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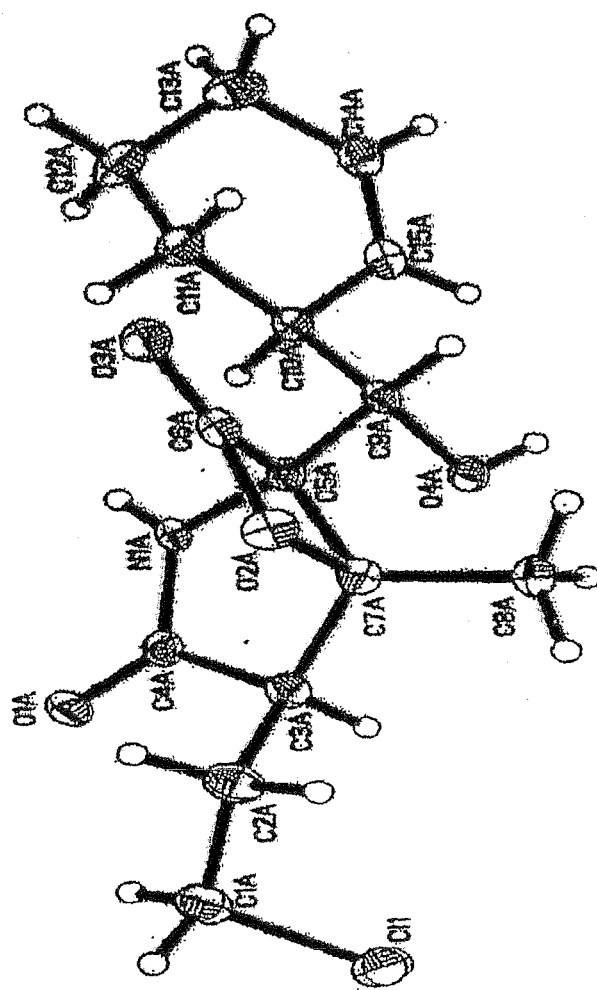
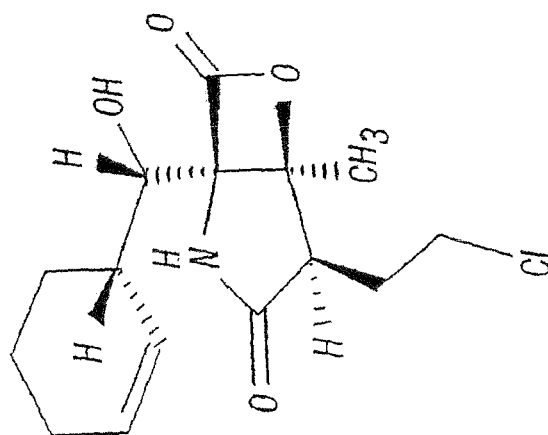
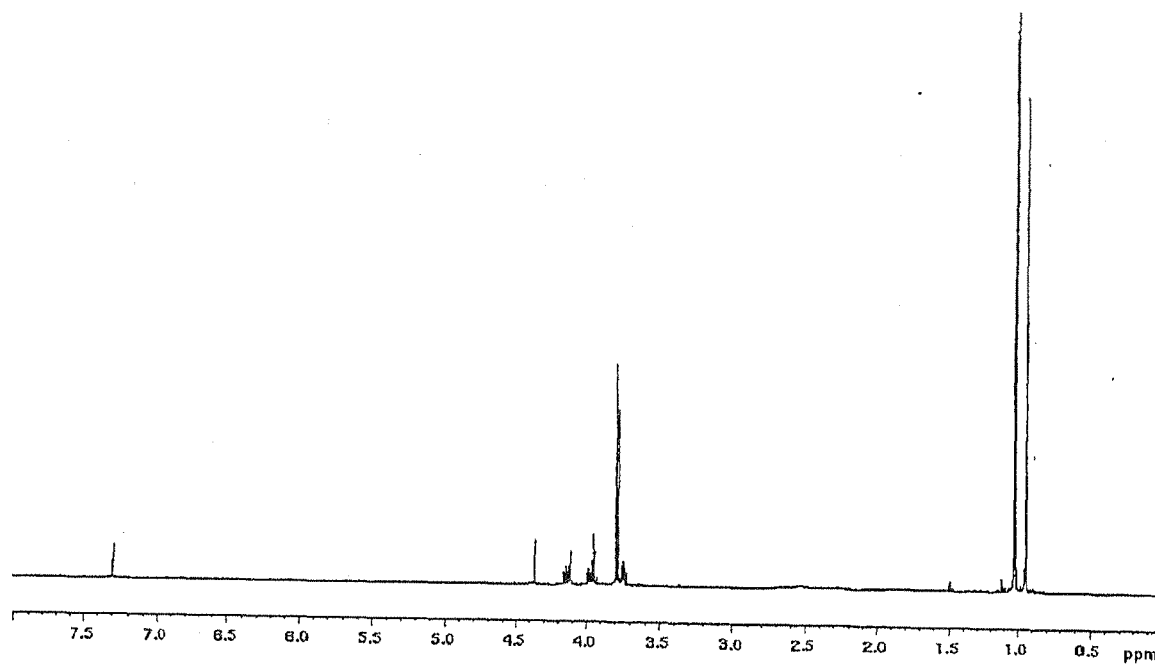
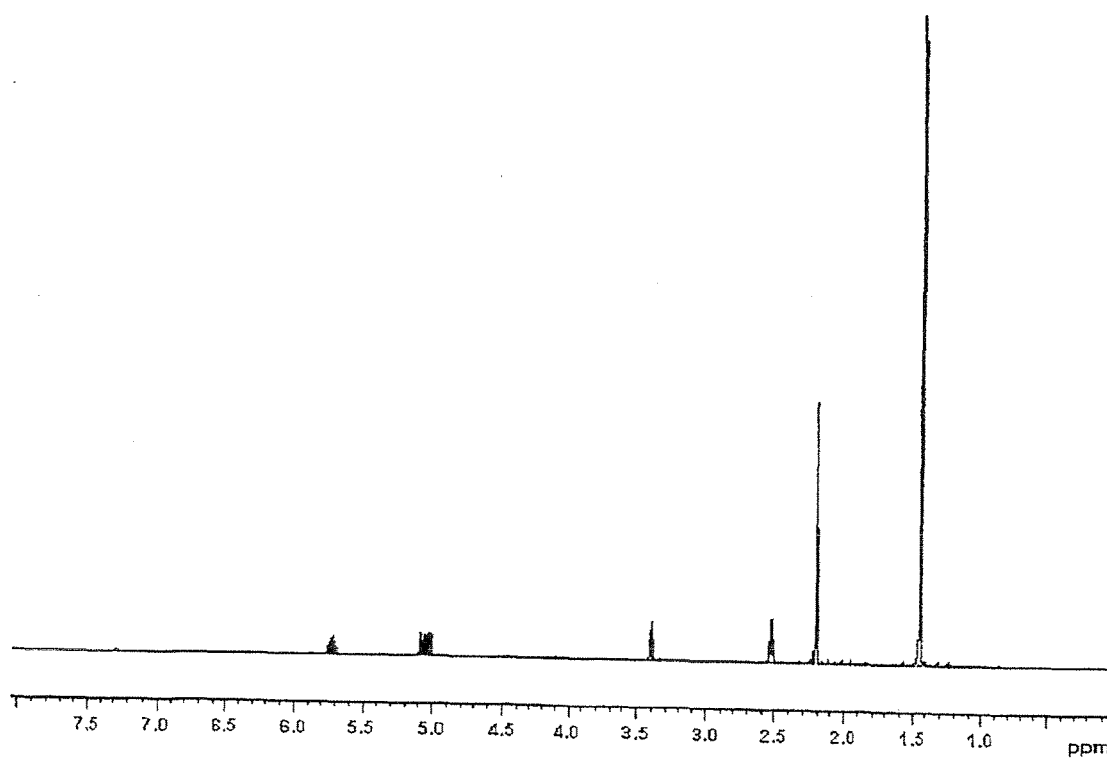


Fig. 1



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Fig-2: ^1H -NMR of Compound (I-1) in CDCl_3 Fig-3: ^1H -NMR of the ester precursor to the Compound (II-1) in CDCl_3

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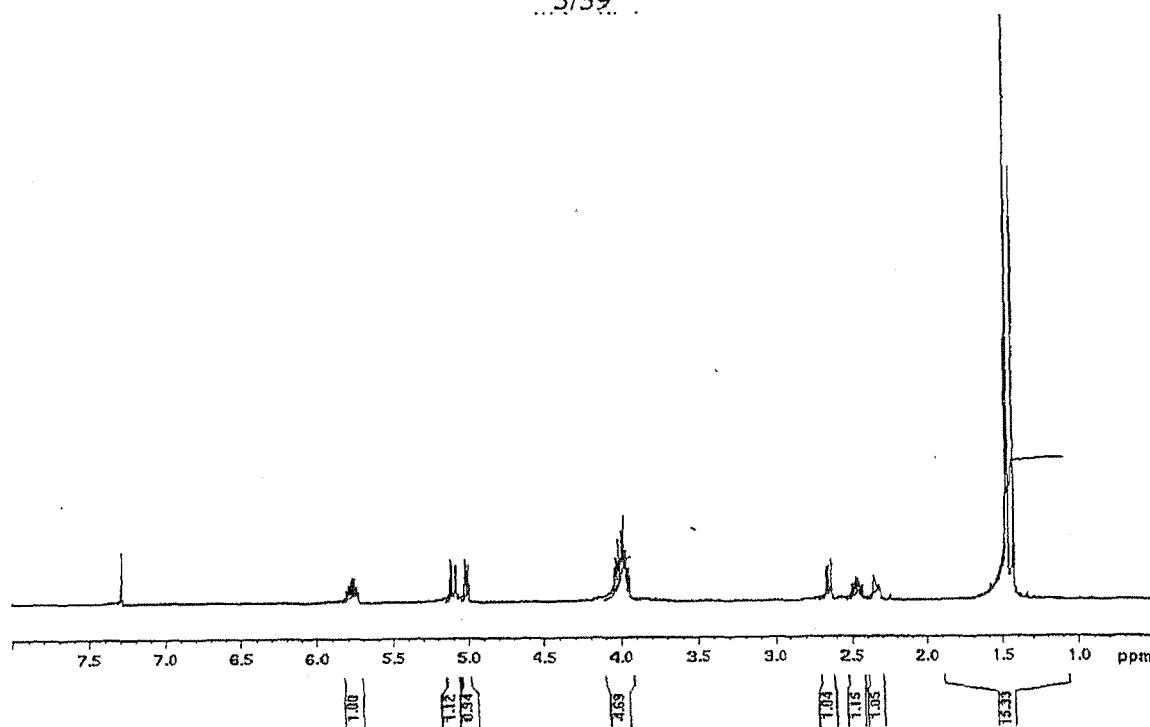
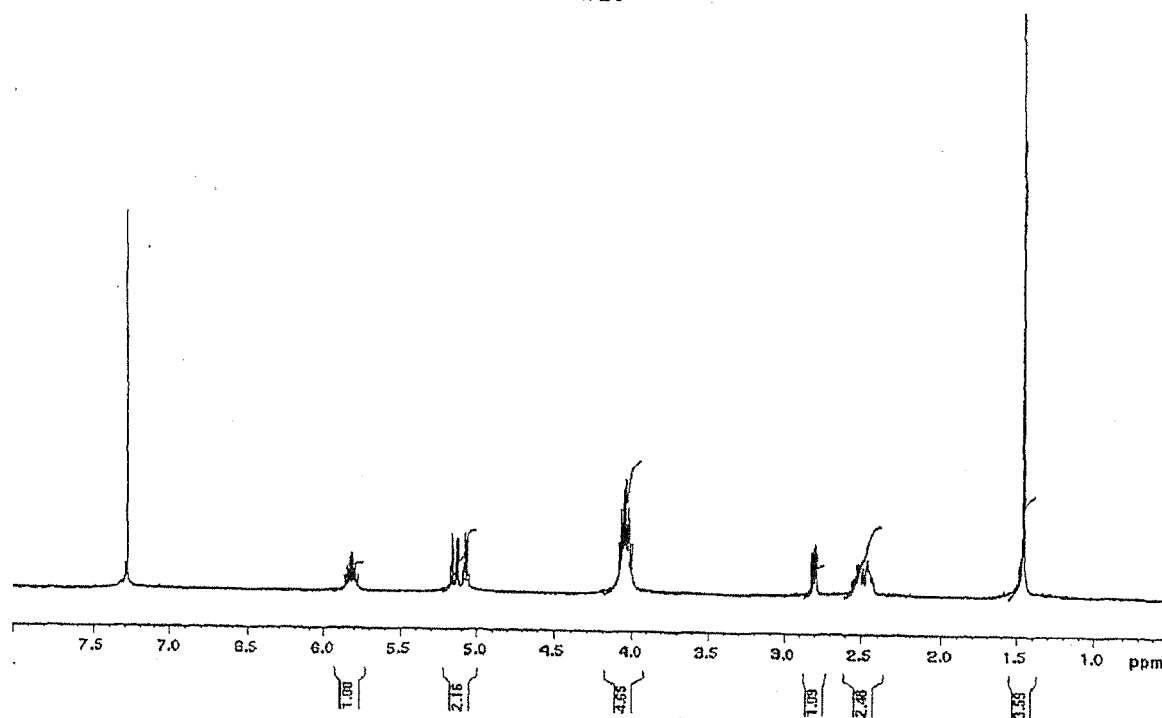
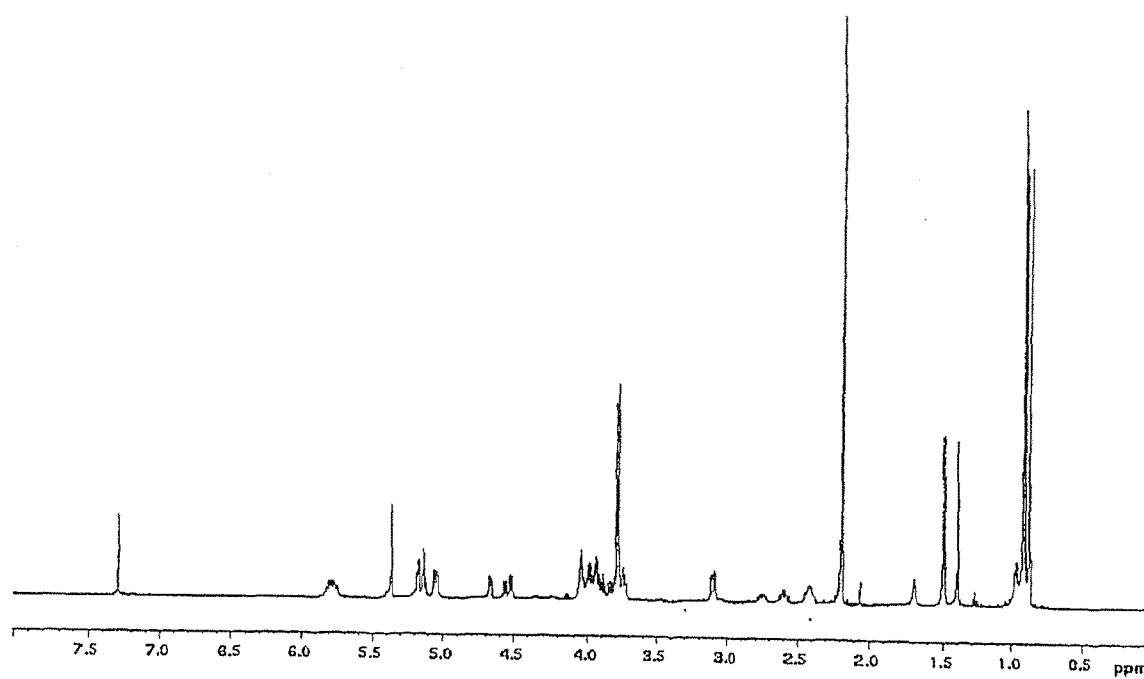


Fig-4: ^1H -NMR of Compound the protected ester precursor of the Compound (II-1) in CDCl_3

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Fig-5: ^1H -NMR of Compound (II-1) in CDCl_3 Fig-6a: ^1H -NMR of Compound (III-1) in CDCl_3

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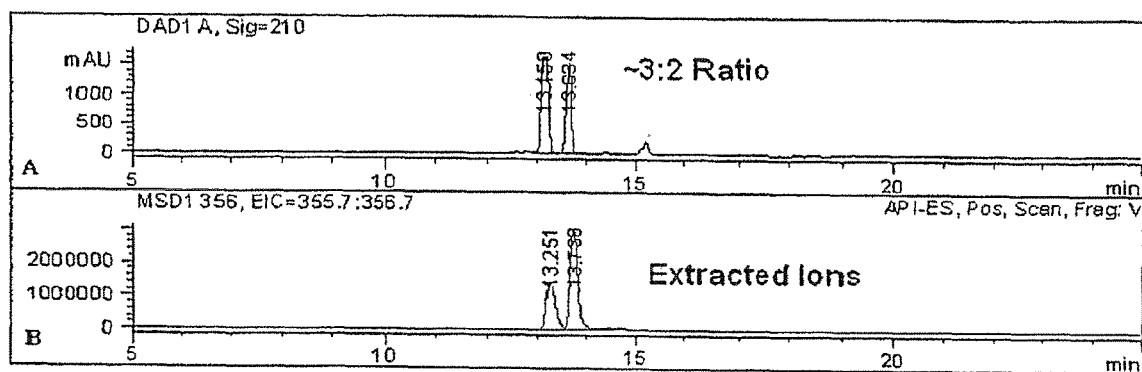
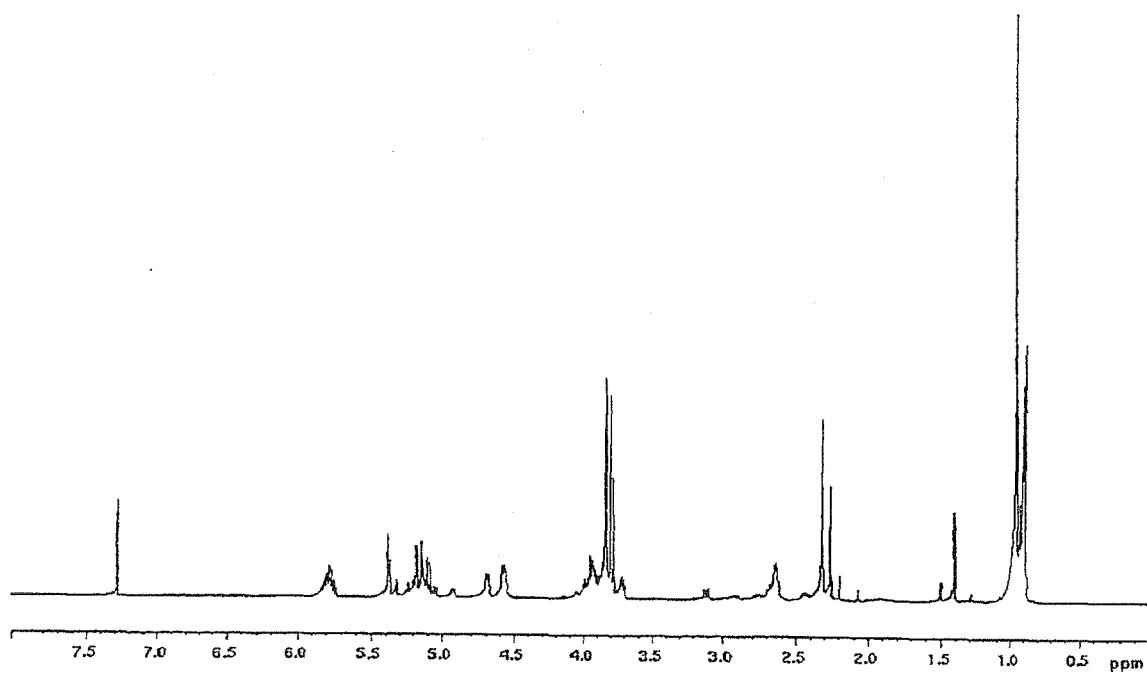


