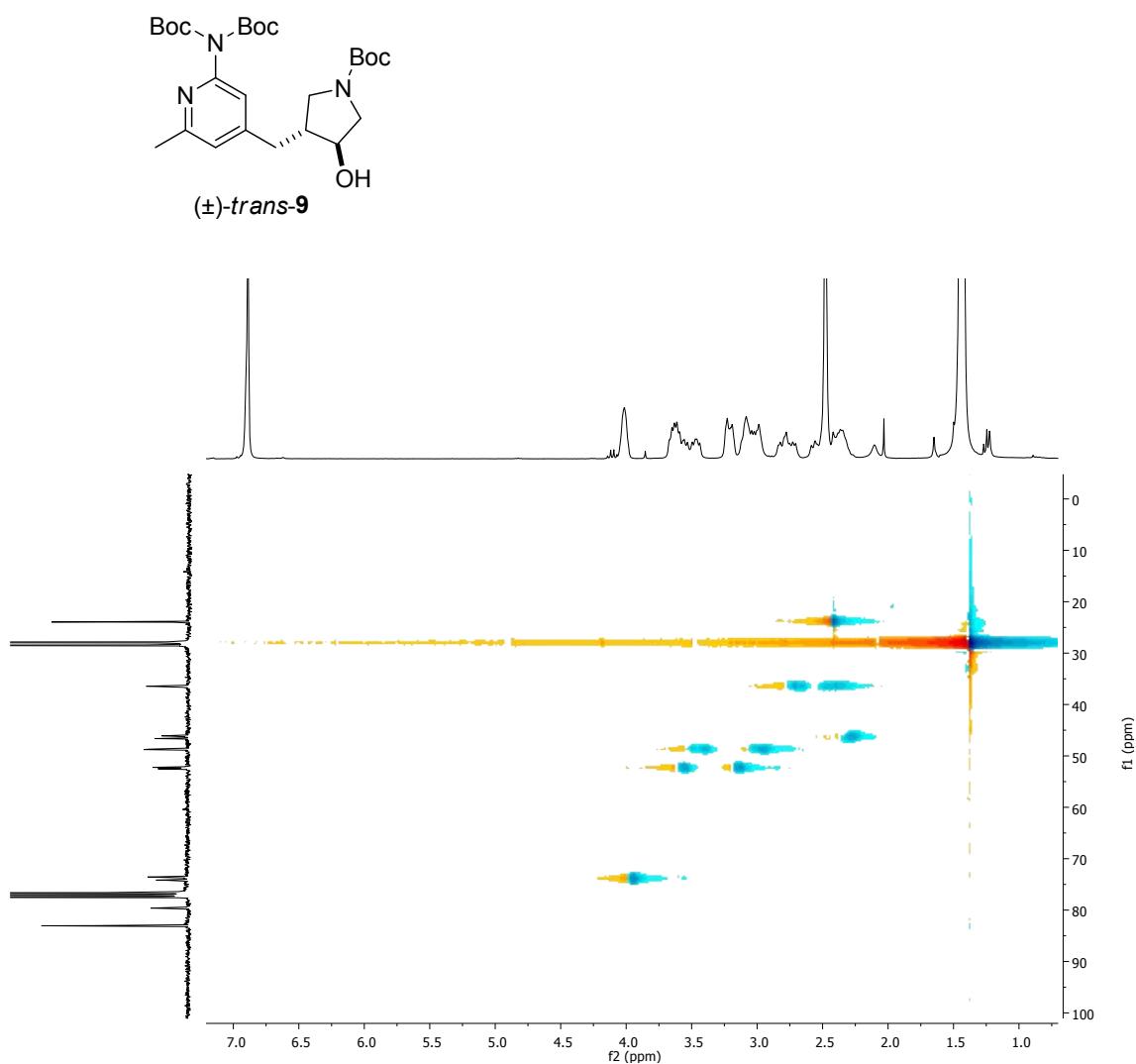
¹³C-DEPT135-RMN (75.5 MHz, CDCl₃)



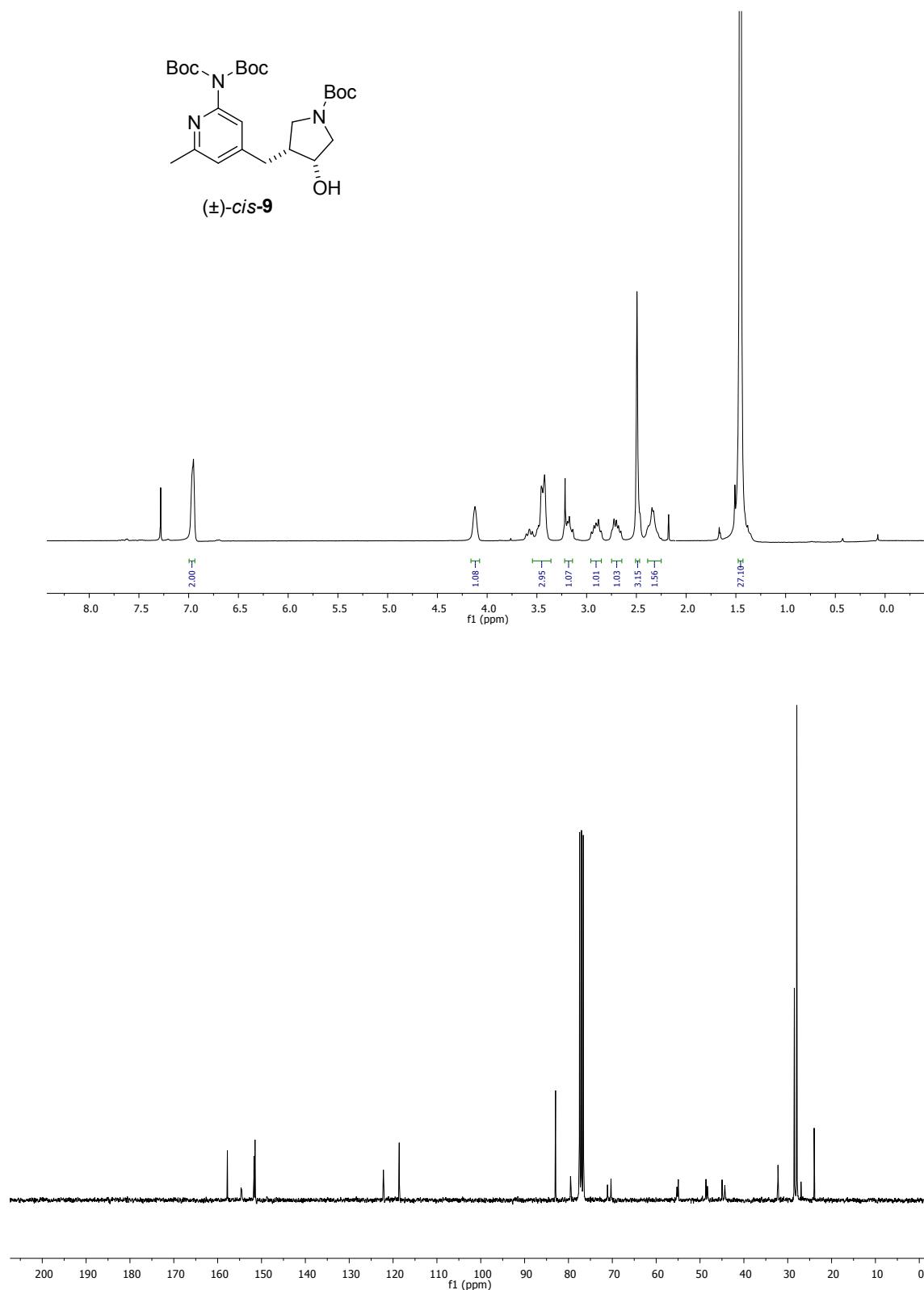
^1H and ^{13}C NMR spectra of (\pm) -*trans*-*tert*-butyl 3-{2-[bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl}methyl}-4-hydroxypyrrolidine-1-carboxylate, [(\pm) -*trans*-9]



