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APPENDICE

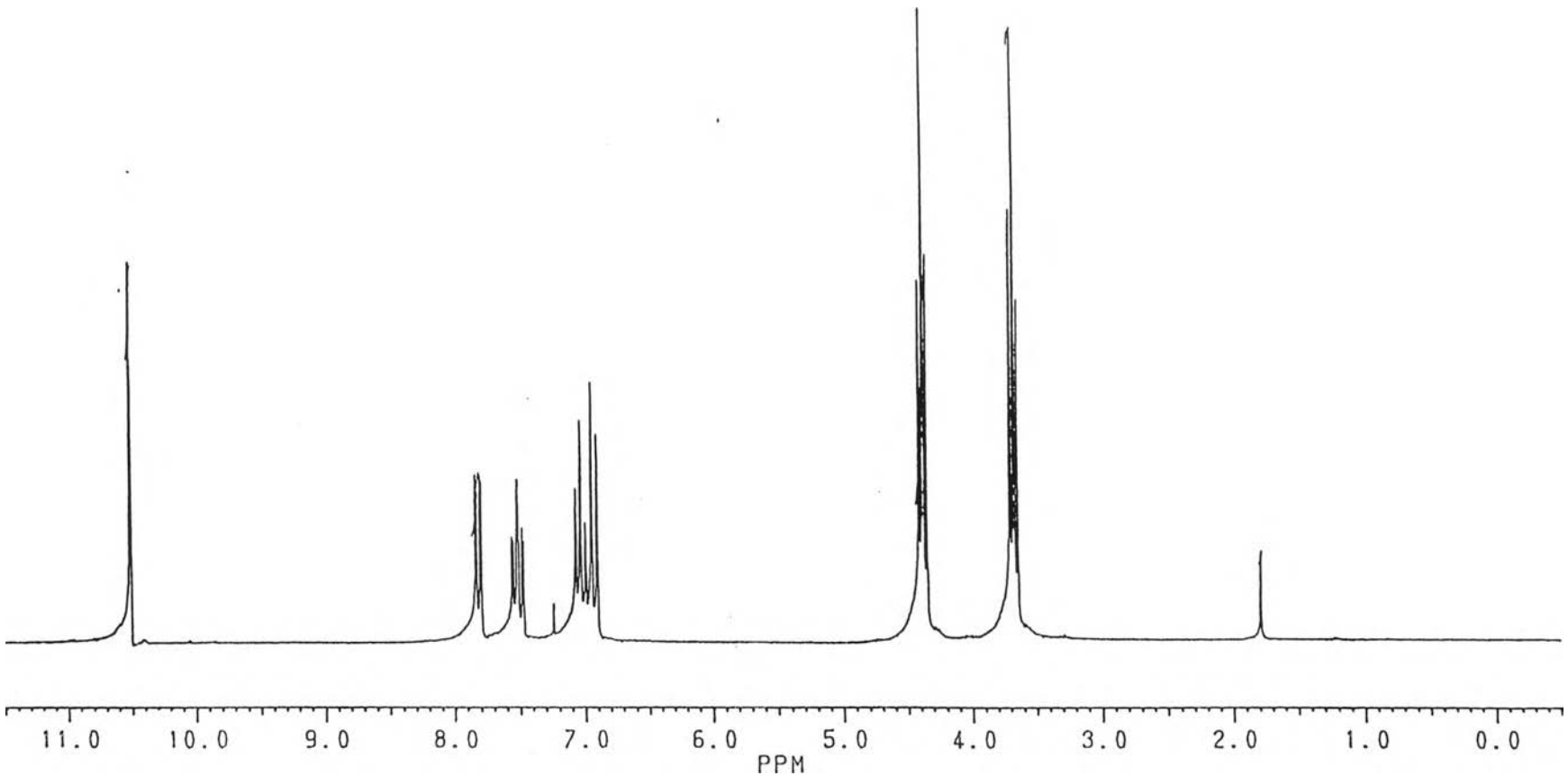

Figure A.1 ^{1}H NMR ($CDCl_3$) spectrum of 2(2′-bromoethoxy)benzaldehyde (1).