Fig-6b: LC-MS of Compound (III-1)

Fig-7a: ^1H -NMR of Compound (IV-1) in CDCl_3

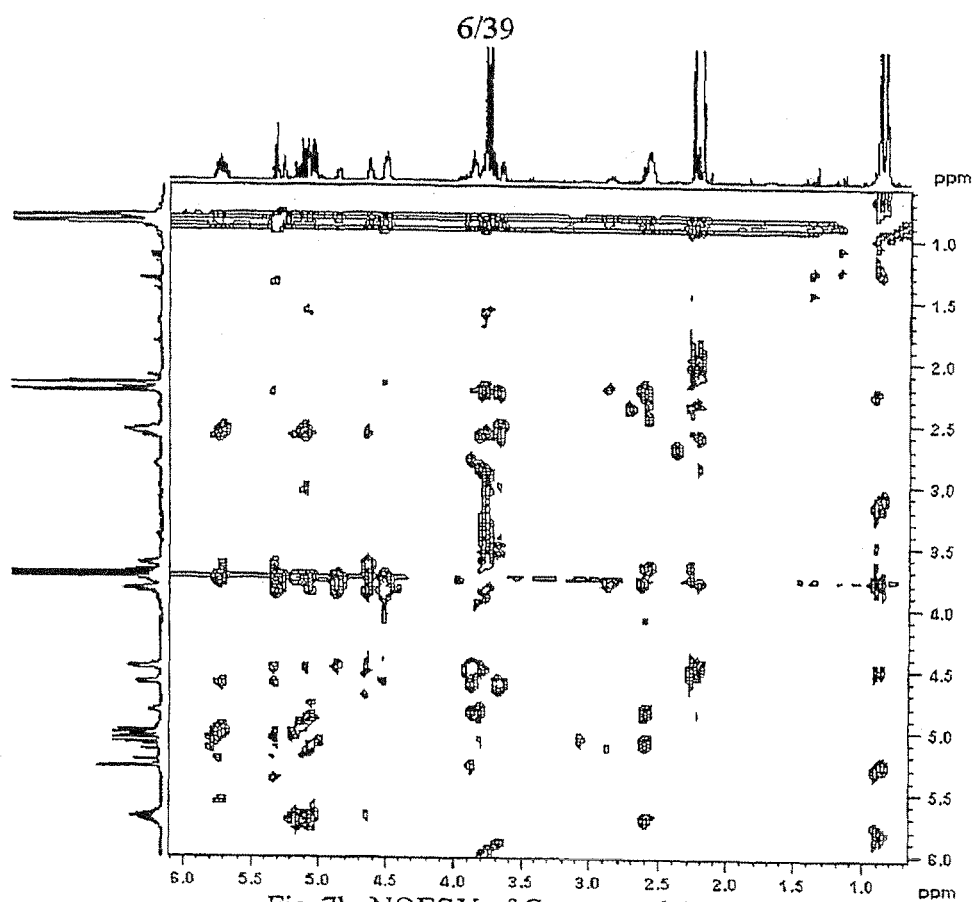
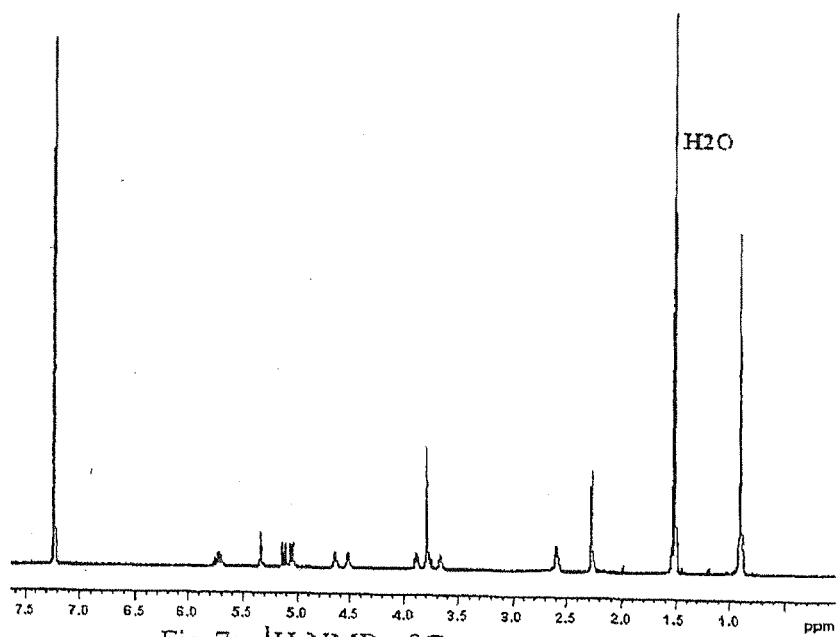
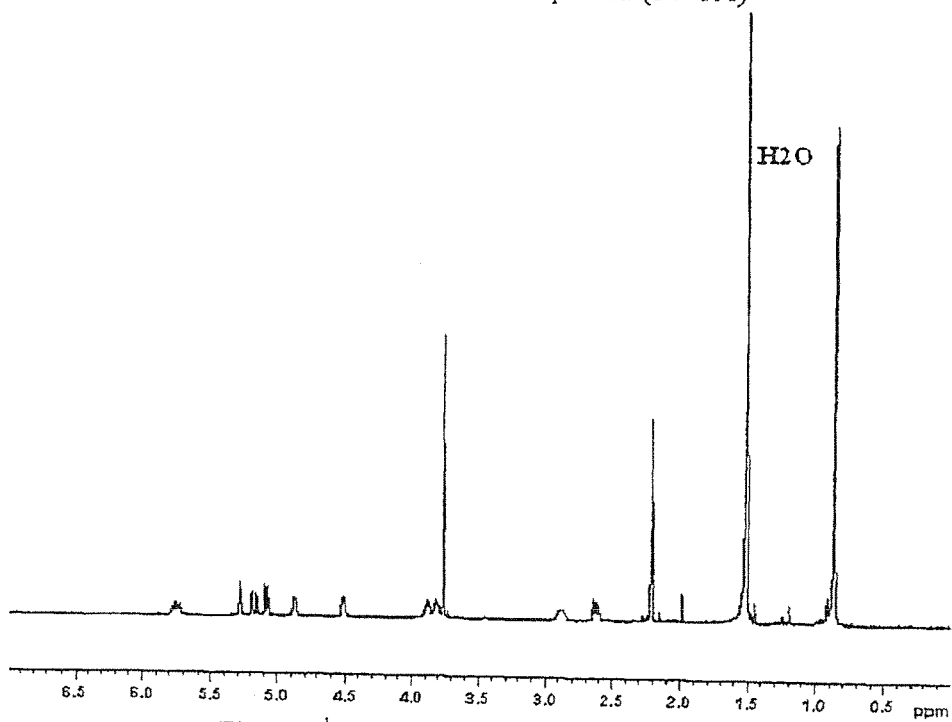


Fig-7b: NOESY of Compound (IV-1)

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Fig-7c: ¹H-NMR of Compound (IV-1A)Fig-7d: ¹H-NMR of Compound (IV-1B)

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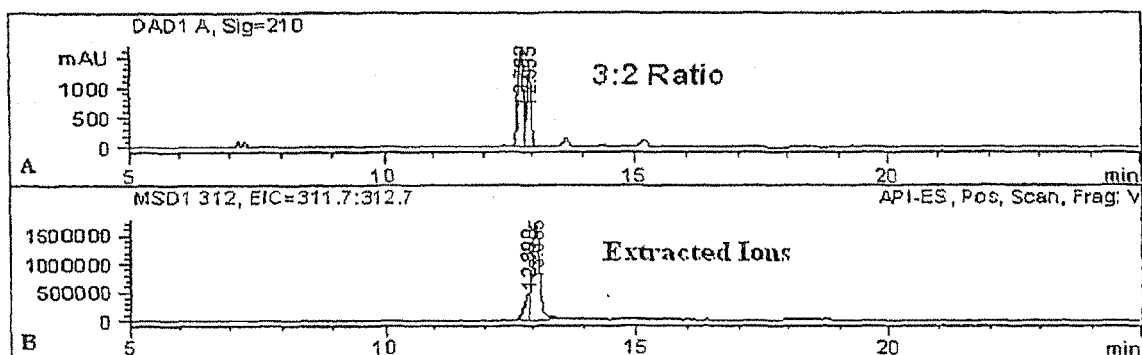
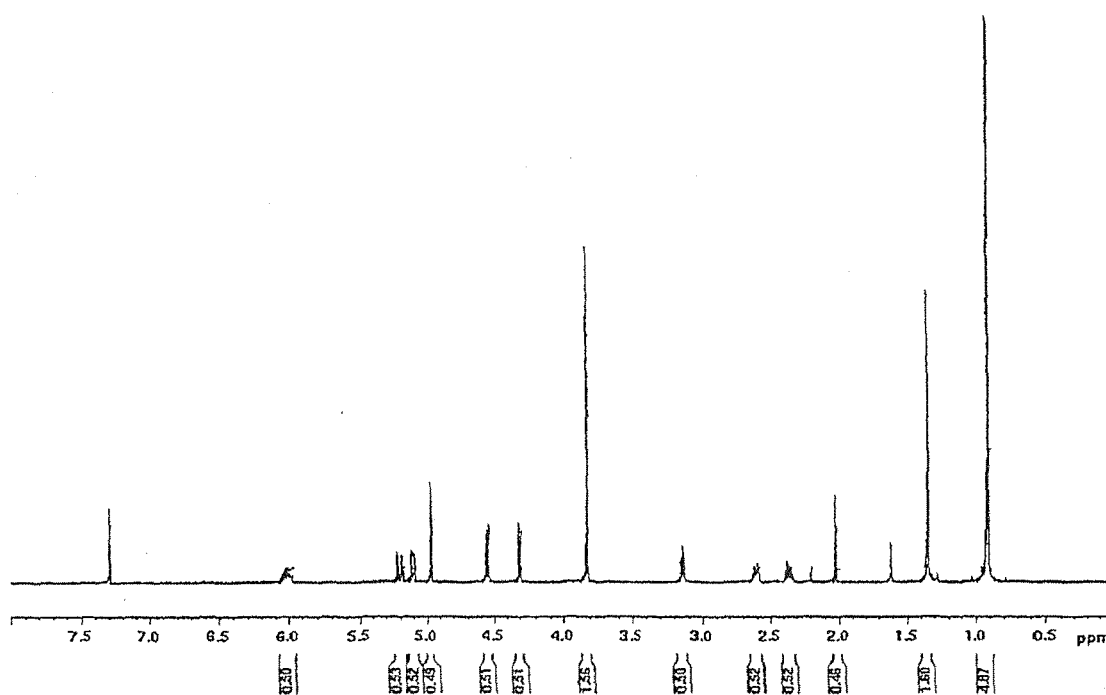


Fig-7e: LC-MS of Compound (IV-1)

Fig-8: ^1H -NMR of Compound (V-1A) in CDCl_3

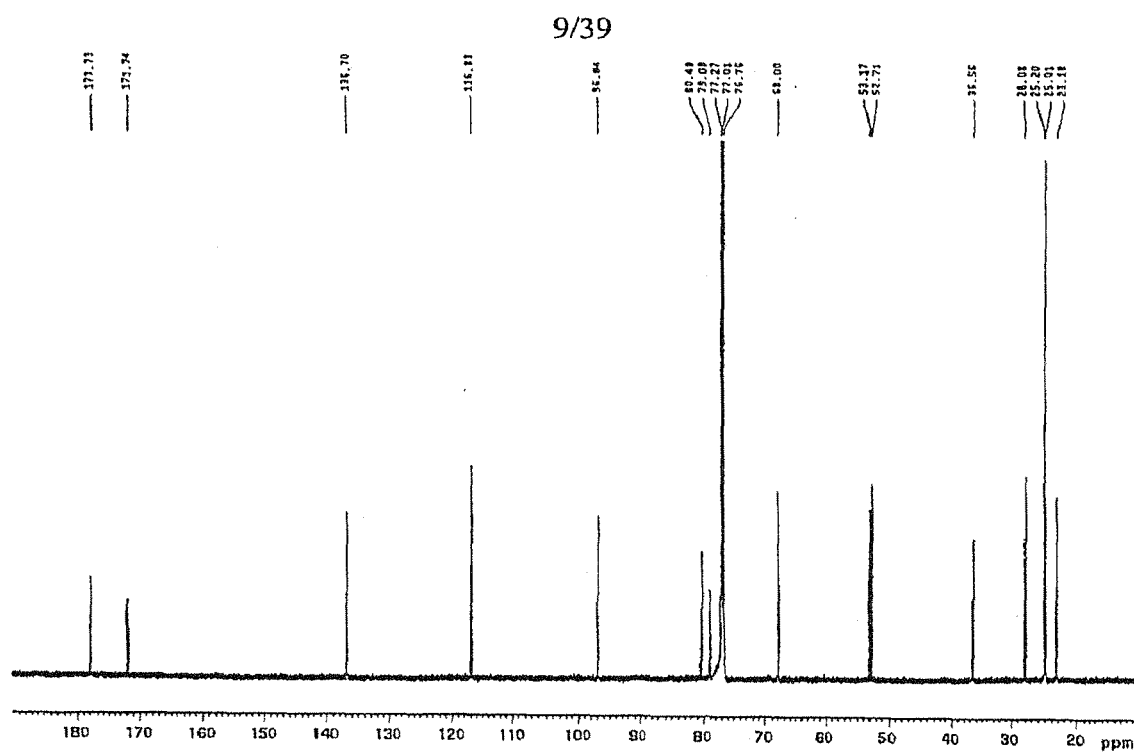


Fig-9: ^{13}C -NMR of Compound (V-1A) in CDCl_3

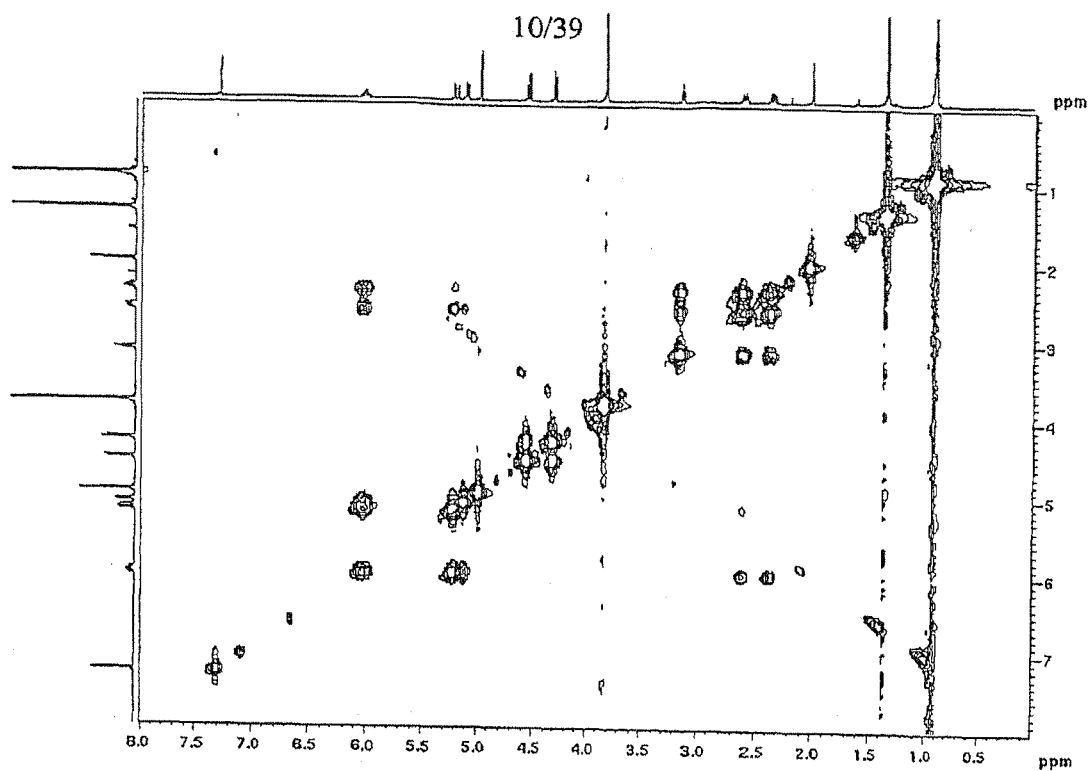
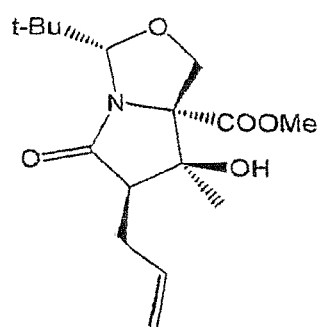
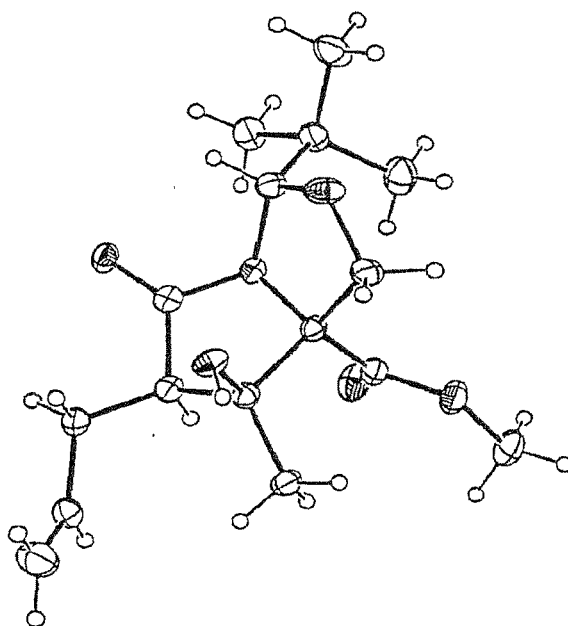