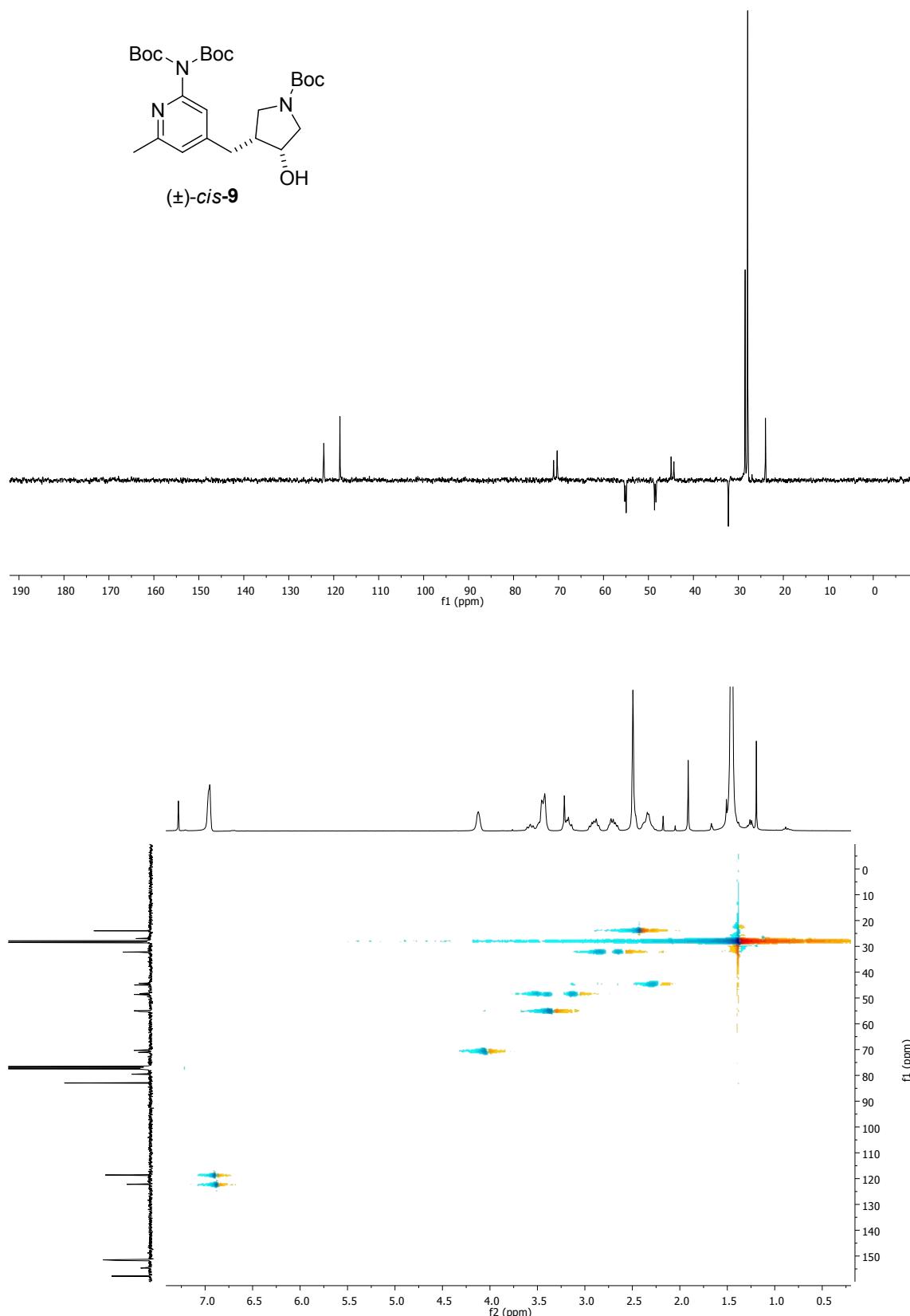
2D NMR HSQC (CDCl_3)



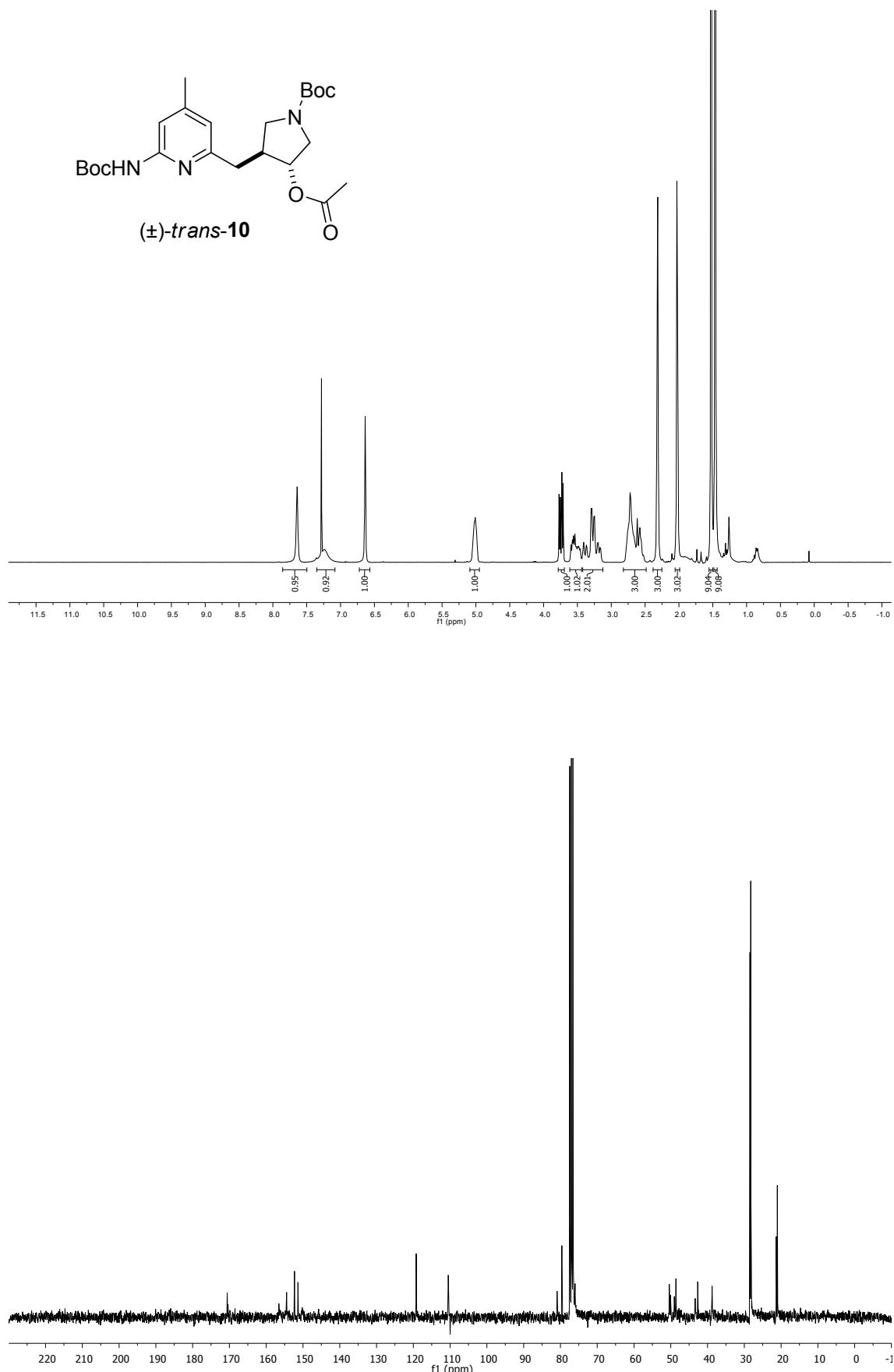
¹H, and ¹³C NMR spectra of (\pm)-*cis*-tert-Butyl 3-{[2-[bis(tert-butoxycarbonyl)amino]-6-methylpyridin-4-yl]methyl}-4-hydroxypyrrolidine-1-carboxylate, [(\pm)-*cis*-9]



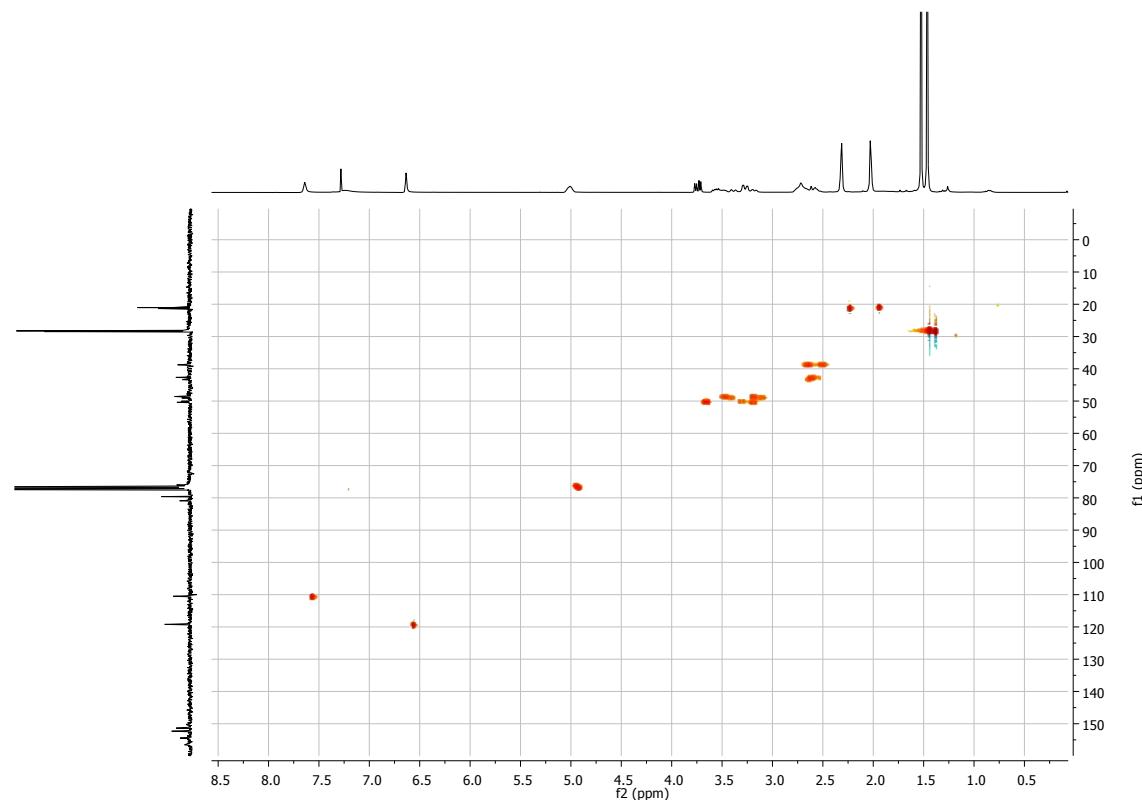
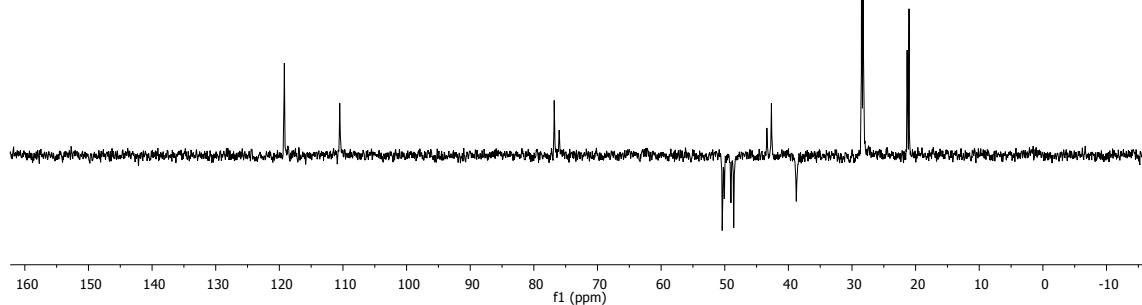
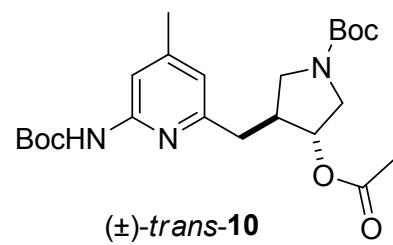
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



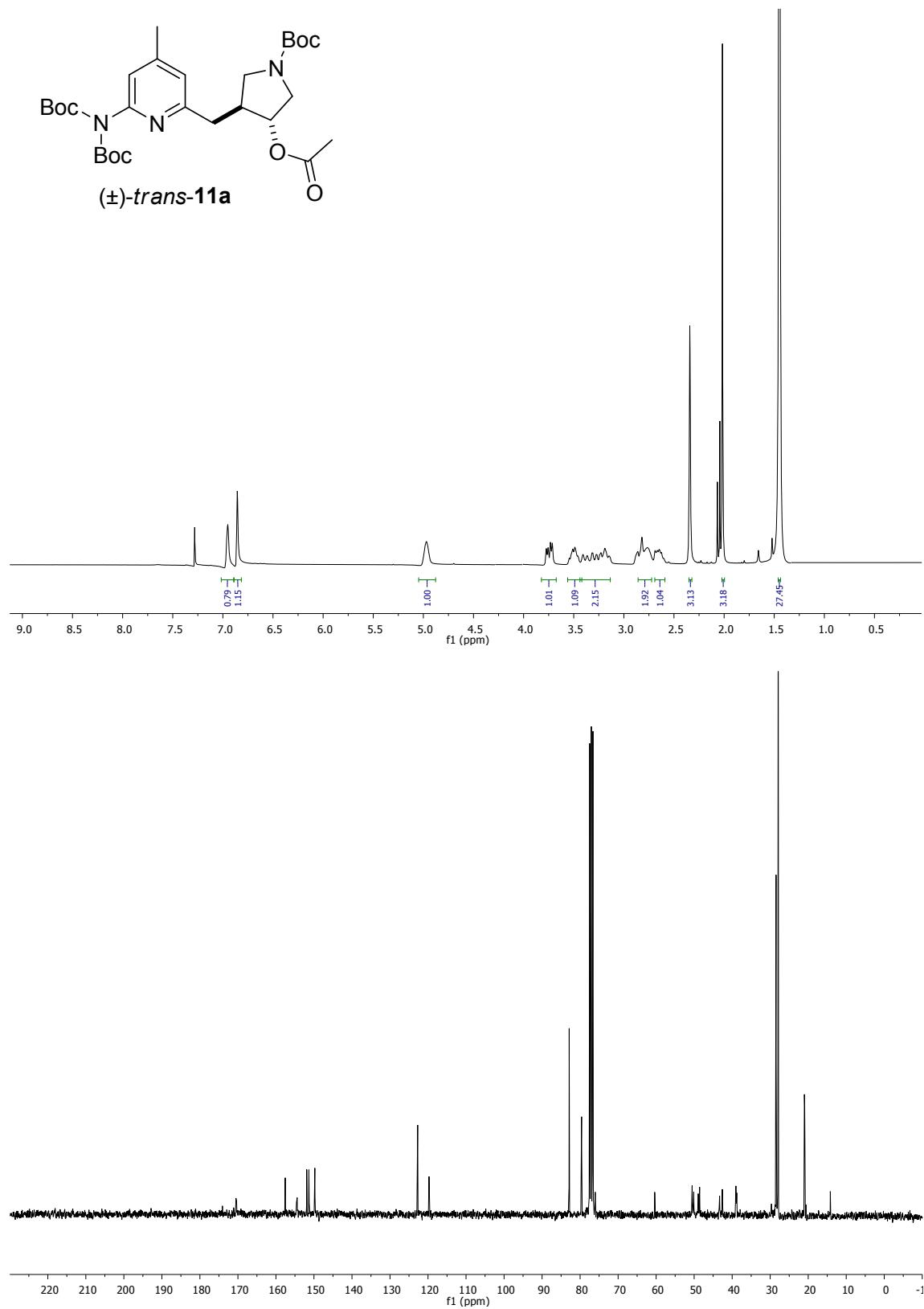
^1H and ^{13}C NMR spectra of (\pm) -*trans*-*tert*-Butyl 3-acetoxy-4-{{[6-(*tert*-butoxycarbonylamino)-4-methylpyridin-2-yl]methyl}pyrrolidine-1-carboxylate, (\pm) -*trans*-**10**.



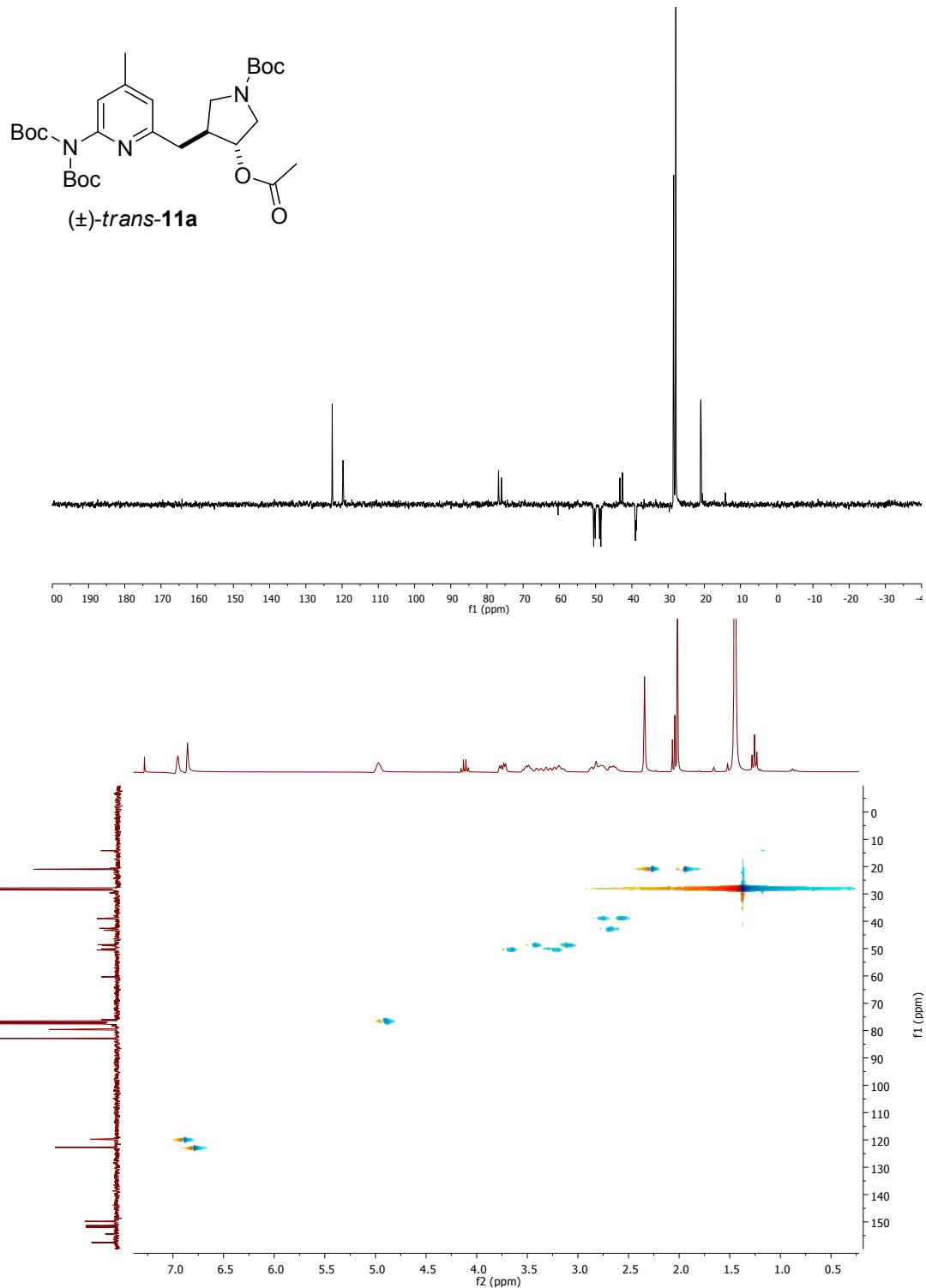
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