Fig-10: ^1H - ^1H COSY of Compound (V-1A) in CDCl_3

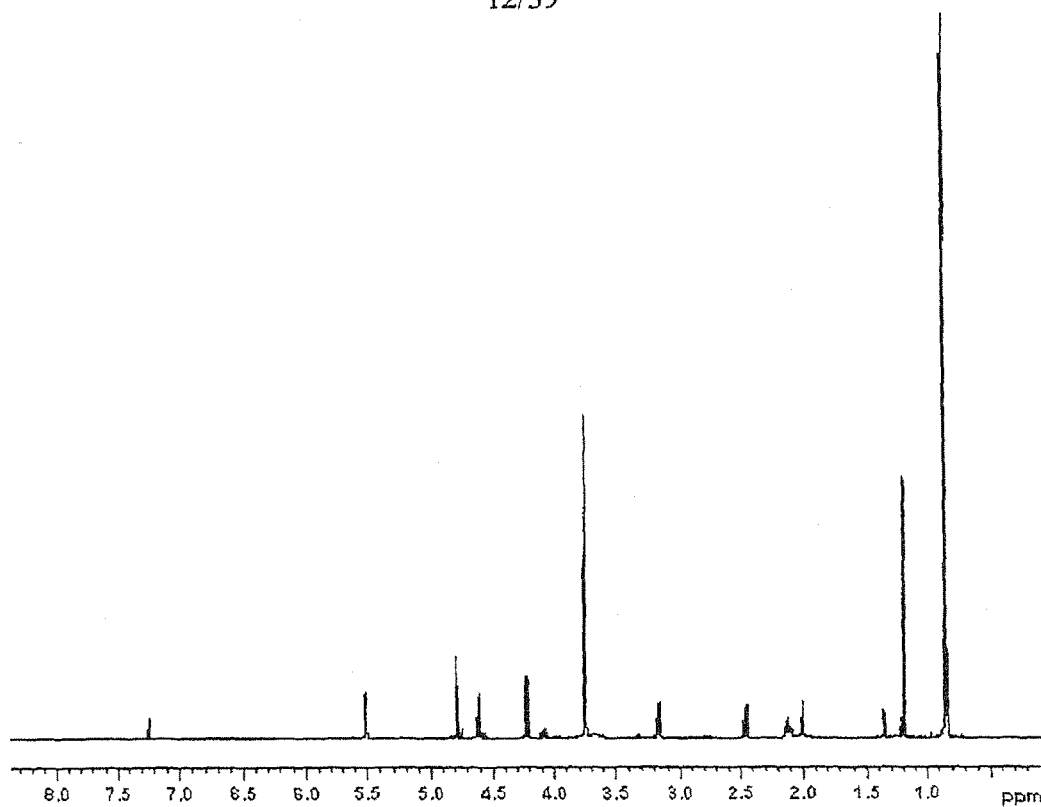
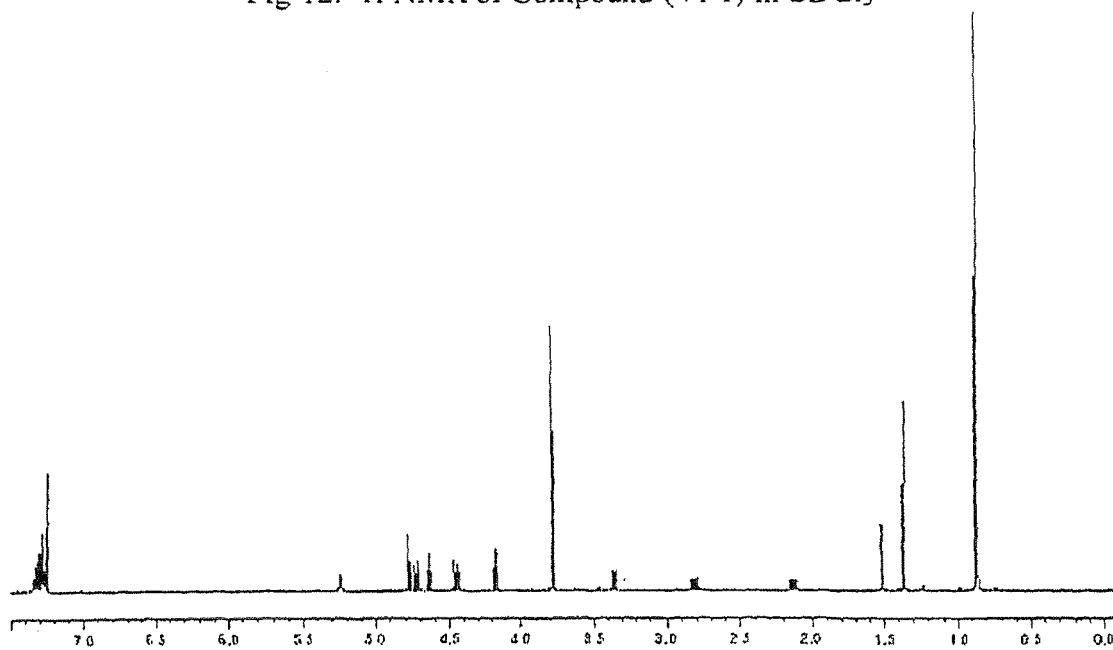
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Fig-11: ORTEP Plot of the X-ray Crystal Structure of Compound (V-1A)

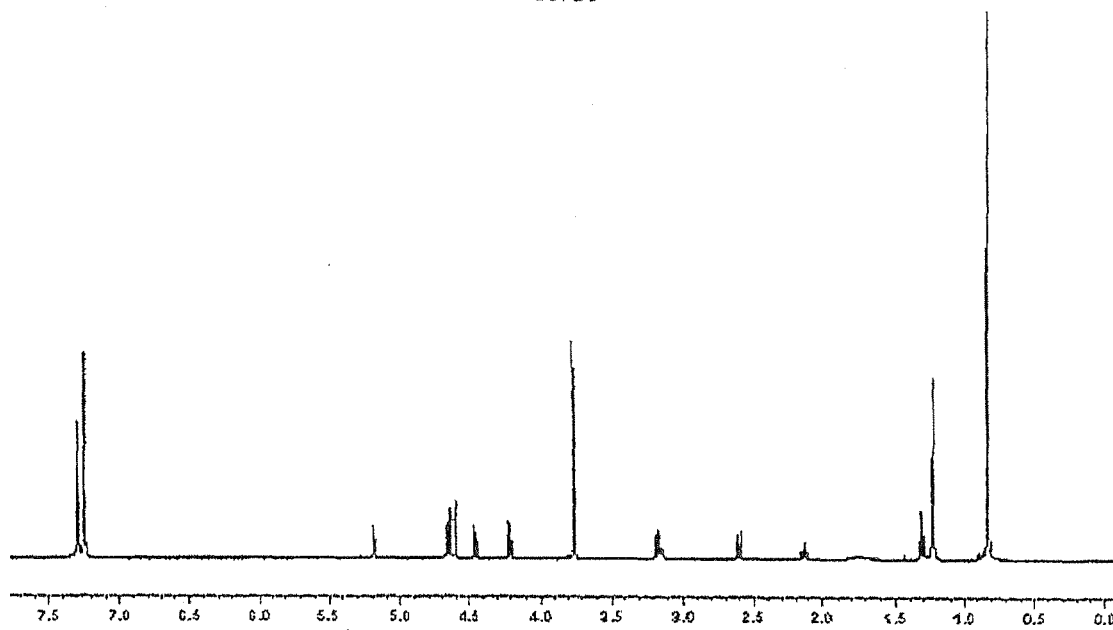


(V-1A)

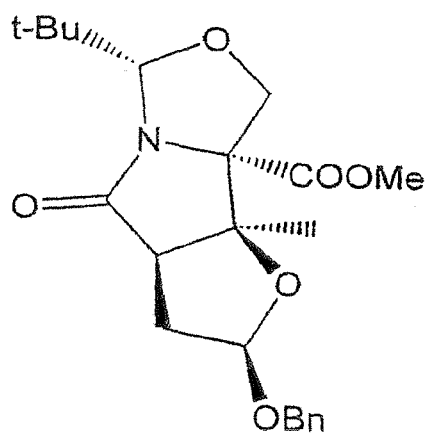
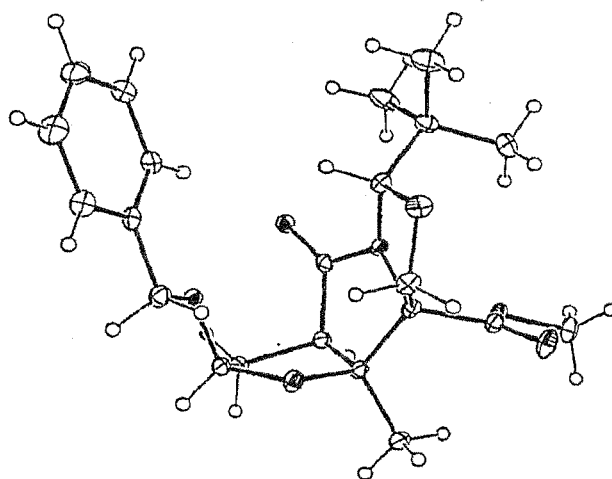
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Fig-12: ^1H NMR of Compound (VI-1) in CDCl_3 Fig-13: ^1H NMR of Compound (VII-1a) in CDCl_3

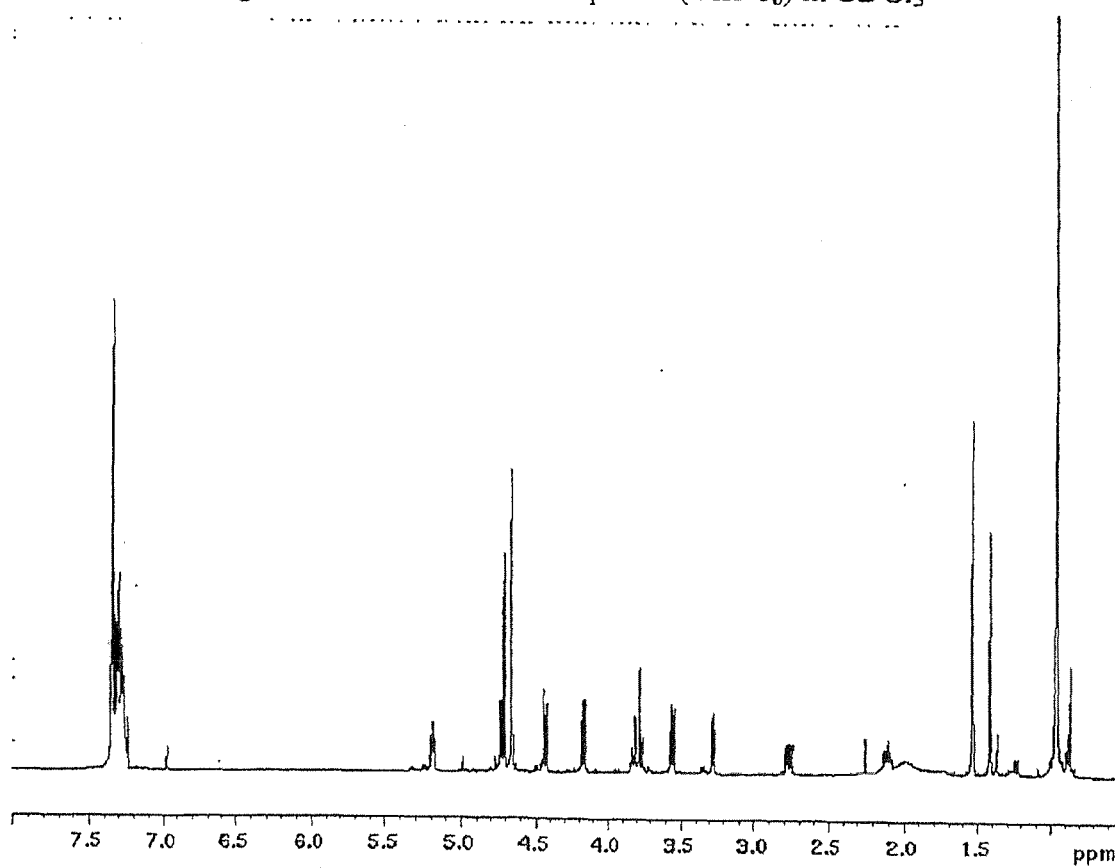
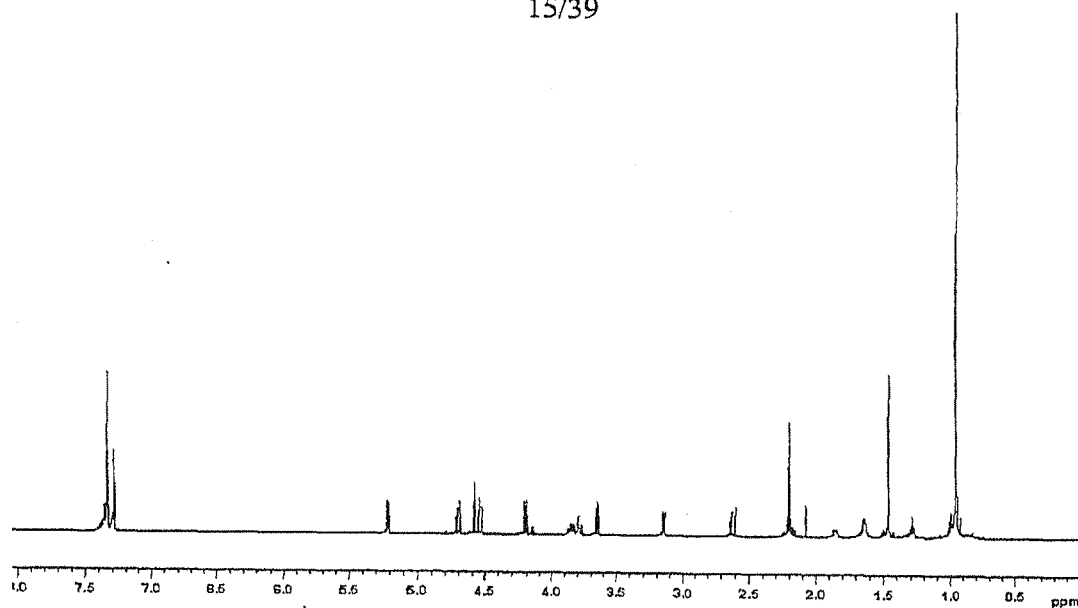
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Fig-14: ^1H NMR of Compound (VII-1b) in CDCl_3