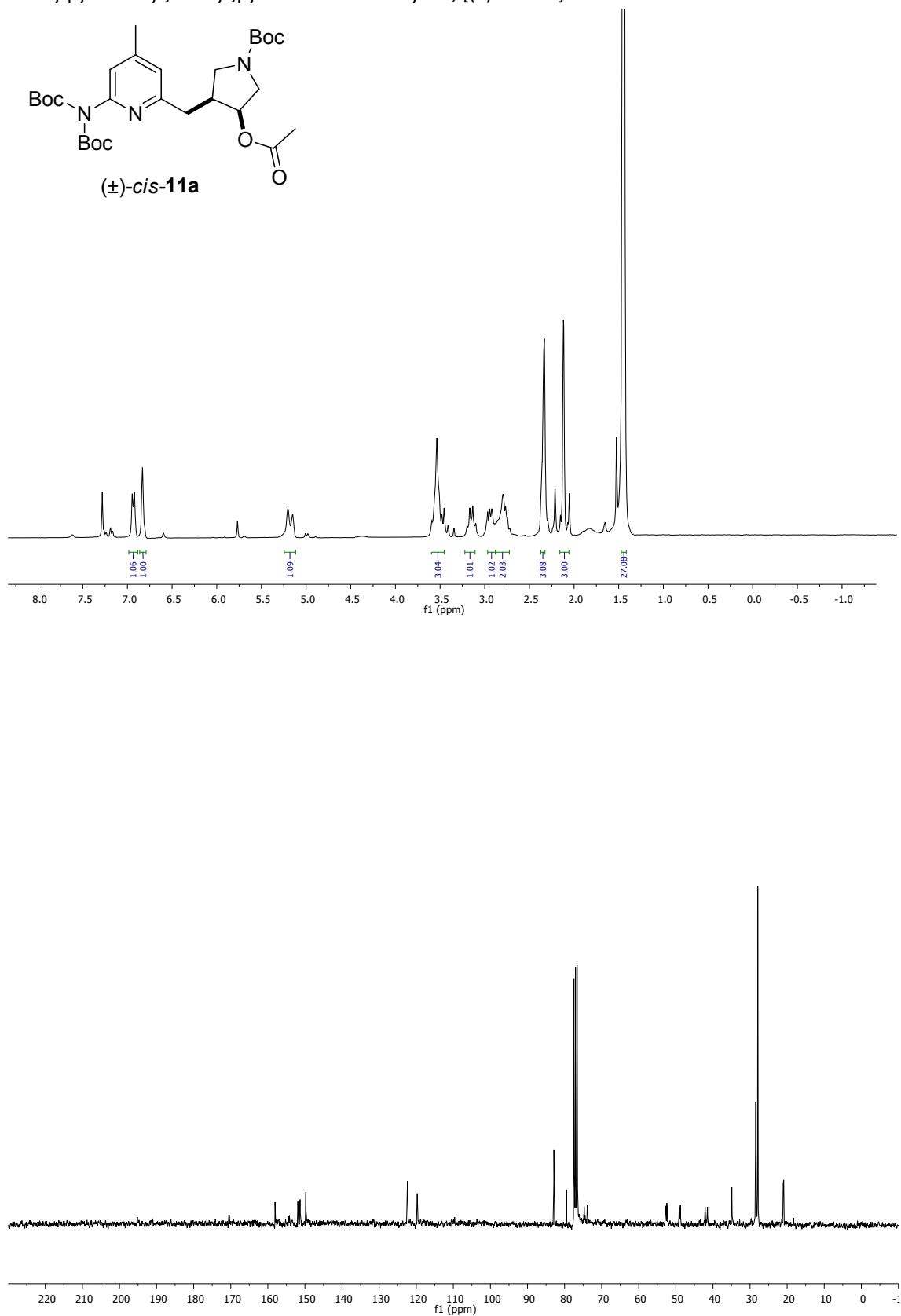
^1H and ^{13}C NMR spectra of (\pm) -*trans*-*tert*-Butyl 3-acetoxy 4-{{6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl}methyl}pyrrolidine-1-carboxylate, [(\pm) -*trans*-**11a**].



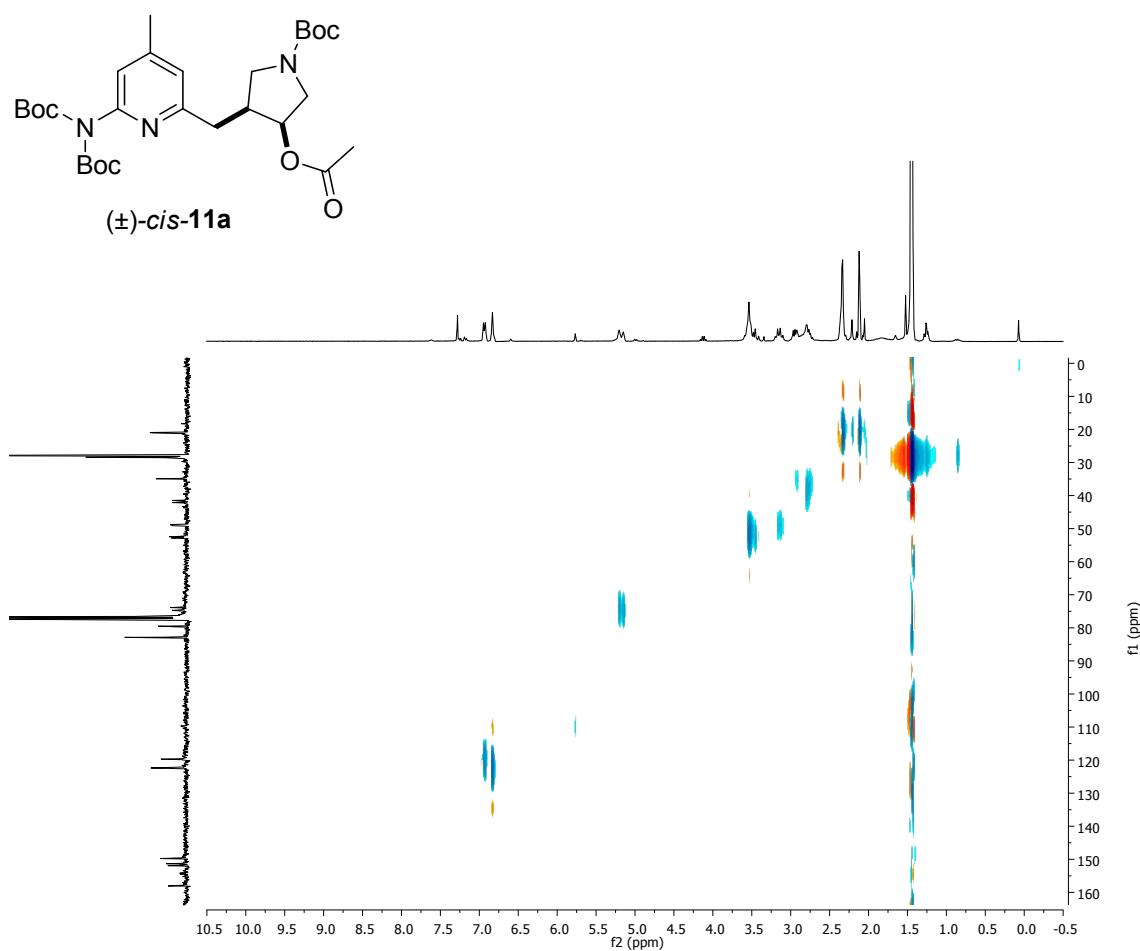
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



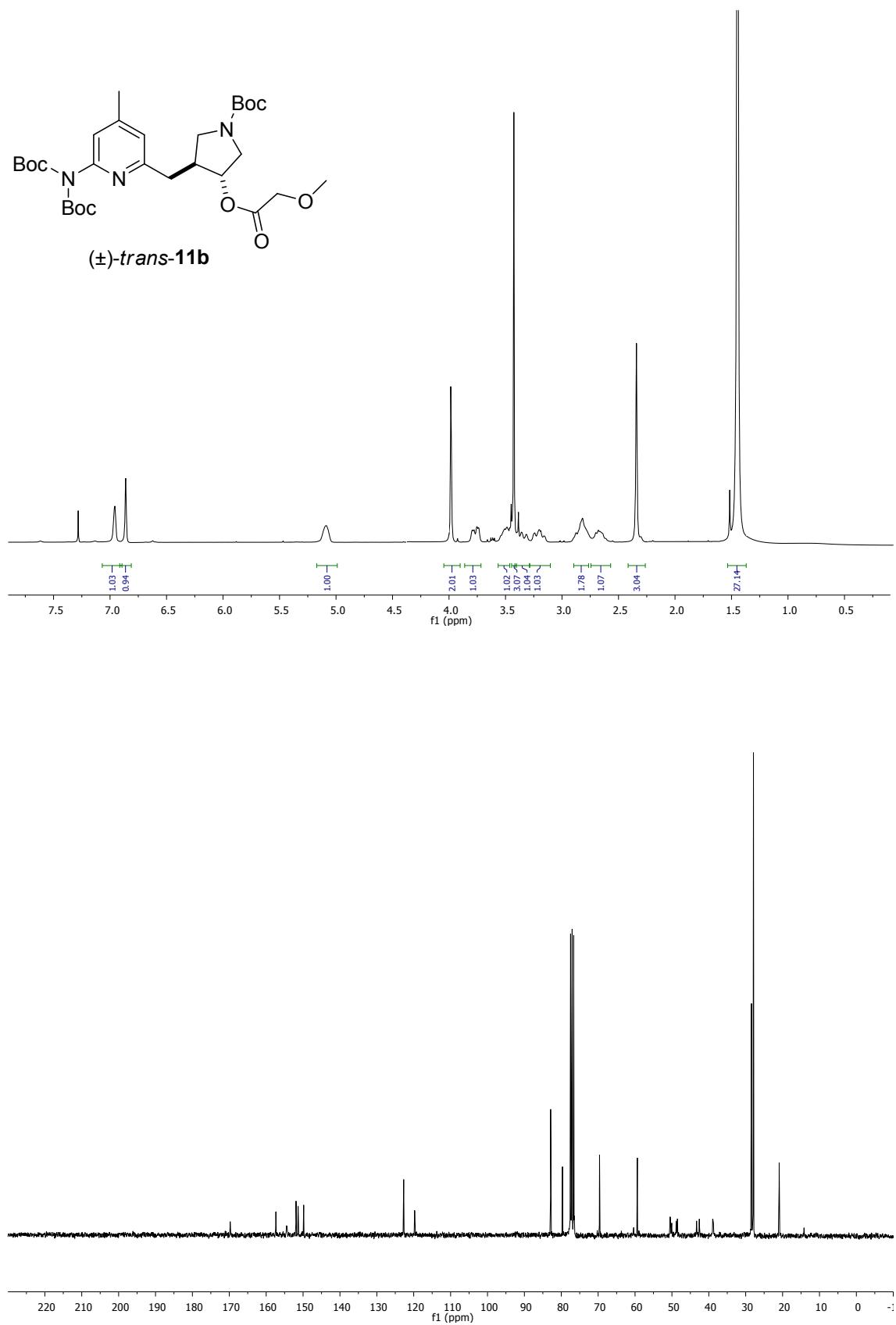
¹H and ¹³C NMR and spectra of (\pm)-*cis*-tert-Butyl 3-acetoxy 4-{[6-[bis(tert-butoxycarbonyl)amino]-4-methylpyridin-2-yl]methyl}pyrrolidine-1-carboxylate, [(\pm)-*cis*-11a]



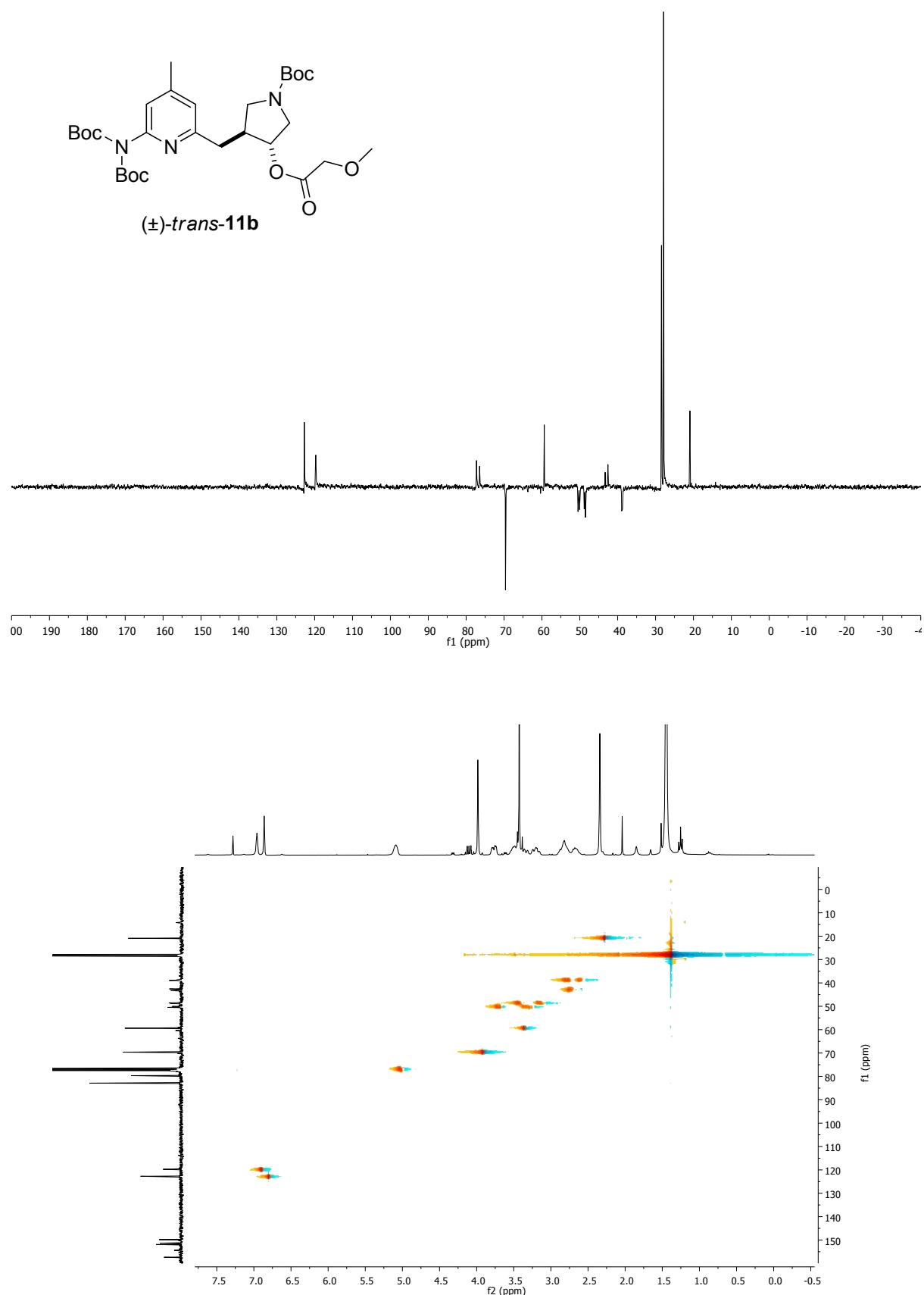
2D RMN HSQC (CDCl_3)



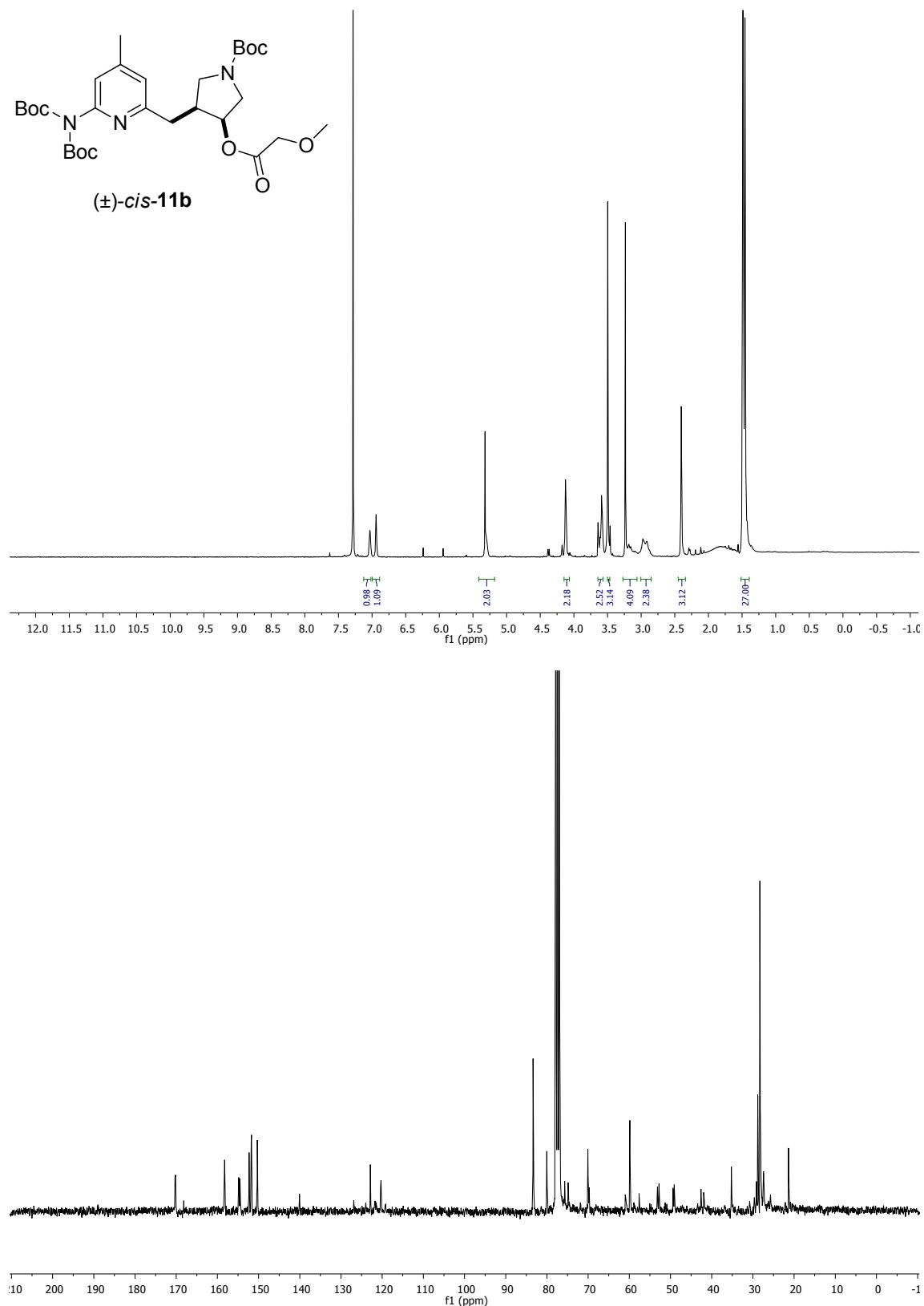
^1H and ^{13}C NMR spectra of (\pm) -*trans*-*tert*-Butyl 3-{{6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl}methyl}-4-methoxyacetoxypyrrolidine-1-carboxylate, $[(\pm)\text{-}trans\text{-}11\text{b}]$.