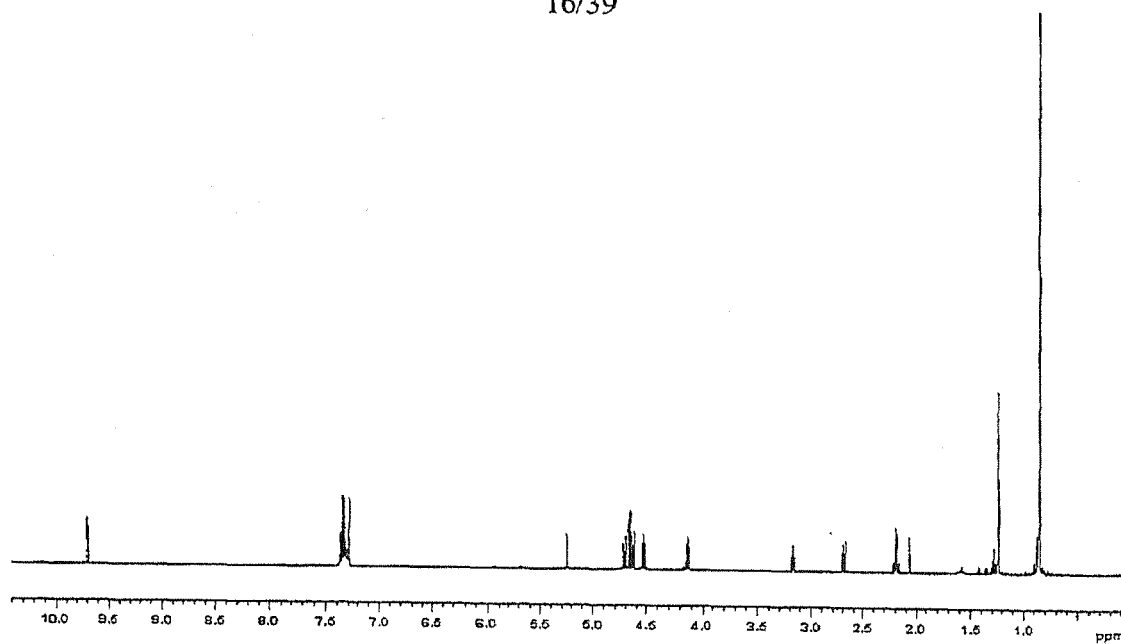
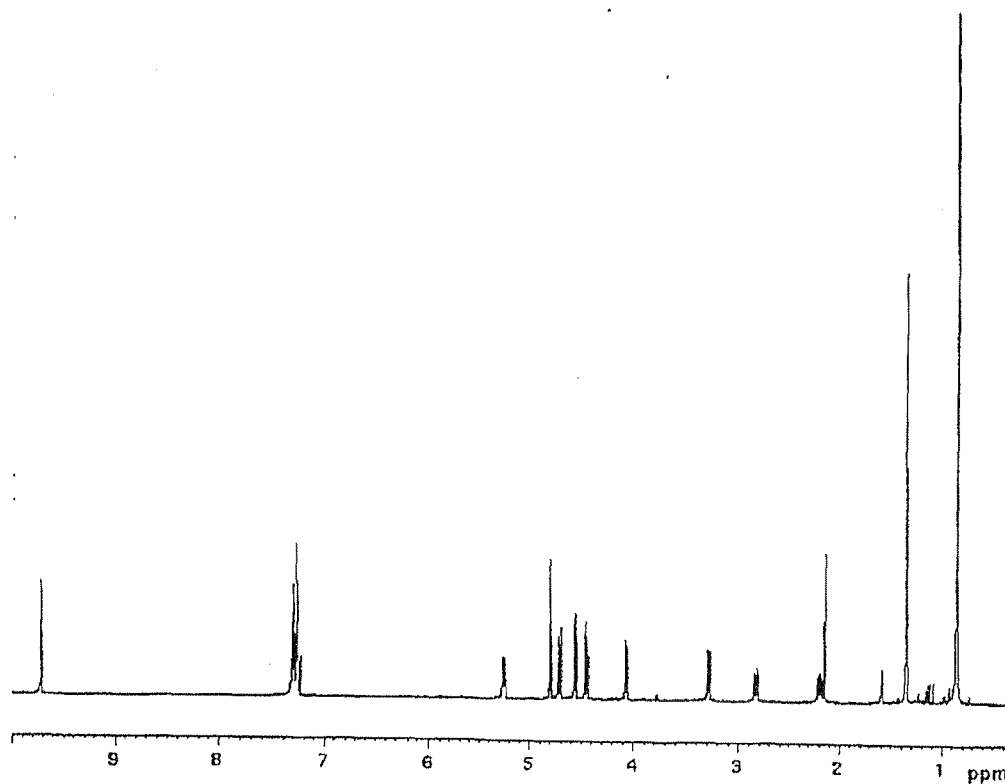
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Fig-15: ORTEP Plot of the X-ray Crystal Structure of Compound (VII-1_b)(VII-1_b)

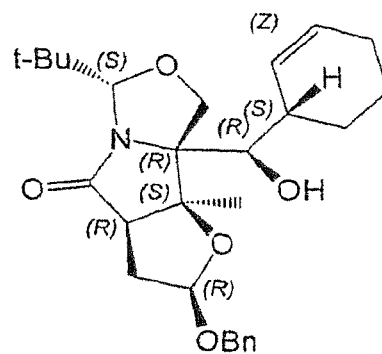
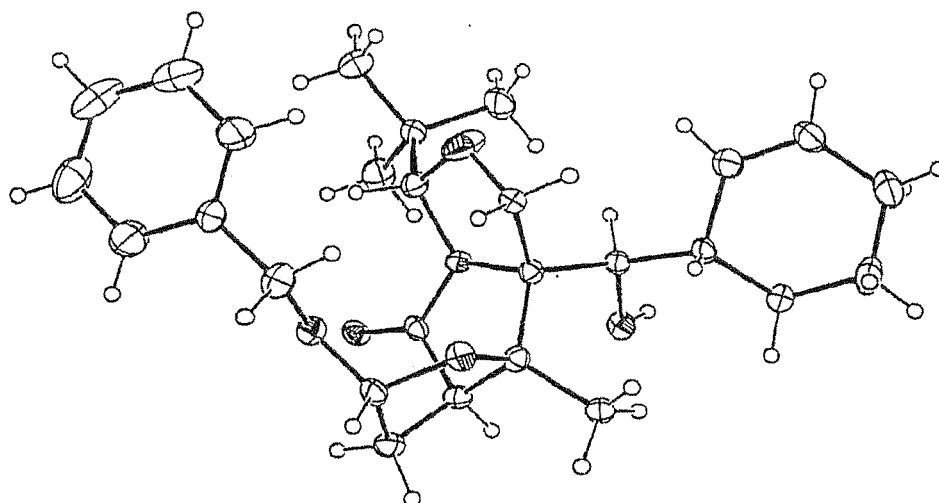
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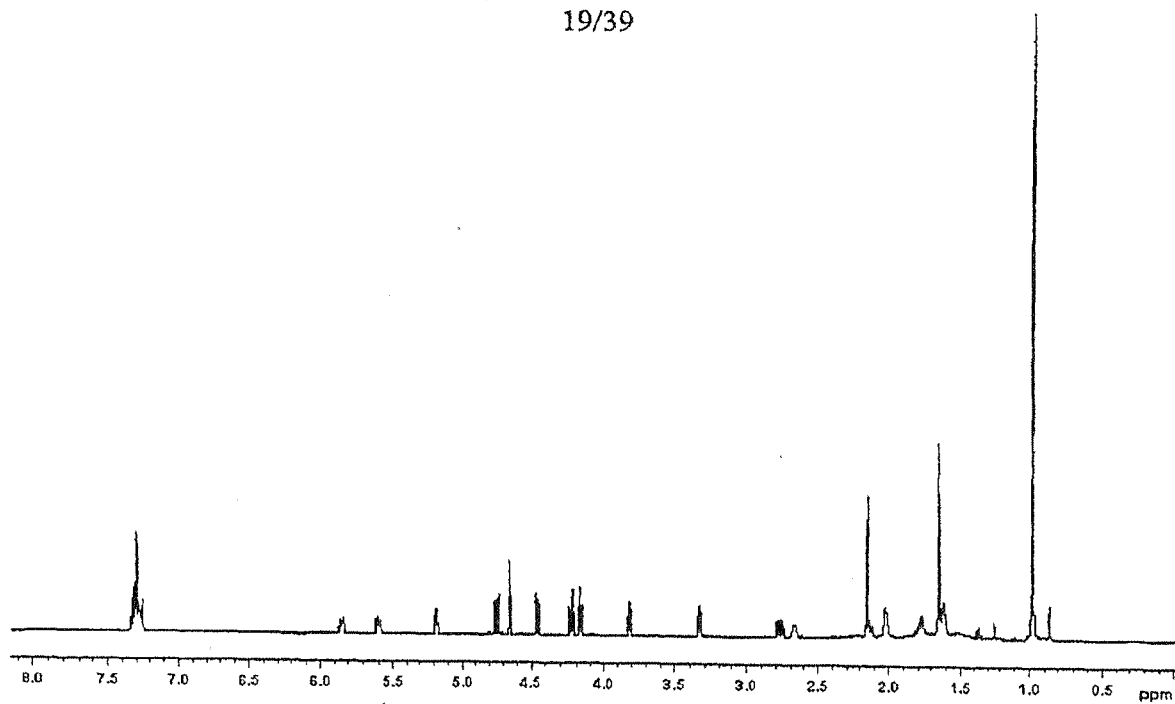
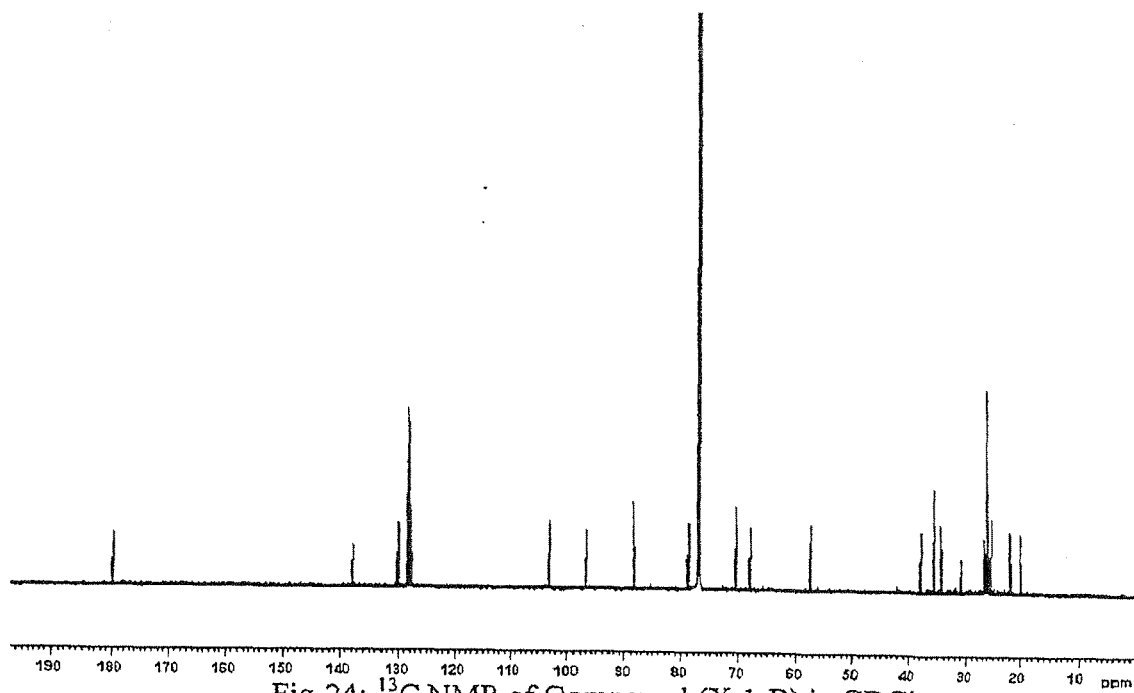
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Fig-18: ^1H NMR of Compound (IX-1_b) in CDCl_3 Fig-19: ^1H NMR of Compound (IX-1_a) in CDCl_3

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Fig-22: ORTEP plot of the X-ray Crystal Structure of Compound (X-1_bB)(X-1_bB)

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Fig-23: ^1H NMR of Compound (X-1_aB) in CDCl_3 Fig-24: ^{13}C NMR of Compound (X-1_aB) in CDCl_3

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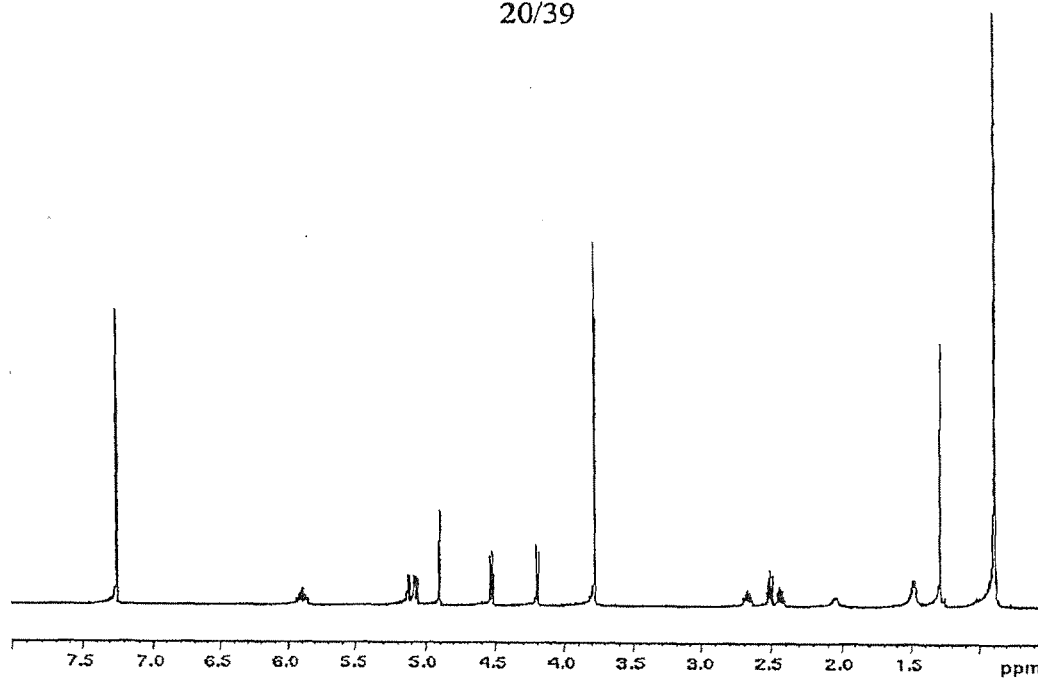
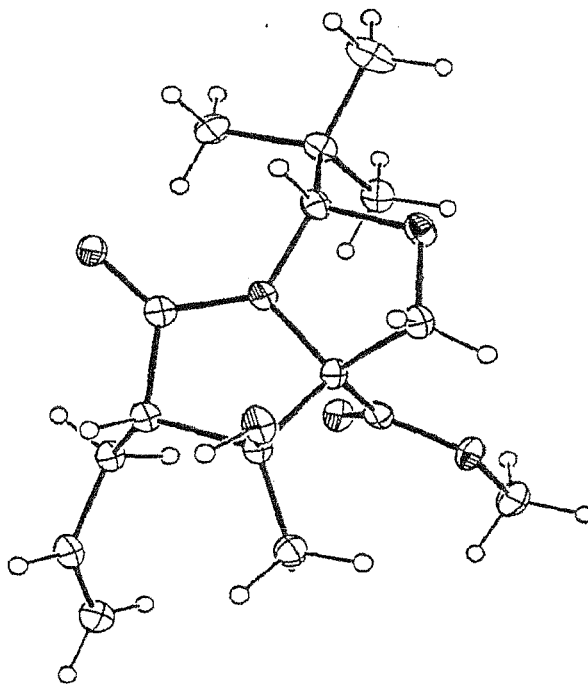
Fig-25: ¹H NMR of Compound (V-1B) in CDCl₃

Fig-26: ORTEP plot of the X-ray crystal structure of Compound (V-1B)

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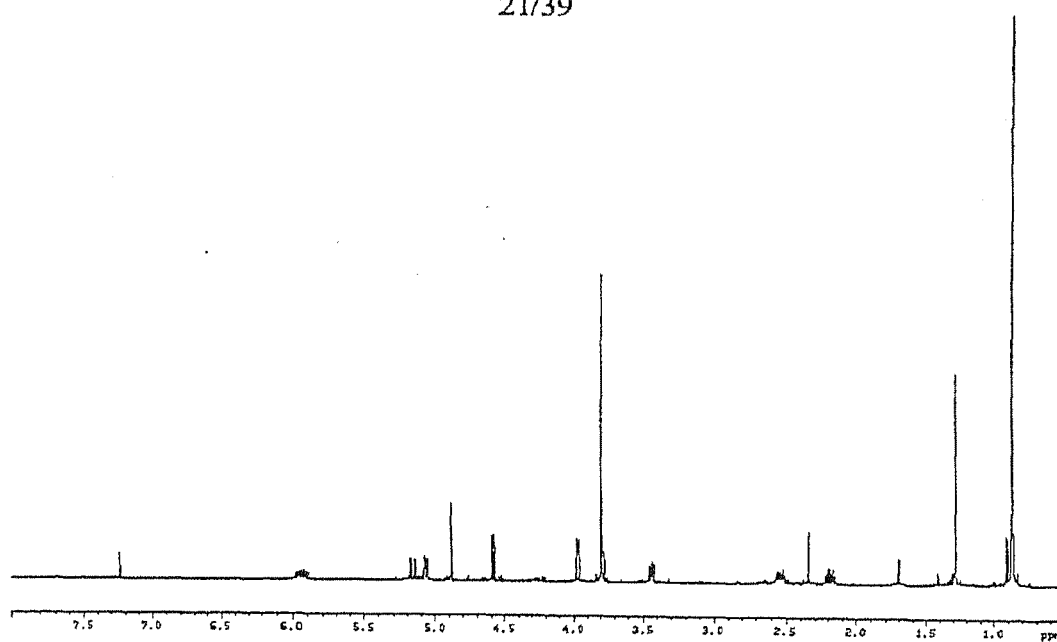


Fig-27: ^1H NMR of Compound (V-1C) in CDCl_3

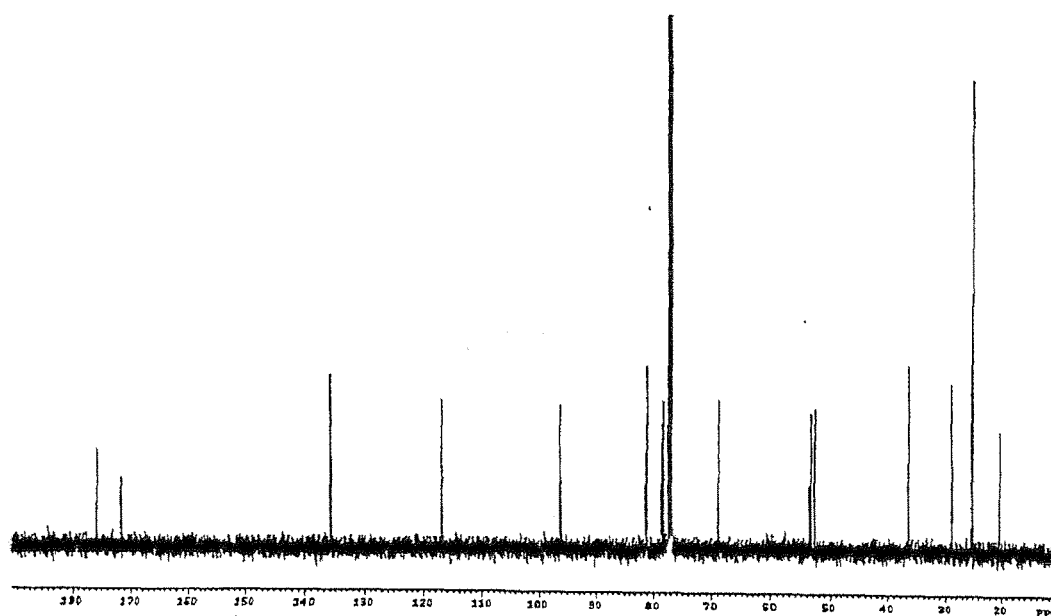
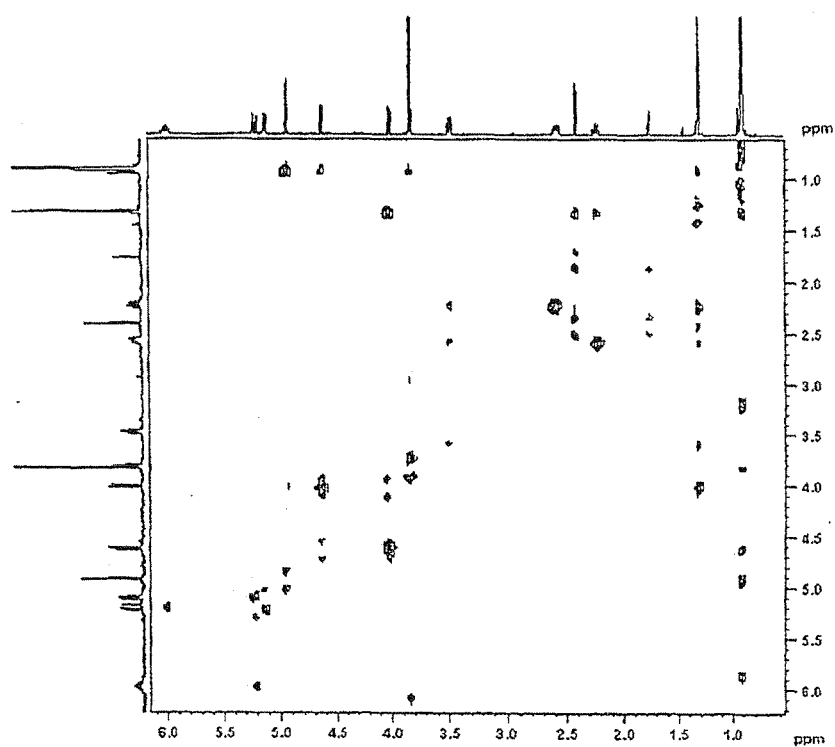
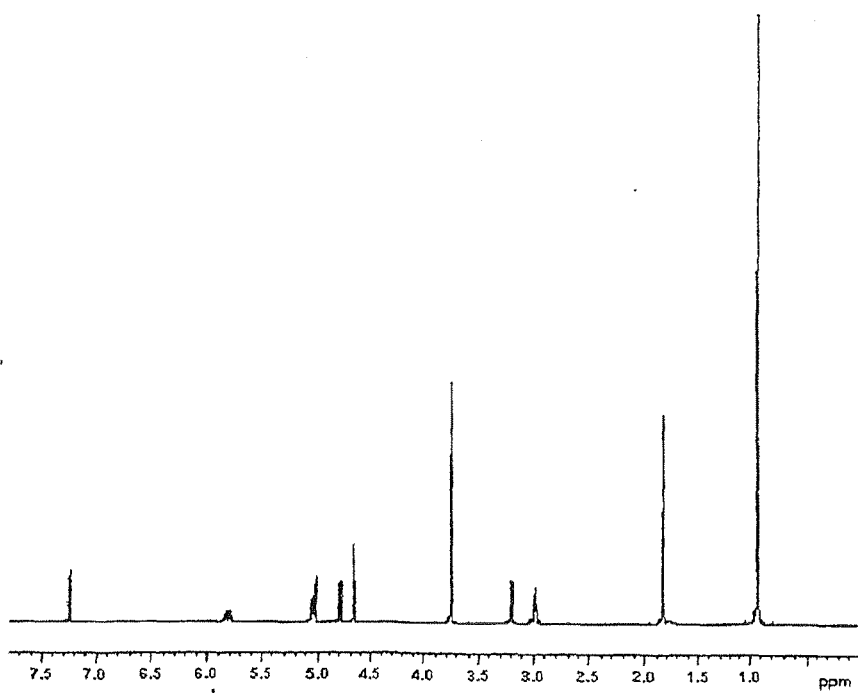
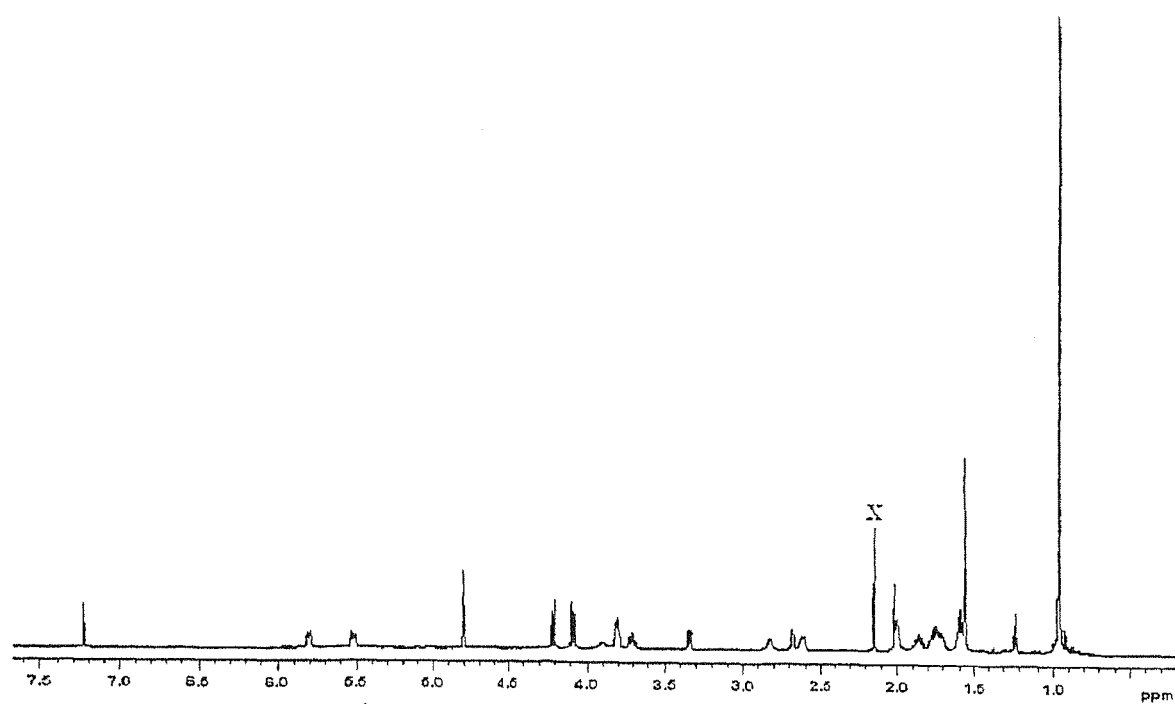
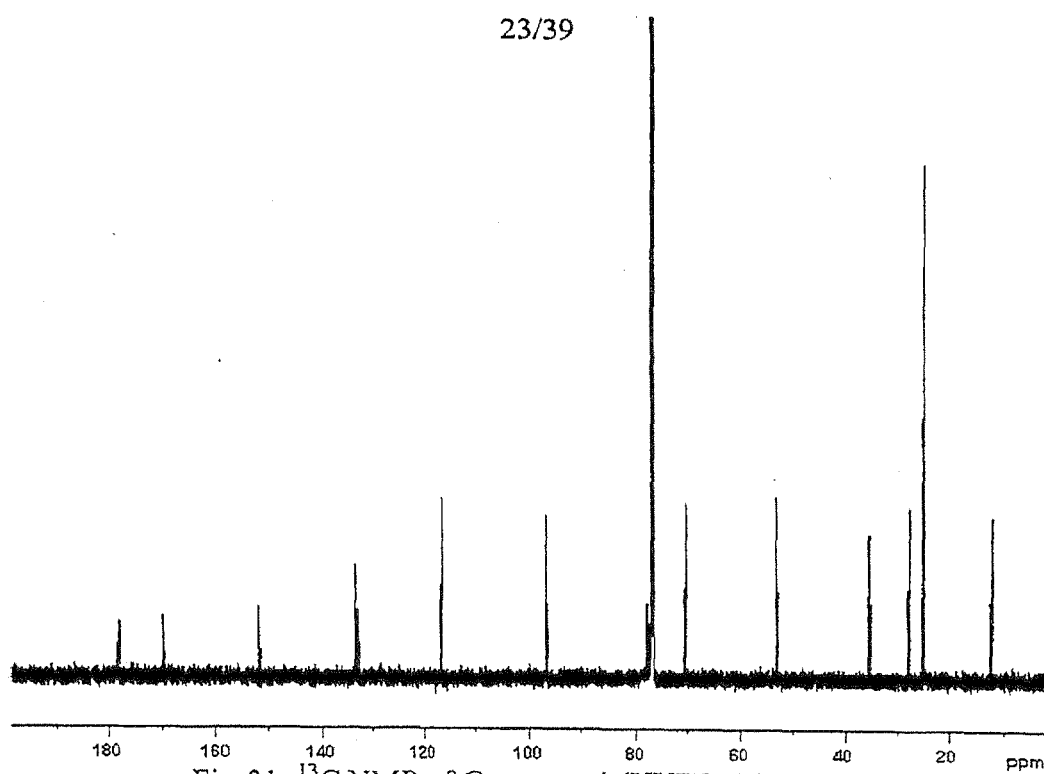


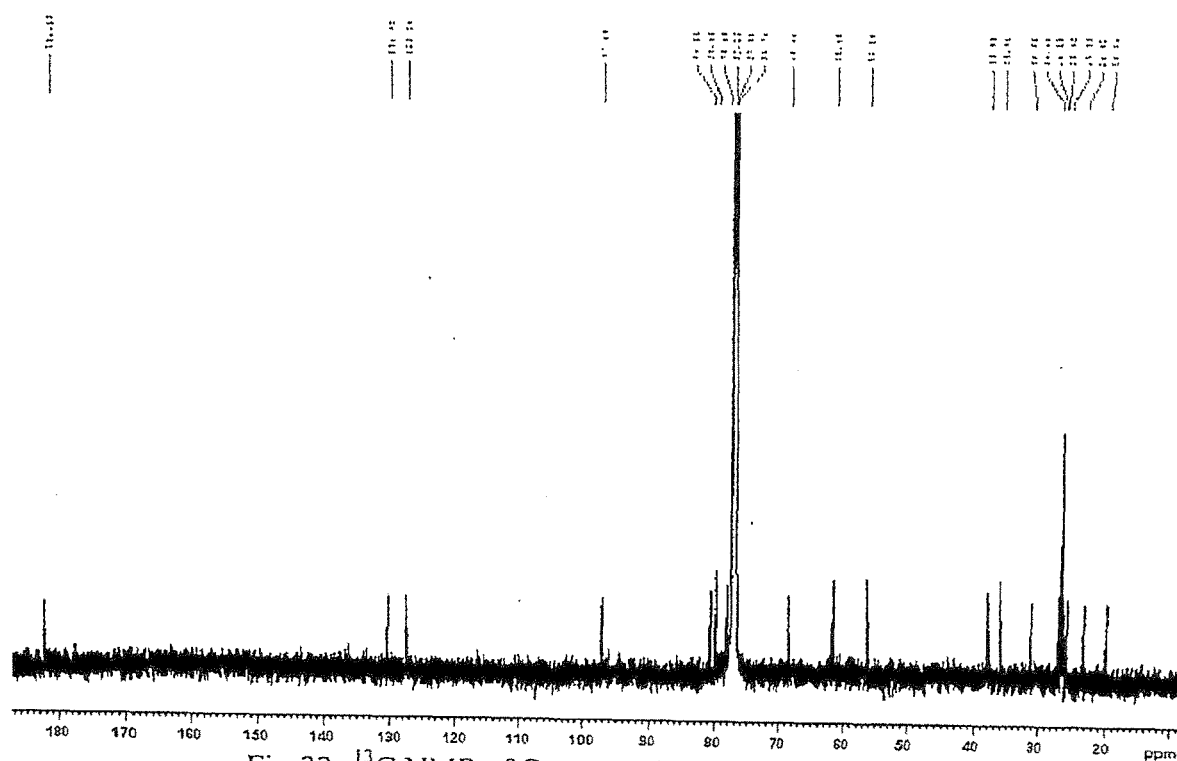
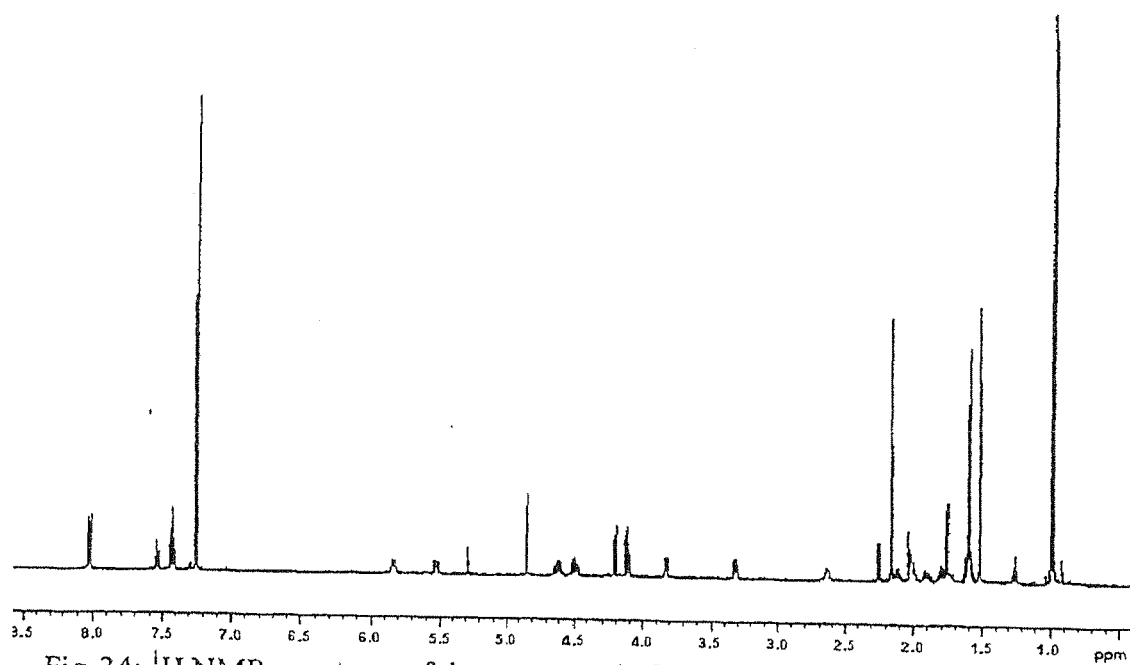
Fig-28: ^{13}C NMR of Compound (V-1C) in CDCl_3

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Fig-29: NOESY of Compound (V-1C) in CDCl₃Fig-30: ¹H NMR of Compound (XXIX-1) in CDCl₃



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Fig-33: ^{13}C NMR of Compound (XXIII-1B) in CDCl_3 Fig-34: ^1H NMR spectrum of the compound of formula (XXIV-1B-Bz) in CDCl_3

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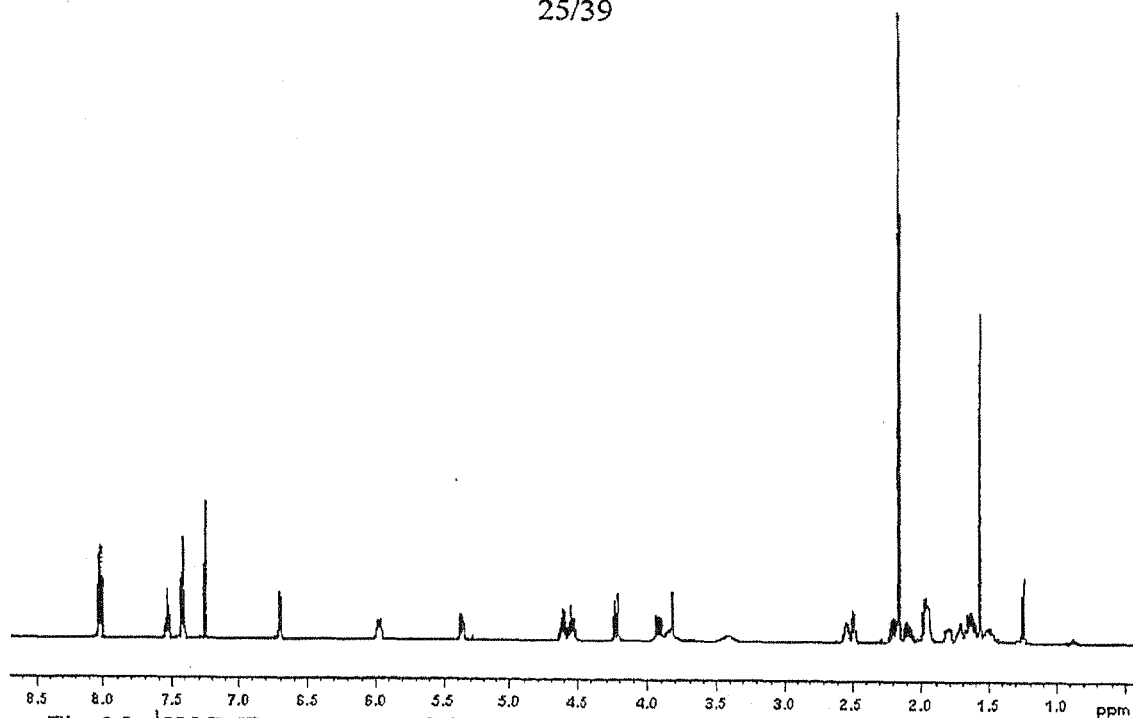