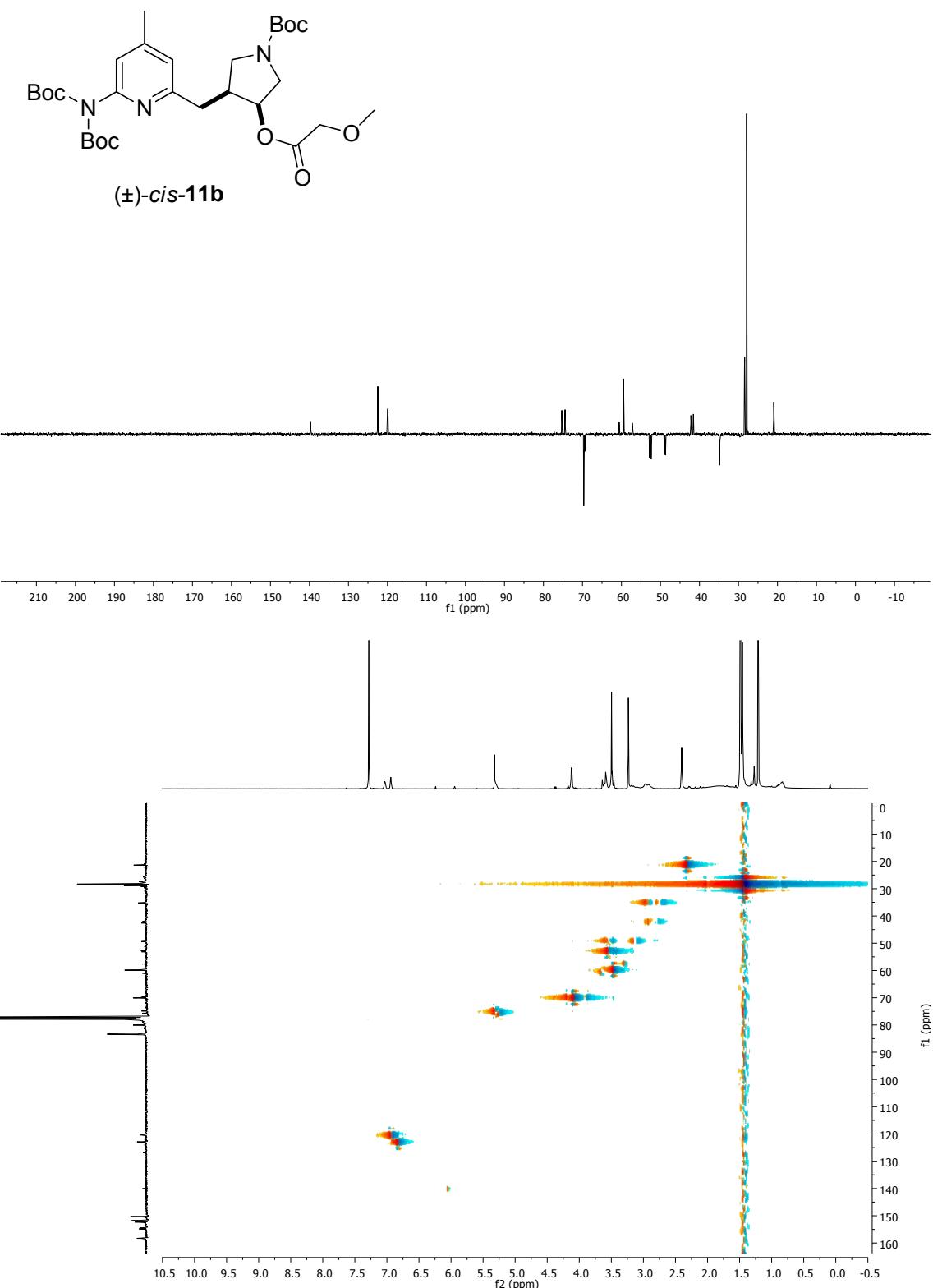
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



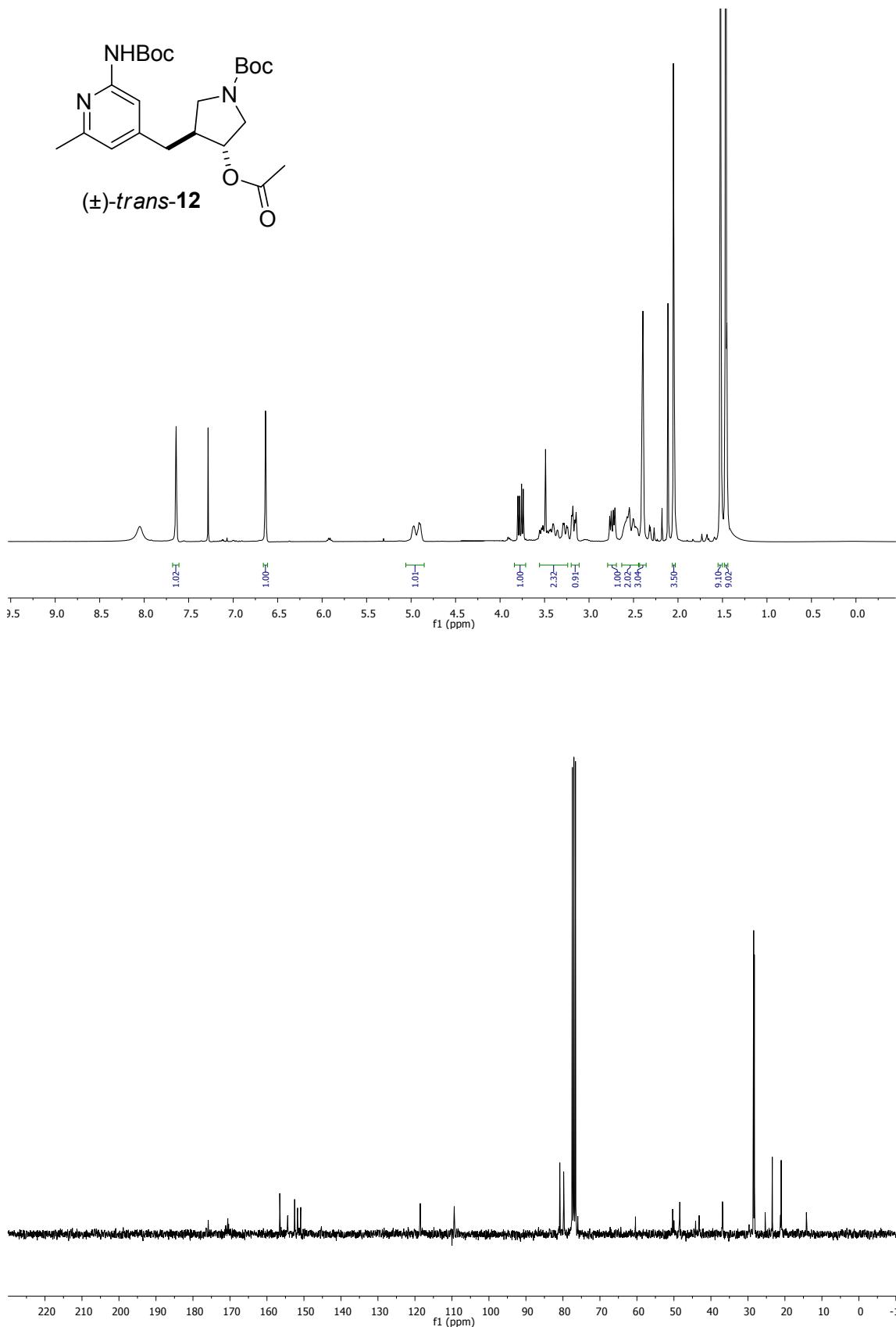
^1H and ^{13}C NMR spectra of (\pm) -*cis*-*tert*-Butyl 3-{{6-[bis(*tert*-butoxycarbonyl)amino]-4-methylpyridin-2-yl}methyl}-4-methoxyacetoxypyrrolidine-1-carboxylate, [(\pm) -*cis*-11b].