Fig-35: ^1H NMR spectrum of the compound of formula (XXV-1B-Bz) in CDCl_3

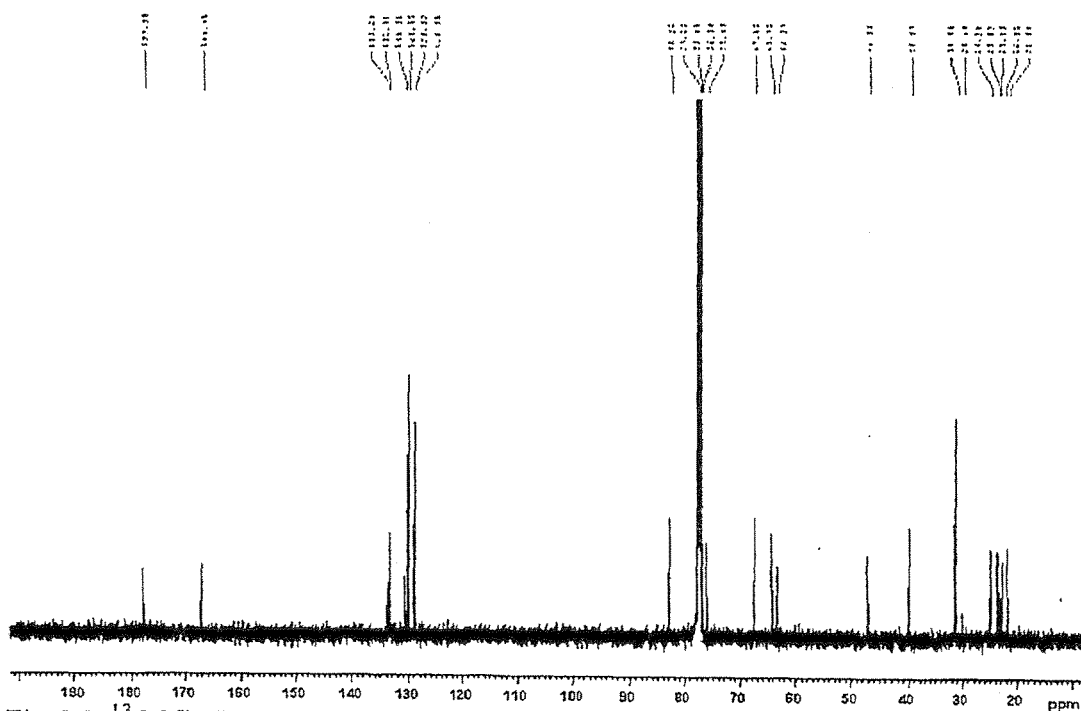


Fig-36: ^{13}C NMR spectrum of the compound of formula (XXV-1B-Bz) in CDCl_3

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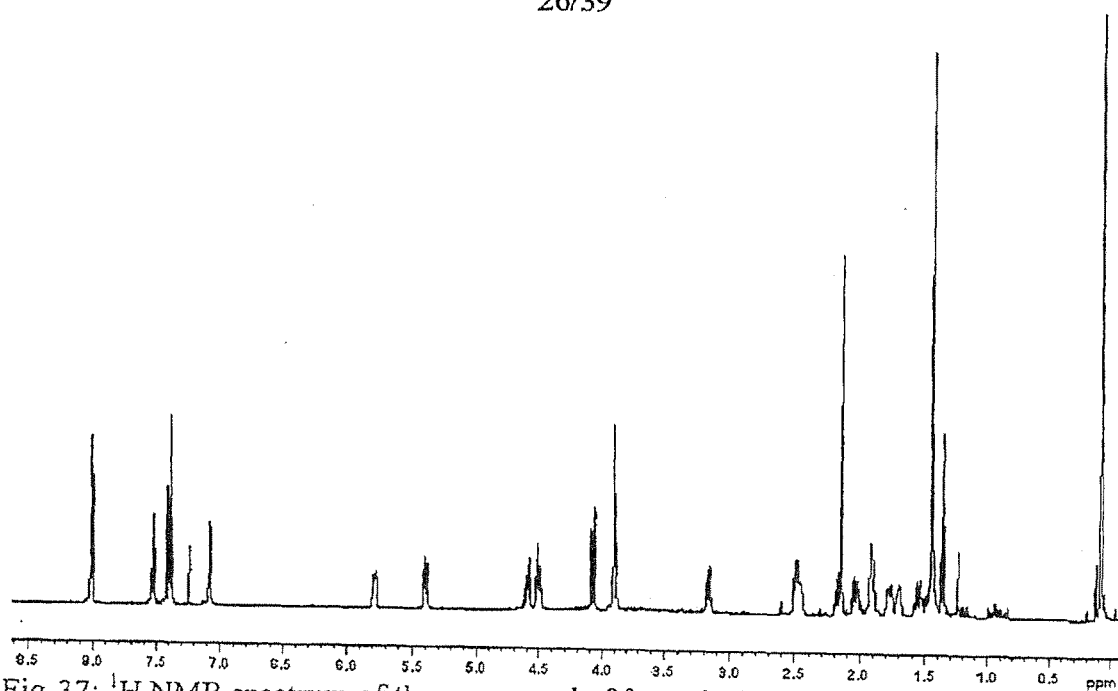


Fig-37: ^1H NMR spectrum of the compound of formula (XXVp-1B-Bz-TMS) in CDCl_3

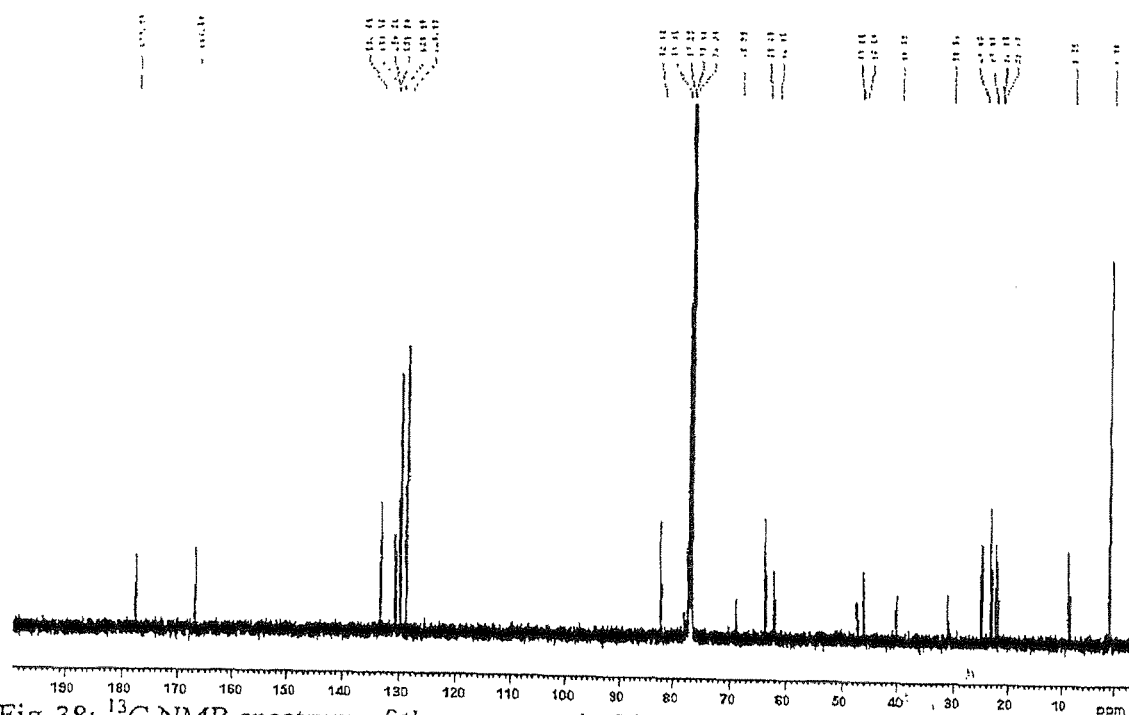
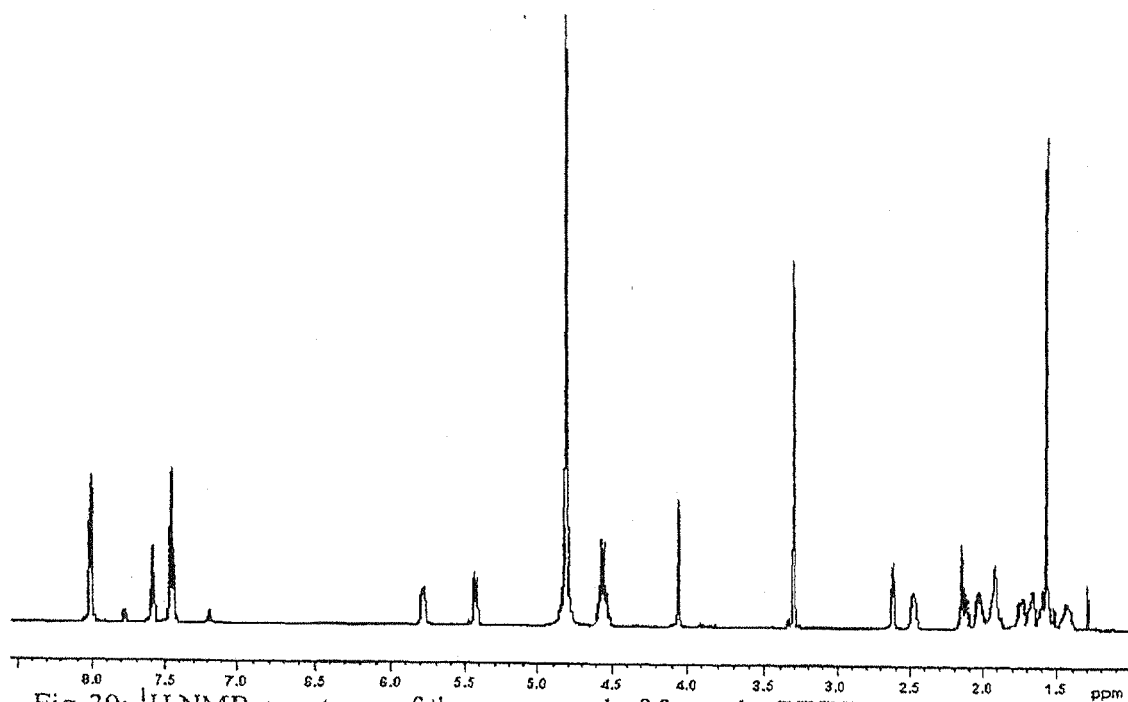
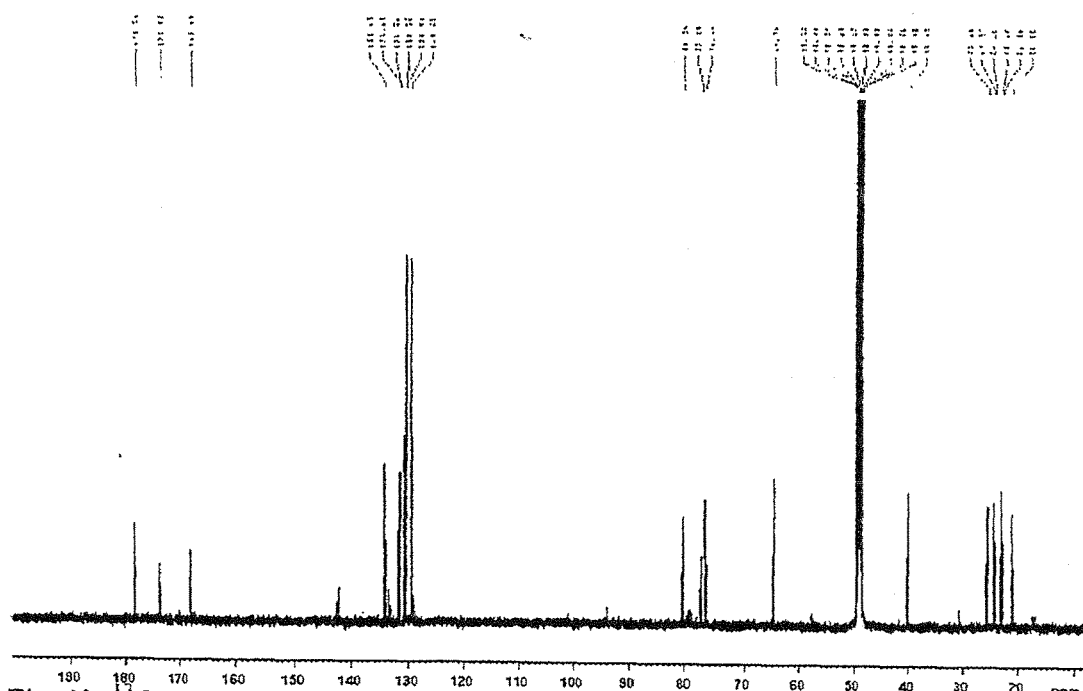


Fig-38: ^{13}C NMR spectrum of the compound of formula (XXVp-1B-Bz-TMS) in CDCl_3

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Fig-39: ^1H NMR spectrum of the compound of formula (XXVI-1B-Bz) in CD_3OD Fig-40: ^{13}C NMR spectrum of the compound of formula (XXVI-1B-Bz) in CD_3OD

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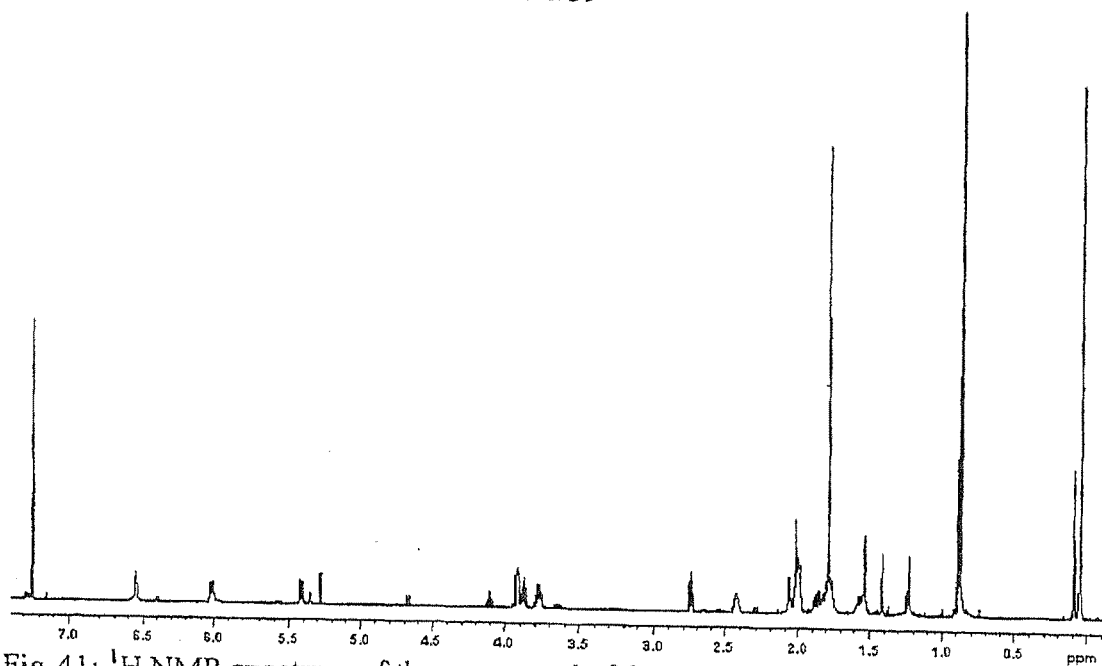