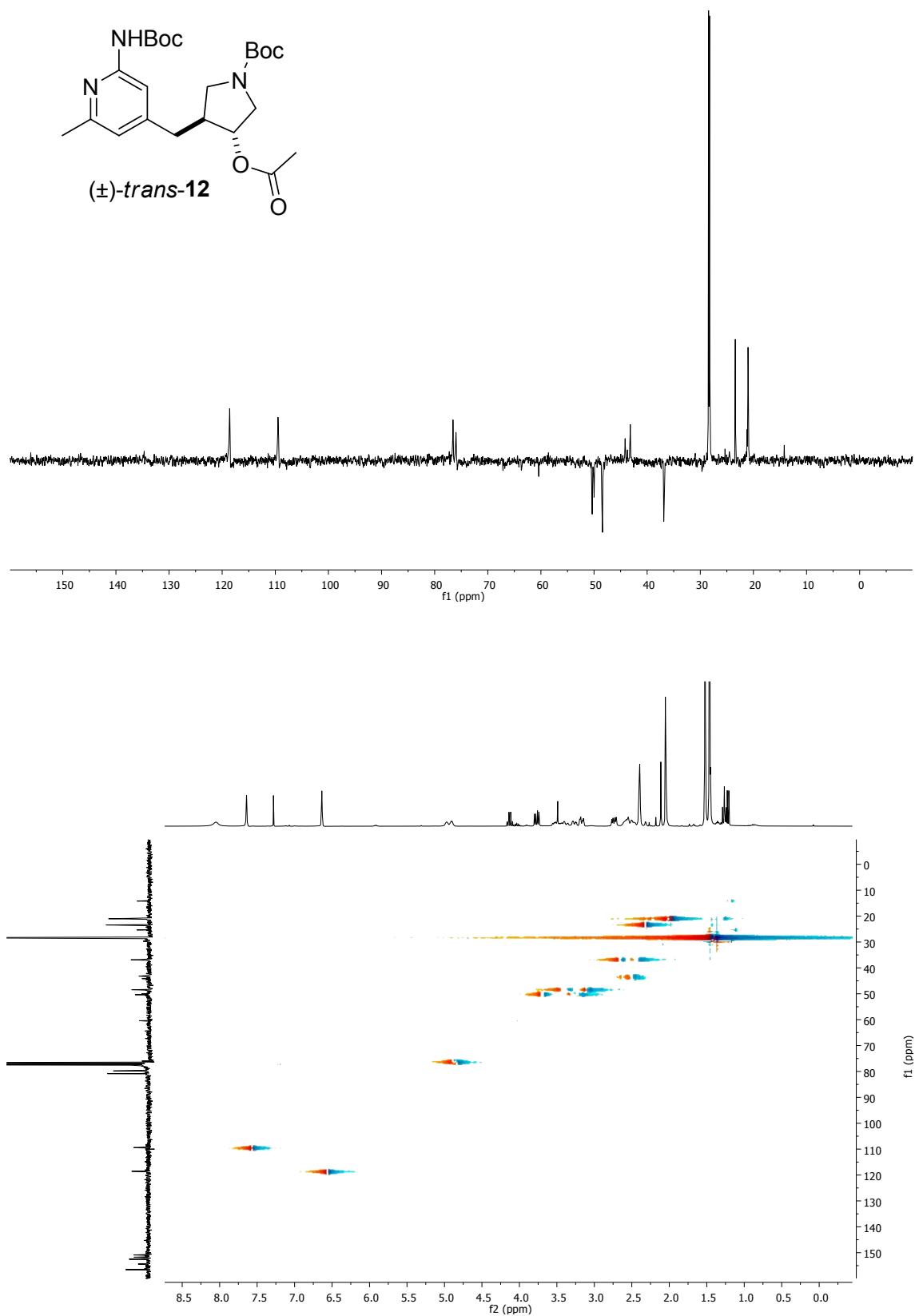
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



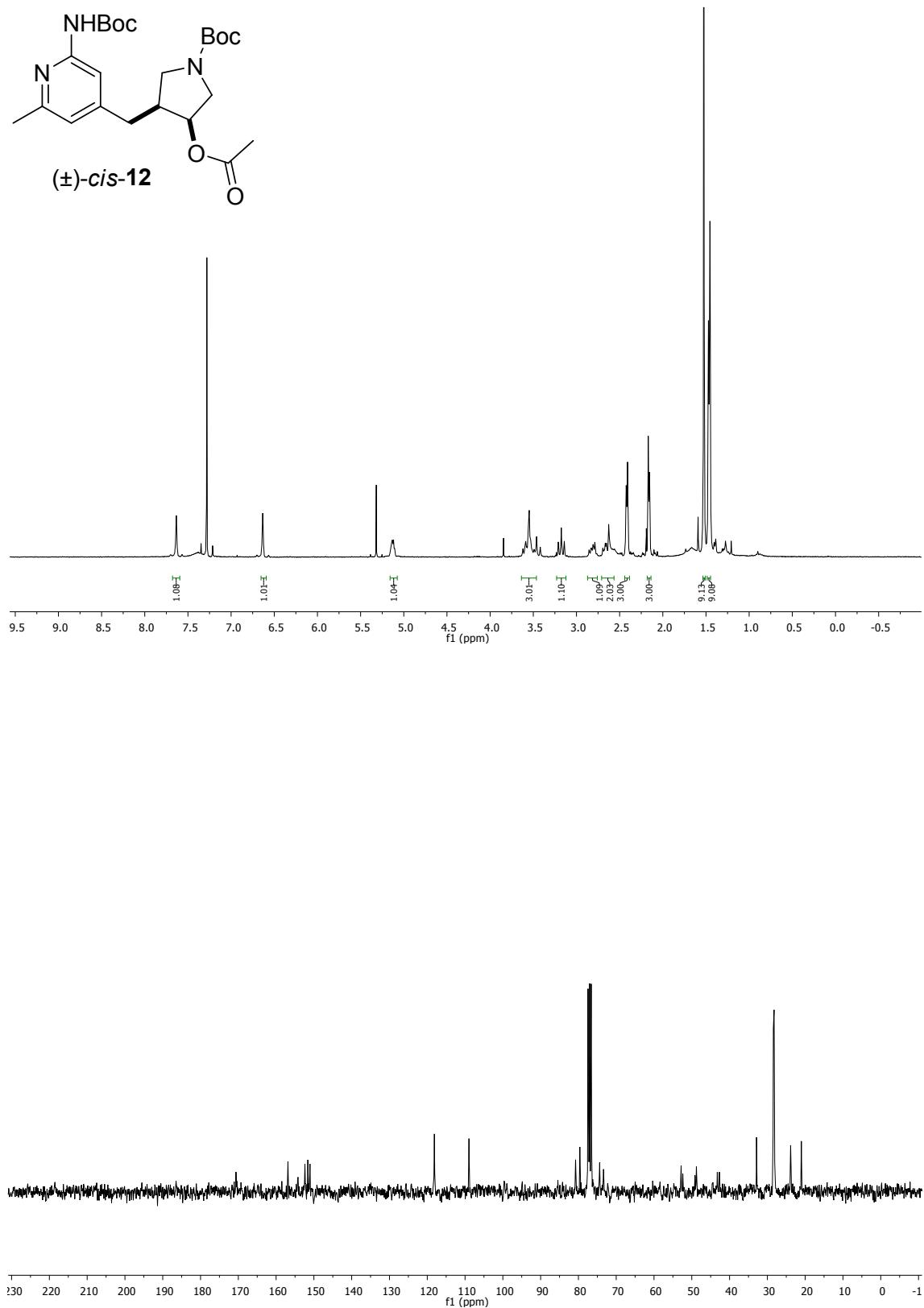
^1H and ^{13}C NMR spectra of (\pm) -*trans*-tert-Butyl 3-acetoxy-4-{{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, (\pm) -*trans*-12.



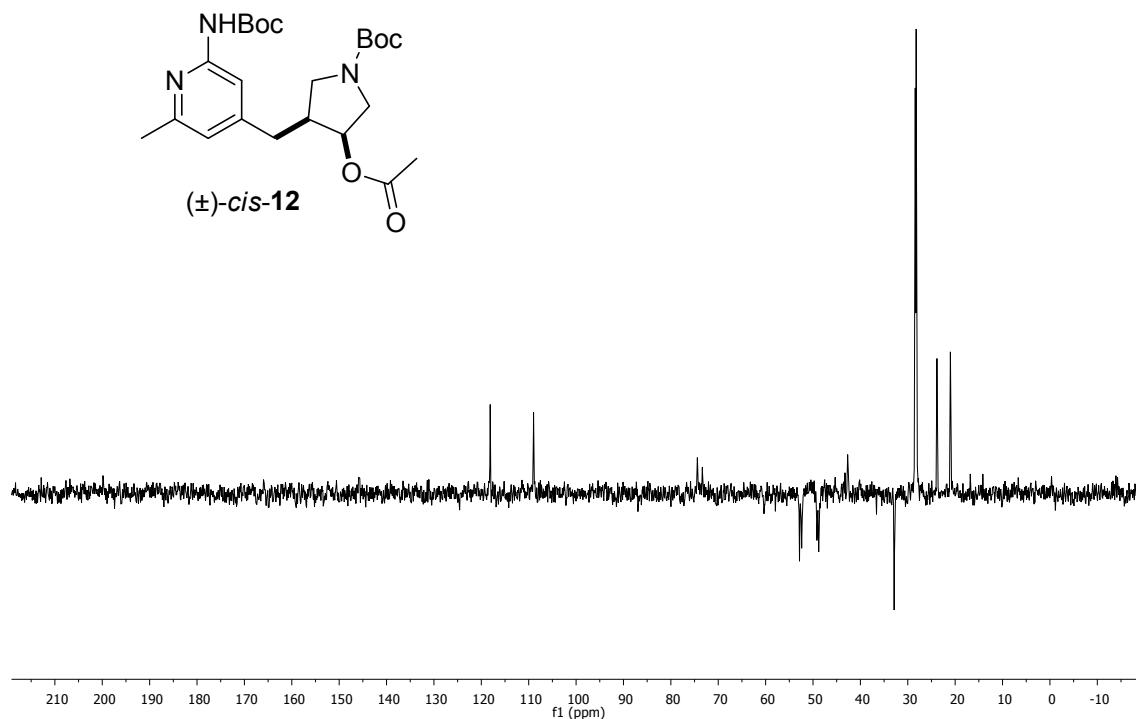
¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



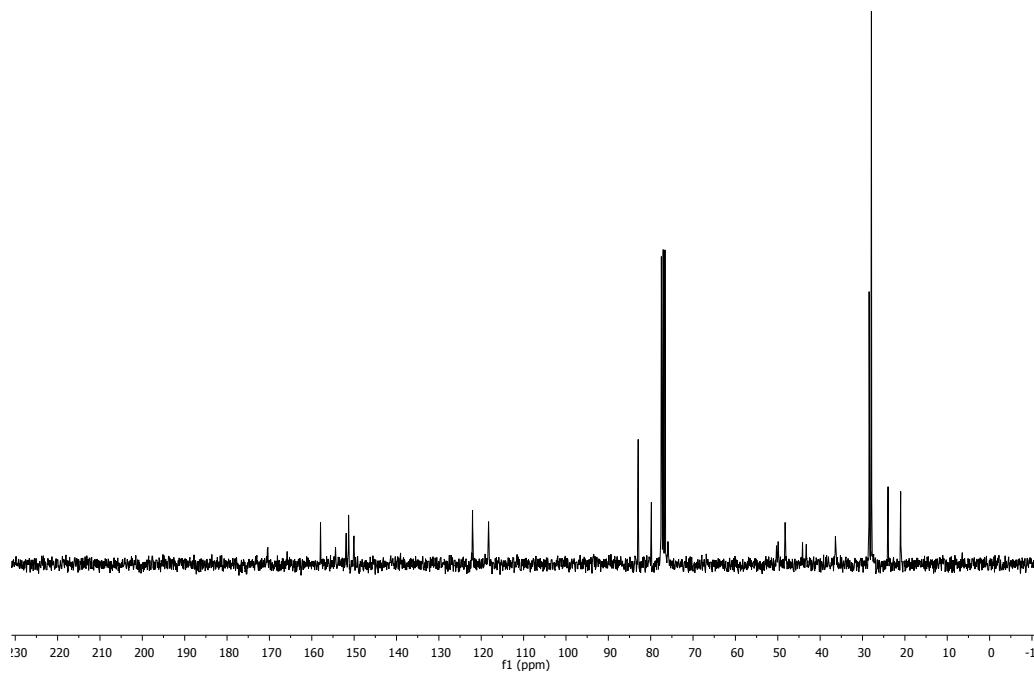
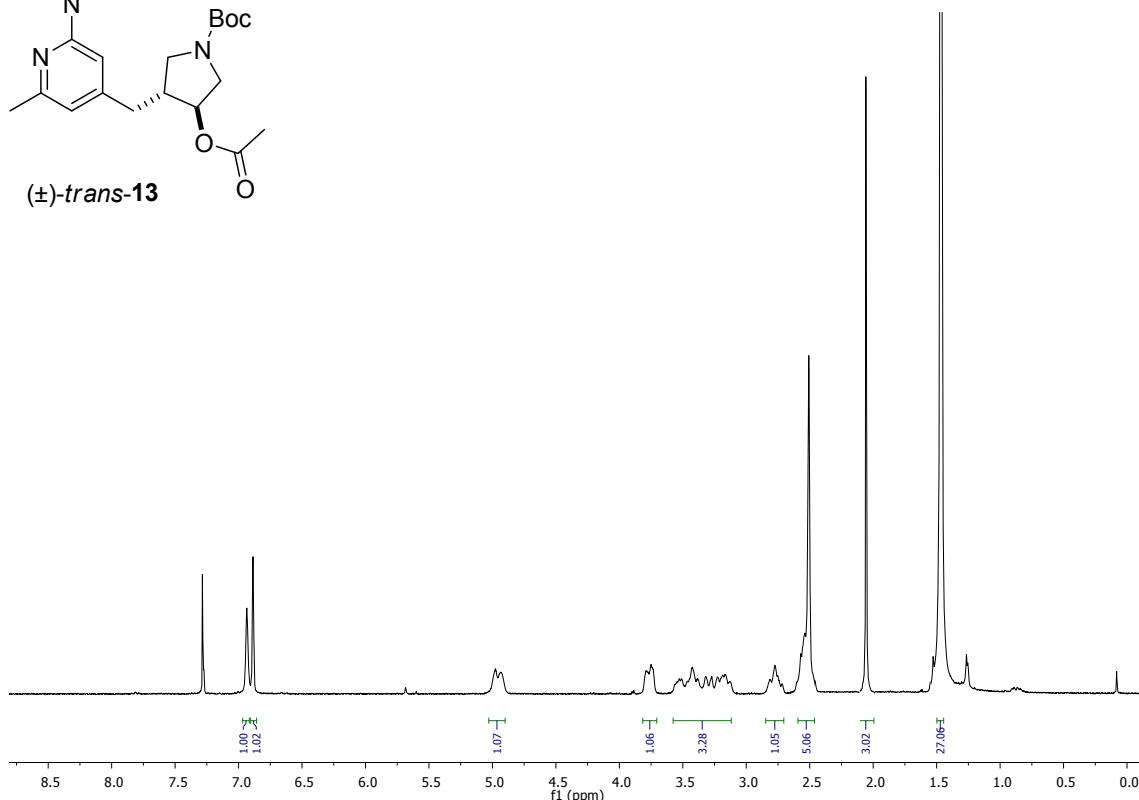
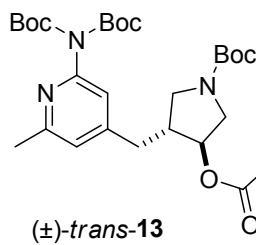
^1H and ^{13}C NMR spectra of (\pm) -*cis*-*tert*-Butyl 3-acetoxy-4-{{[2-(*tert*-butoxycarbonylamino)-6-methylpyridin-4-yl]methyl}pyrrolidine-1-carboxylate, $[(\pm)\text{-}c\text{i}s\text{-}12]$.



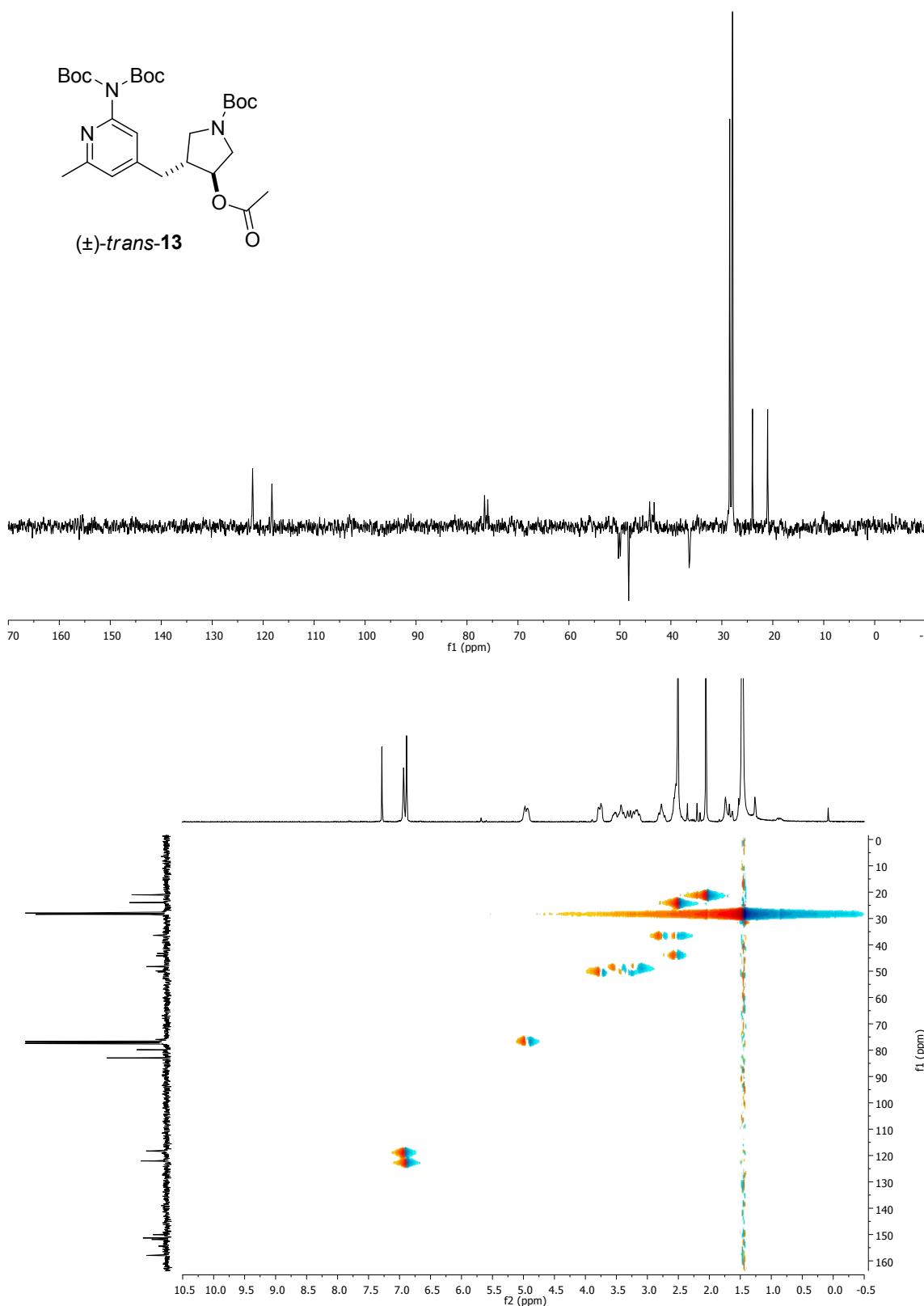
¹³C-DEPT135-RMN (75.5 MHz, CDCl₃)



^1H and ^{13}C NMR spectra of (\pm)-*trans*-*tert*-Butyl 3-acetoxy-4-{{[2-bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl}methyl}pyrrolidine-1-carboxylate, [(\pm)-*trans*-13]



¹³C-DEPT135 (75.5 MHz, CDCl₃) and 2D RMN HSQC (CDCl₃)



^1H and ^{13}C NMR spectra of (\pm) -*cis*-*tert*-Butyl 3-acetoxy-4-{{[2-bis(*tert*-butoxycarbonyl)amino]-6-methylpyridin-4-yl}methyl}pyrrolidine-1-carboxylate, (\pm) -*cis*-13