Fig-41: ¹H NMR spectrum of the compound of formula (XXVIII-1B-TBS) in CDCl₃

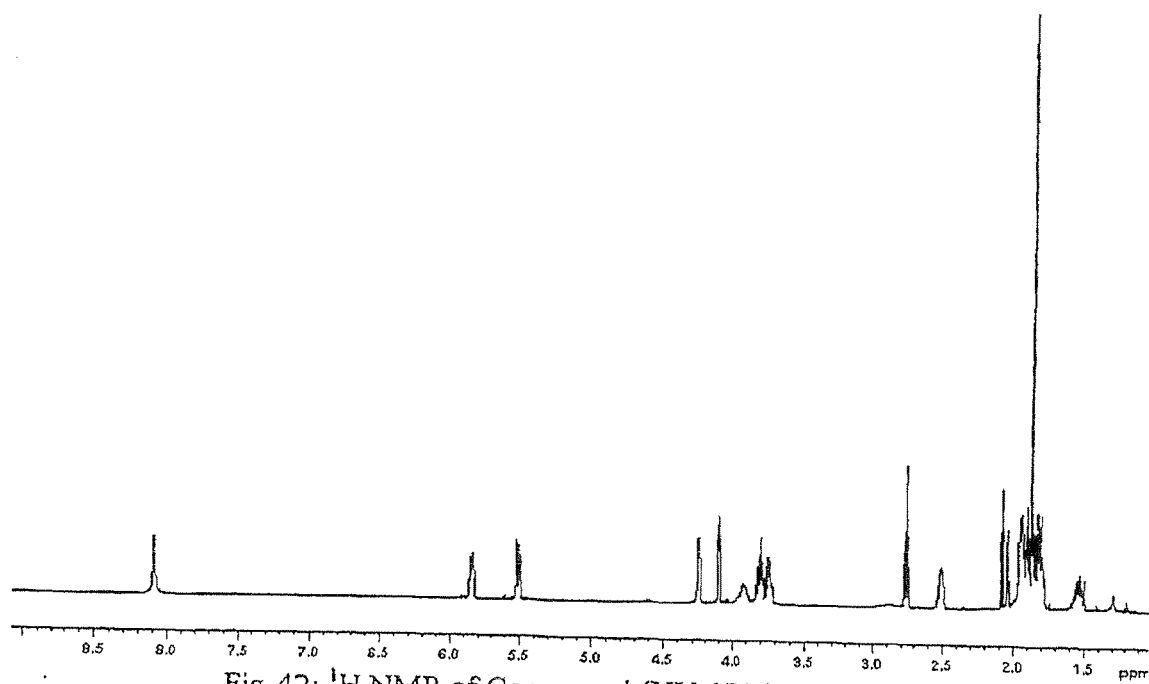


Fig-42: ¹H NMR of Compound (XV-1B) in acetone-d₆

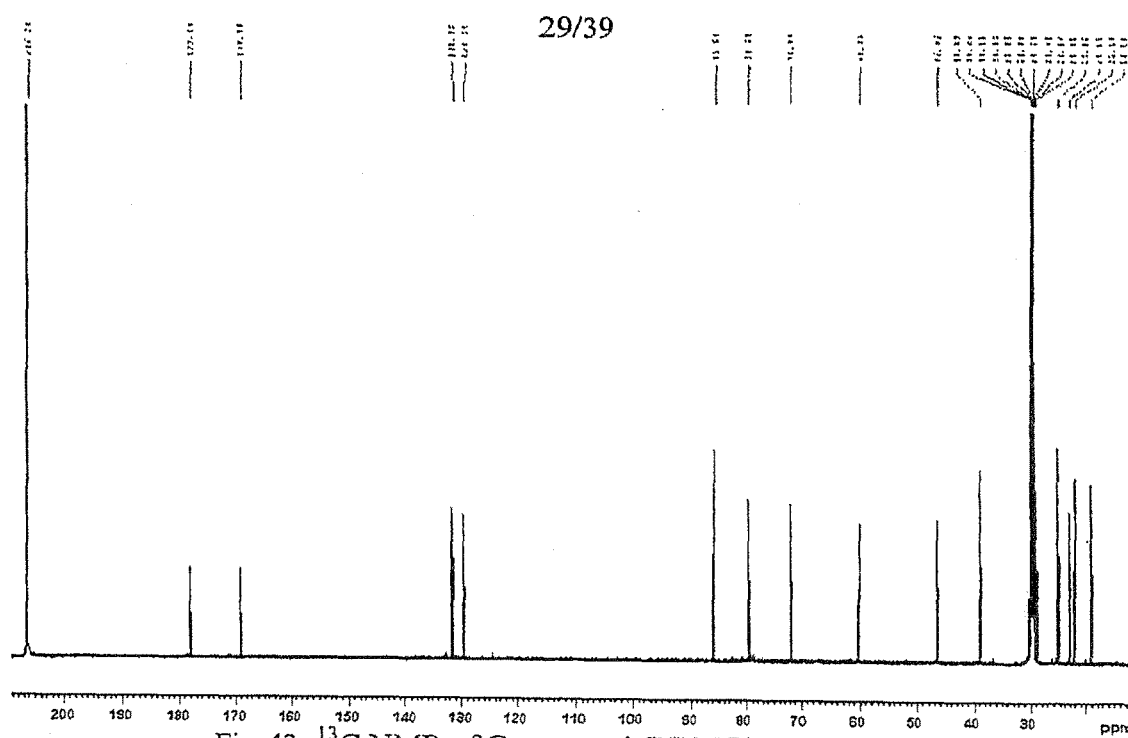
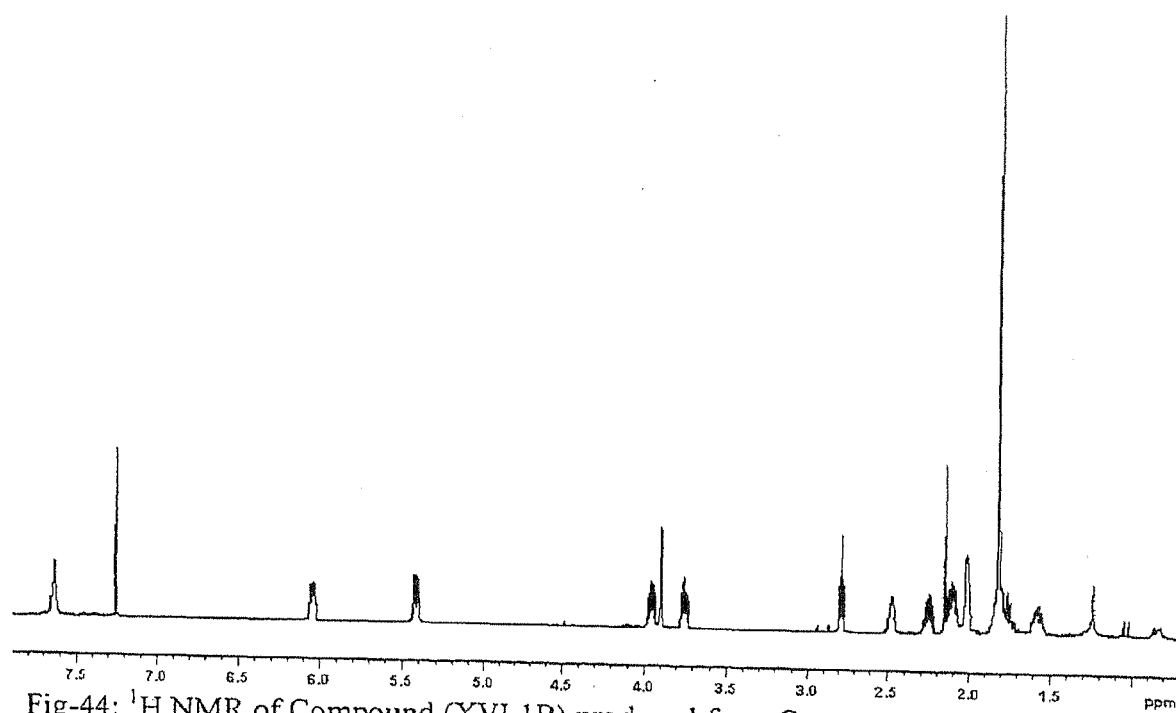


Fig-43: ^{13}C NMR of Compound (XV-1B) in acetone- d_6

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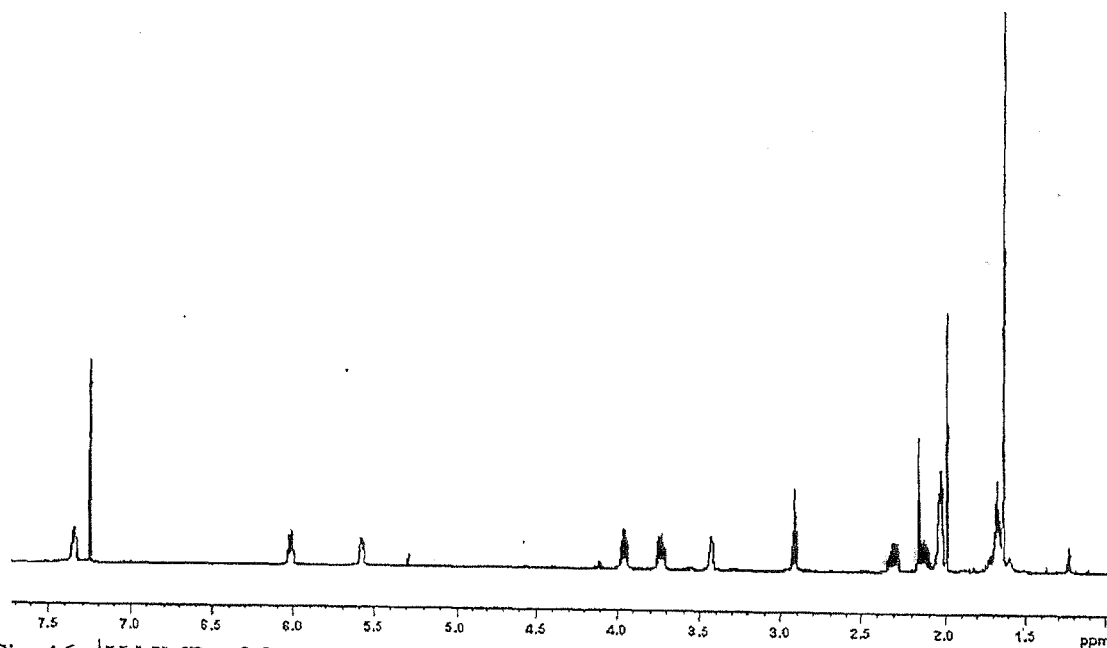


Fig-46: ¹H NMR of Compound (XXII-1) produced from Compound (XVI-1B) obtained synthetically in CDCl₃

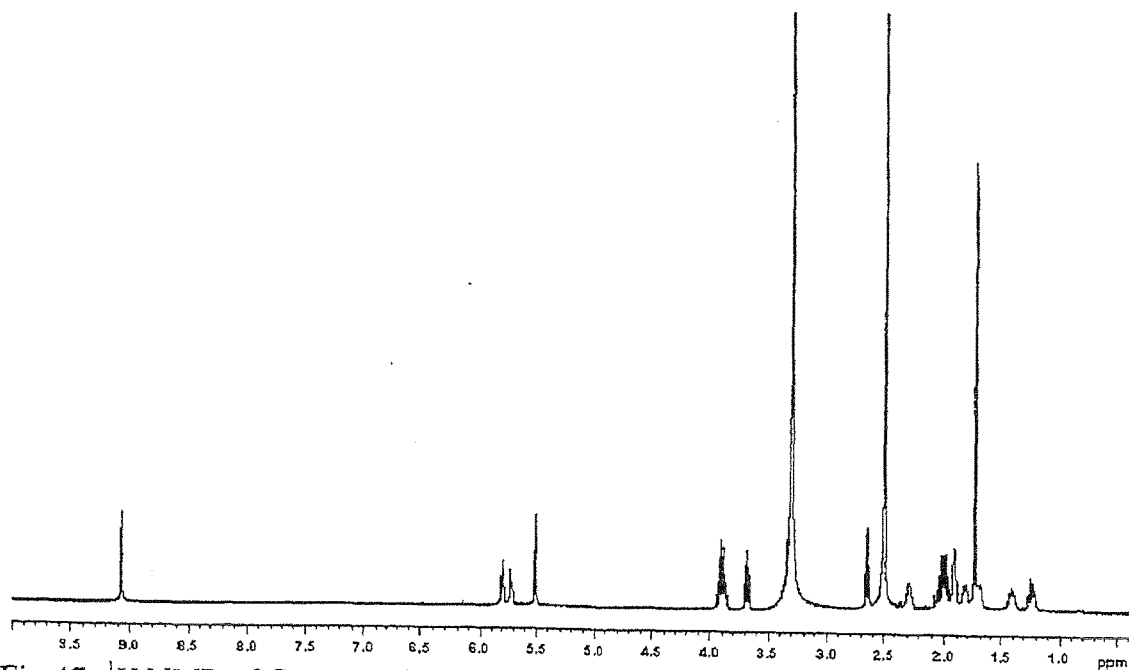


Fig-47: ¹H NMR of Compound (XVI-1A) produced from Compound (XXII-1) obtained synthetically in DMSO-d₆

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Compound (XVI-1A)
Produced from Fermentation



Compound (XVI-1A)
Produced Synthetically

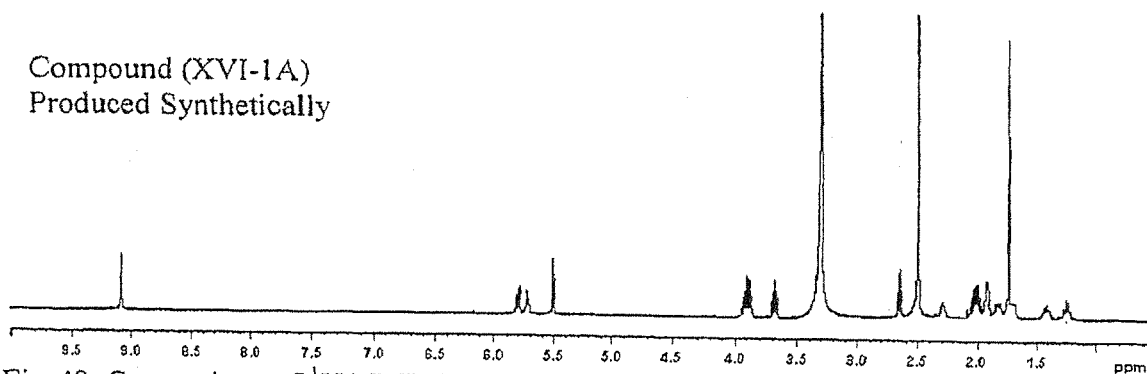


Fig-48: Comparison of ¹H NMR Spectra of Compound (XVI-1A) Obtained Synthetically and From Fermentation

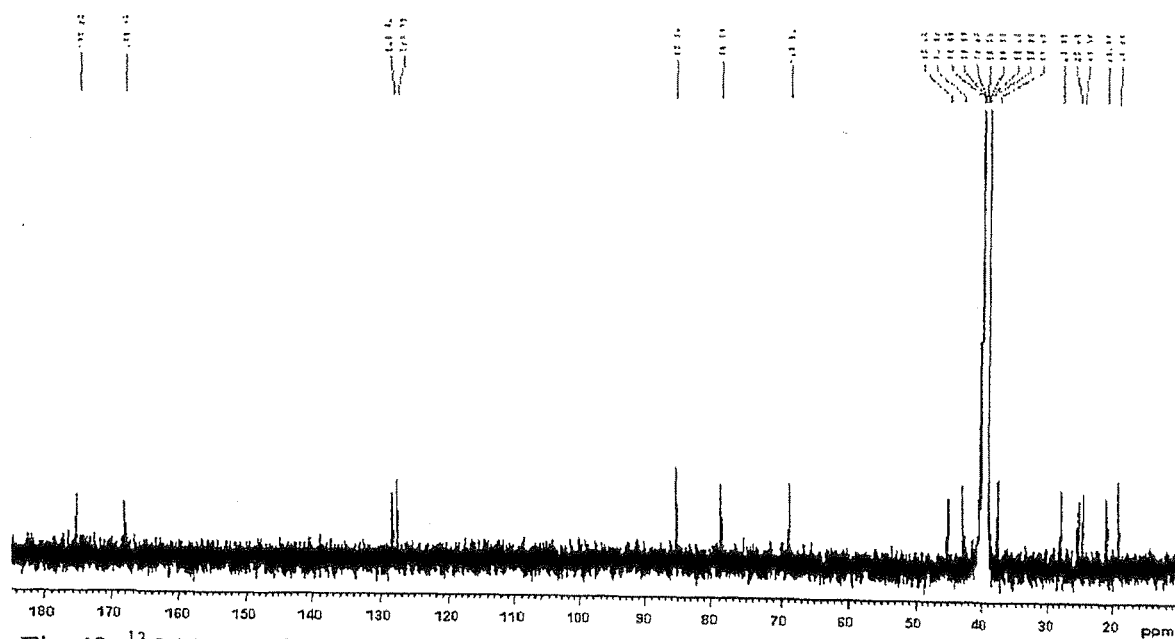
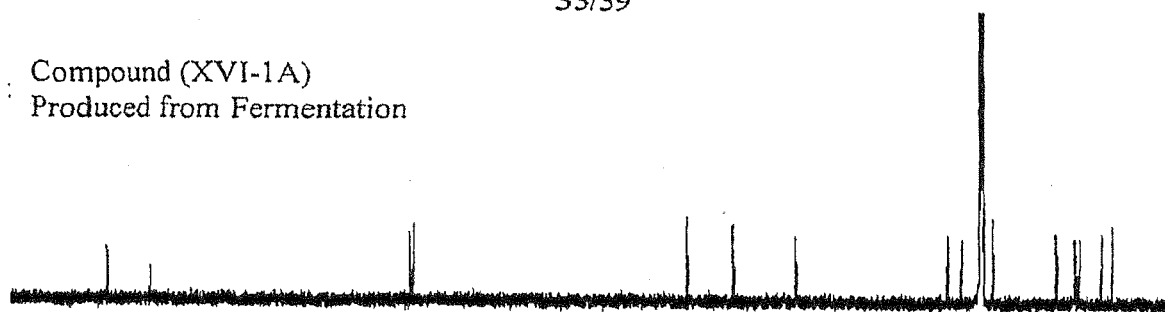


Fig-49: ¹³C NMR of Compound (XVI-1A) produced from Compound (XXII-1) obtained synthetically in DMSO-d₆

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Compound (XVI-1A)
Produced from Fermentation



Compound (XVI-1A)
Produced Synthetically

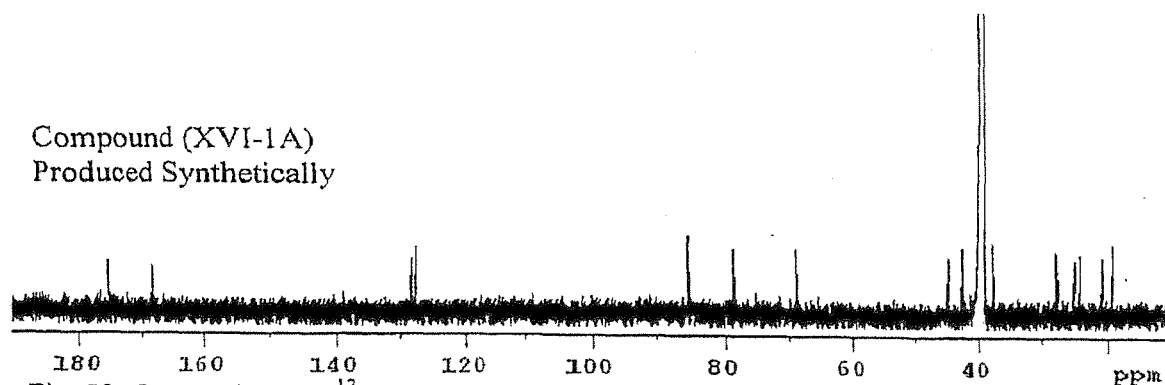
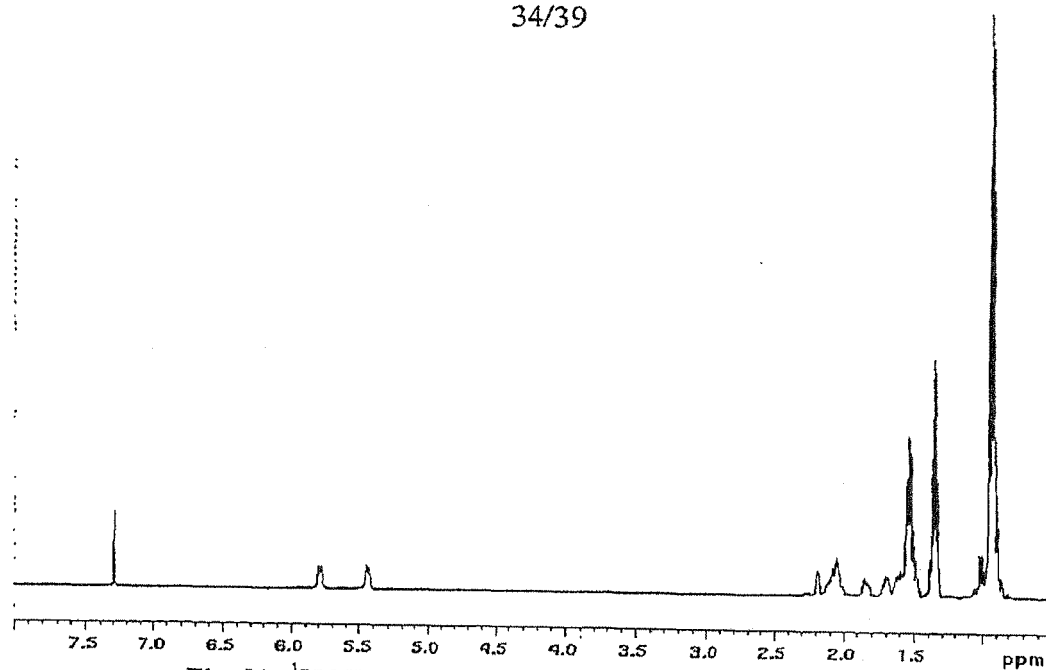
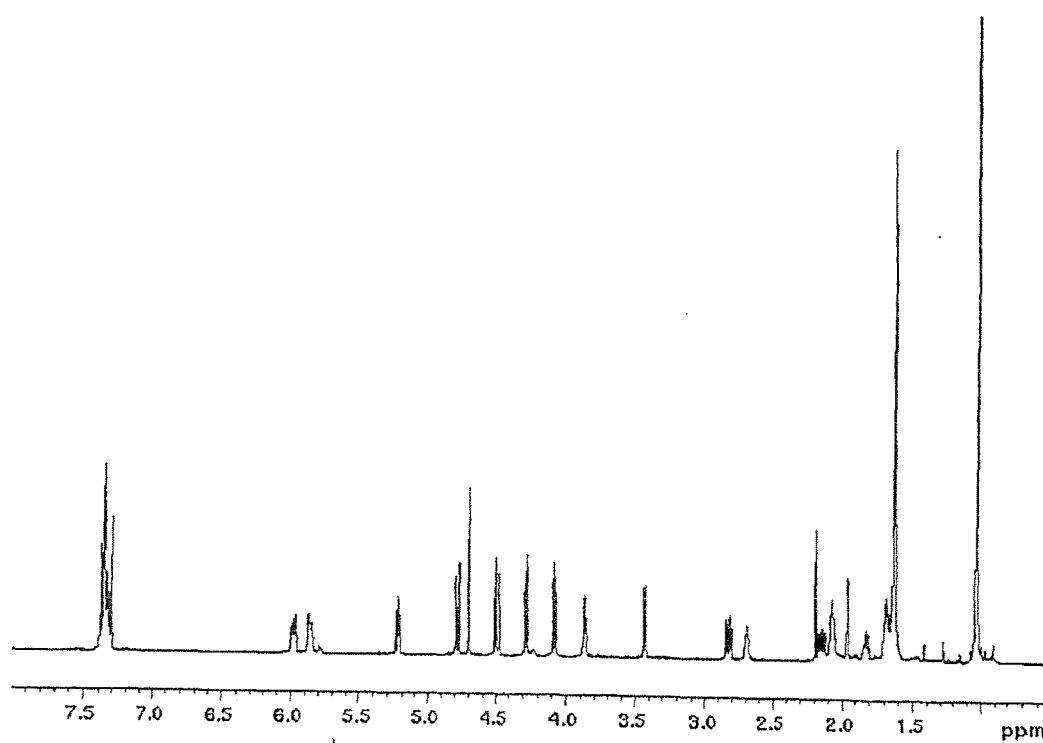
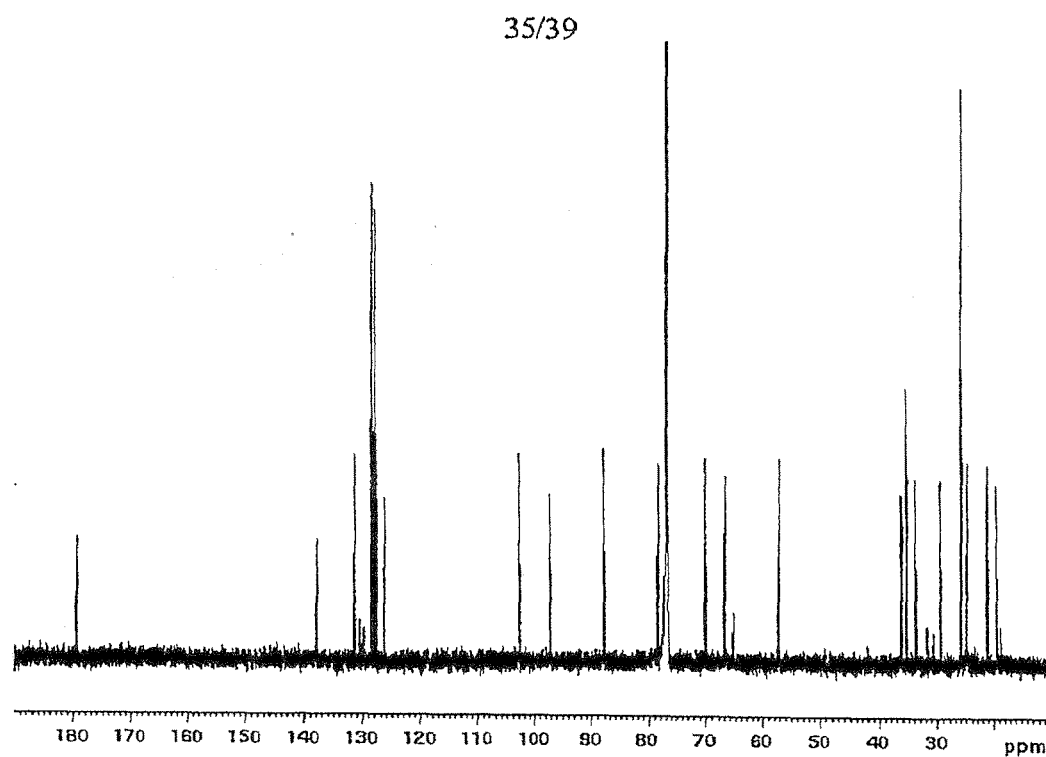
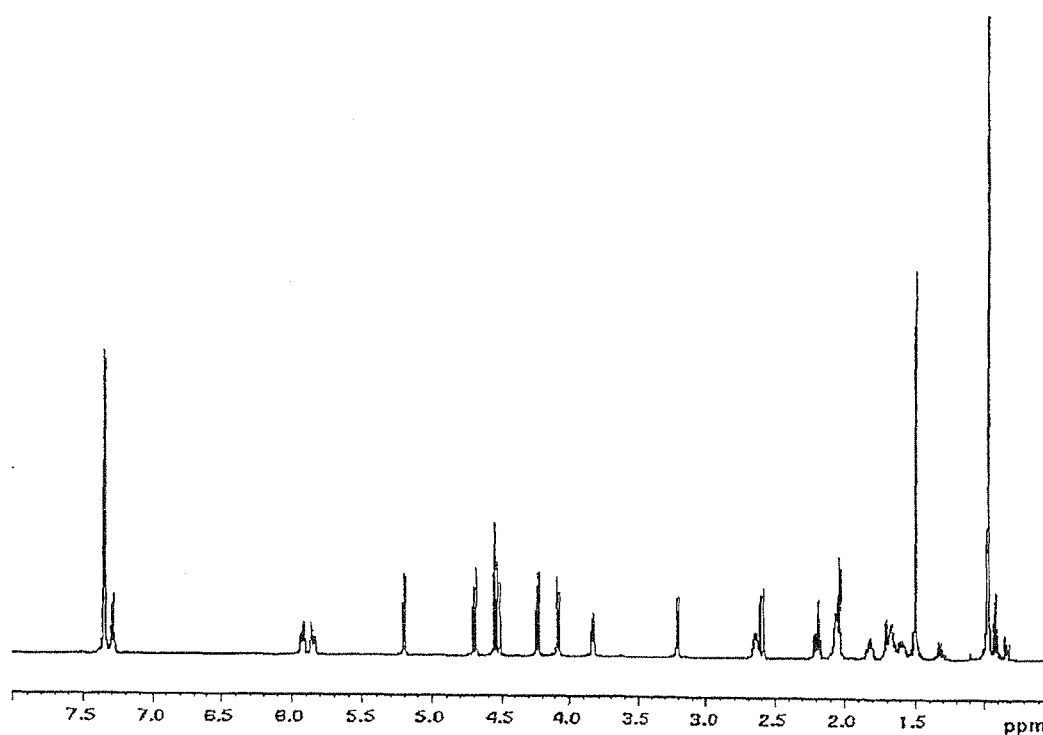


Fig-50: Comparison of ^{13}C NMR Spectra of Compound (XVI-1A) Produced Obtained Synthetically and From Fermentation

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Fig-51: ^1H NMR of Cyclohexenyltributyltin in CDCl_3 Fig-52: ^1H NMR of Compound (X-1_a) in CDCl_3

Fig-53: ^{13}C NMR of Compound (X-1_a) in CDCl_3 Fig-54: ^1H NMR of Compound (X-1_b) in CDCl_3

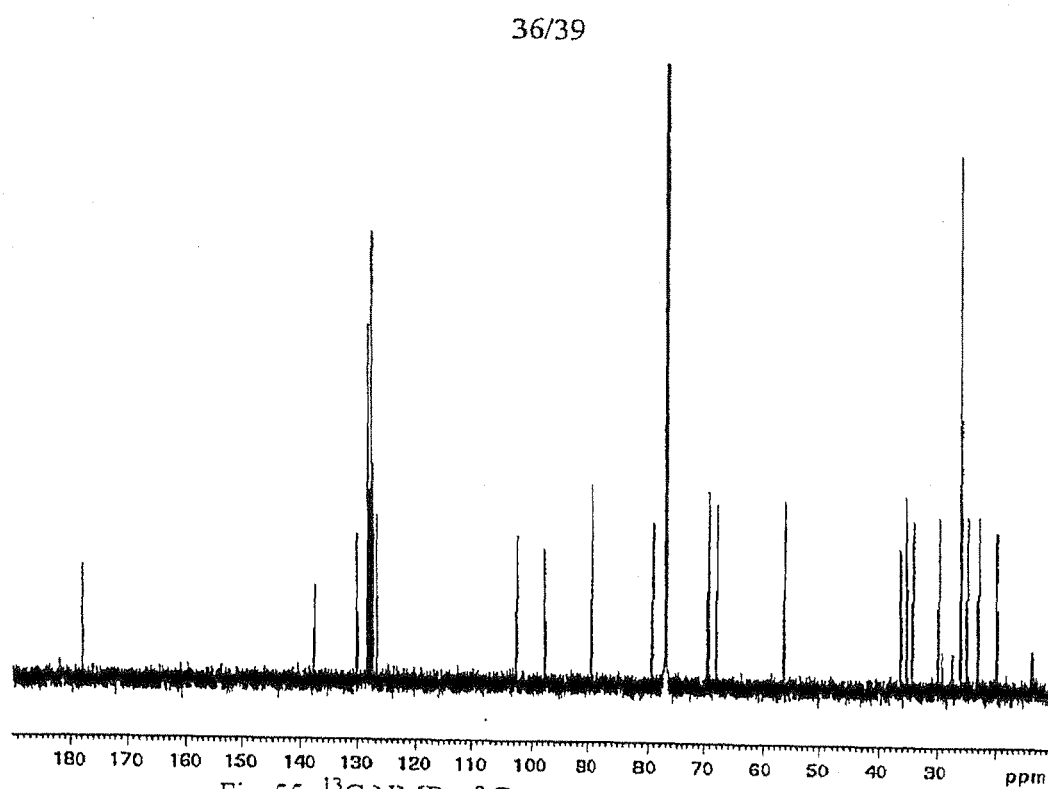


Fig-55: ^{13}C NMR of Compound (X-1_b) in CDCl_3

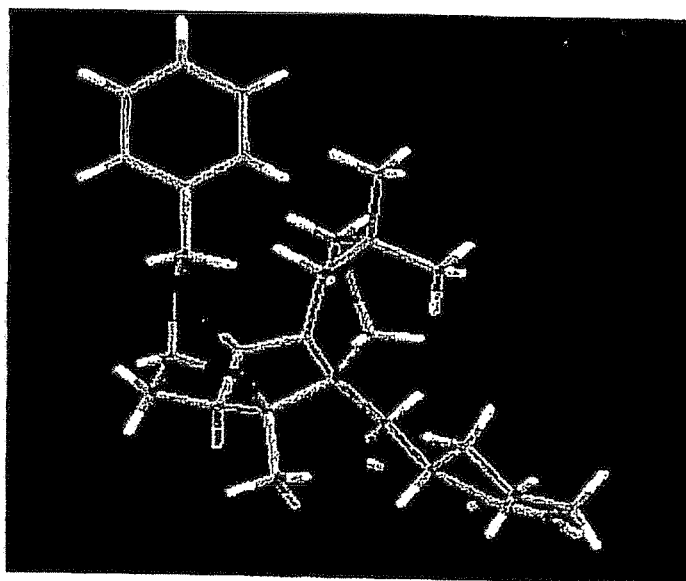
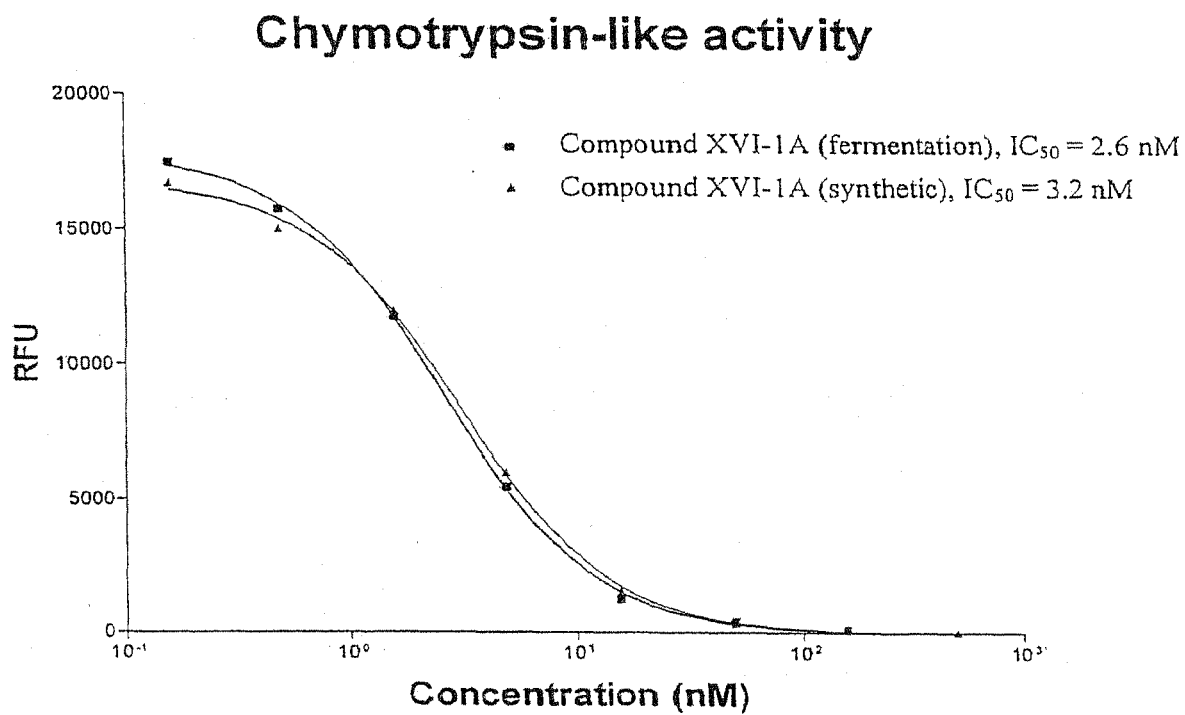


Fig-56: Crystal Structure of Compound (X-1_b)

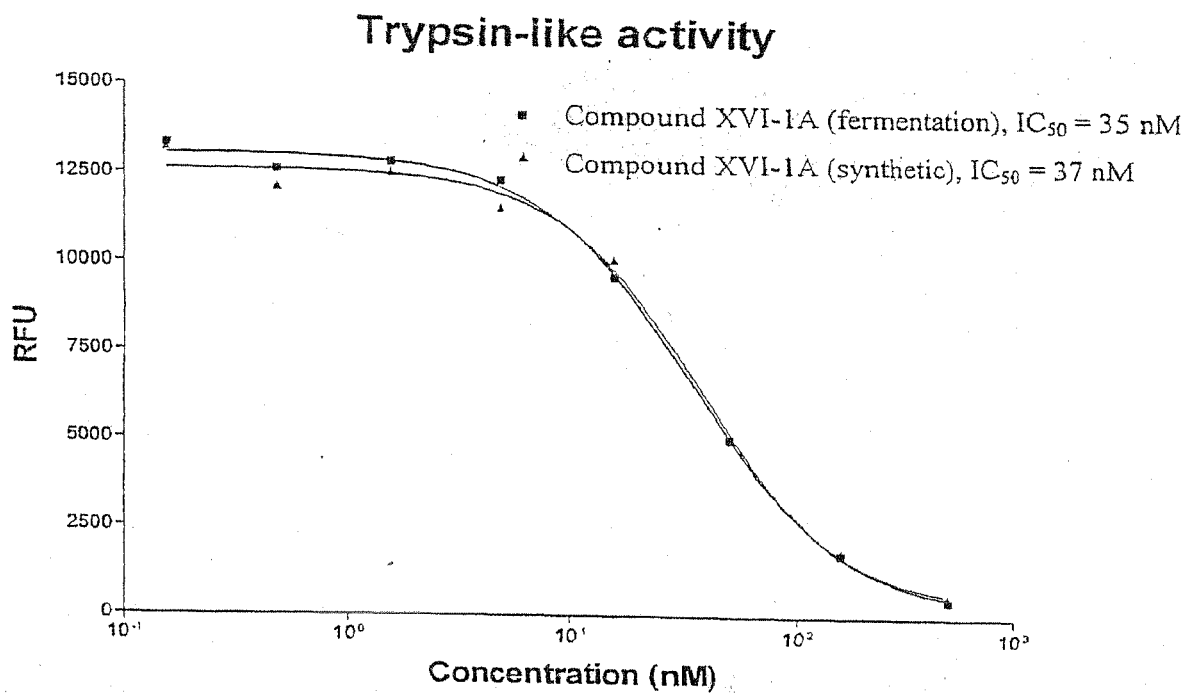
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Fig-57: Inhibition of the Chymotrypsin-like Activity of 20S Proteasomes by the Synthetic and Fermentation Compounds XVI-1A



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Fig-58: Inhibition of the Trypsin-like Activity of 20S Proteasomes by the Synthetic and Fermentation Compounds XVI-1A



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Fig-59: Inhibition of the Caspase-like Activity of 20S Proteasomes by the Synthetic and Fermentation Compounds XVI-1A