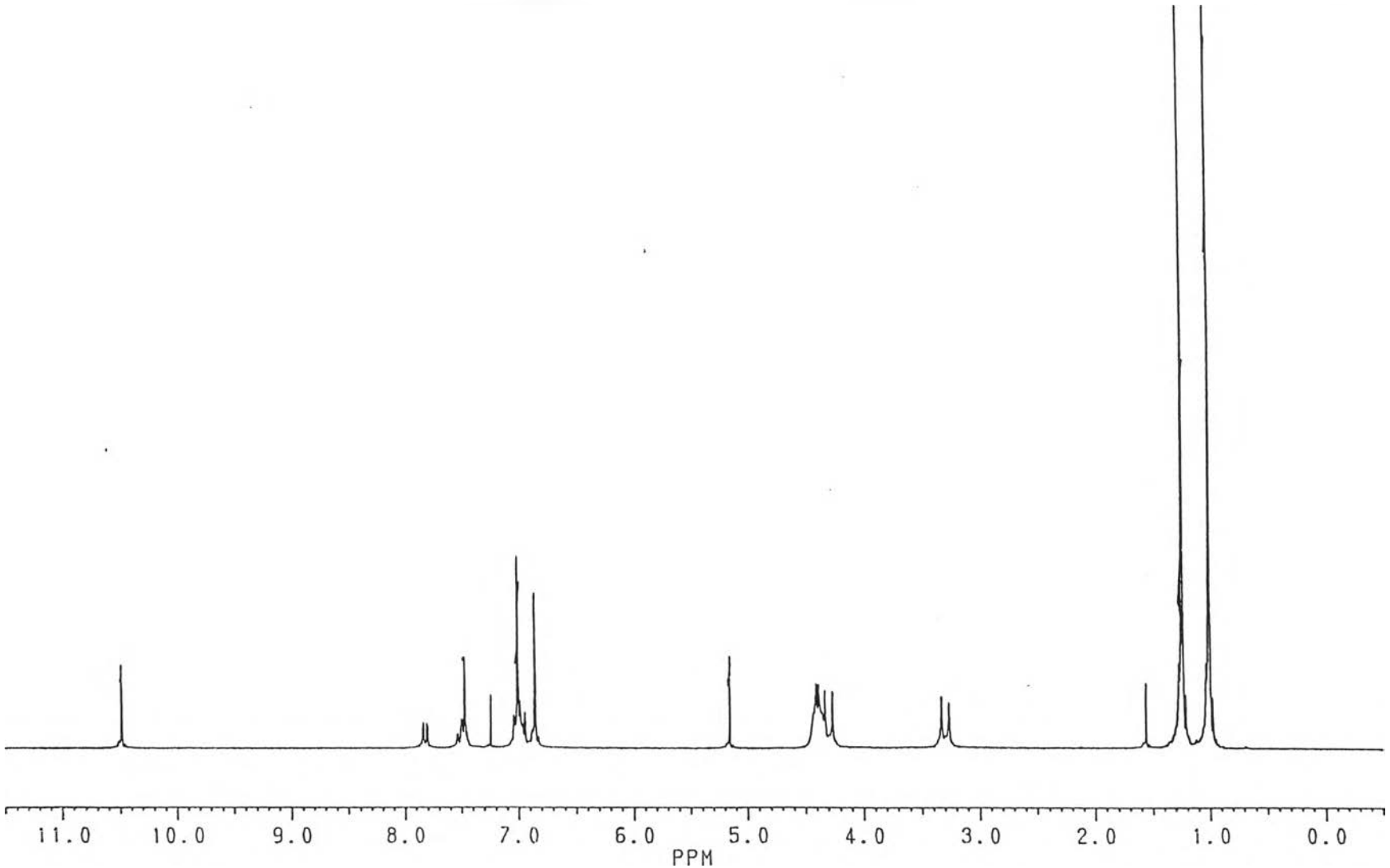

Figure A.2 ^{1}H NMR ($CDCl_3$) spectrum of 25,27-di-(2-ethoxy)benzaldehyde-*p*-*tert*-butylcalix[4]arene (**3**).

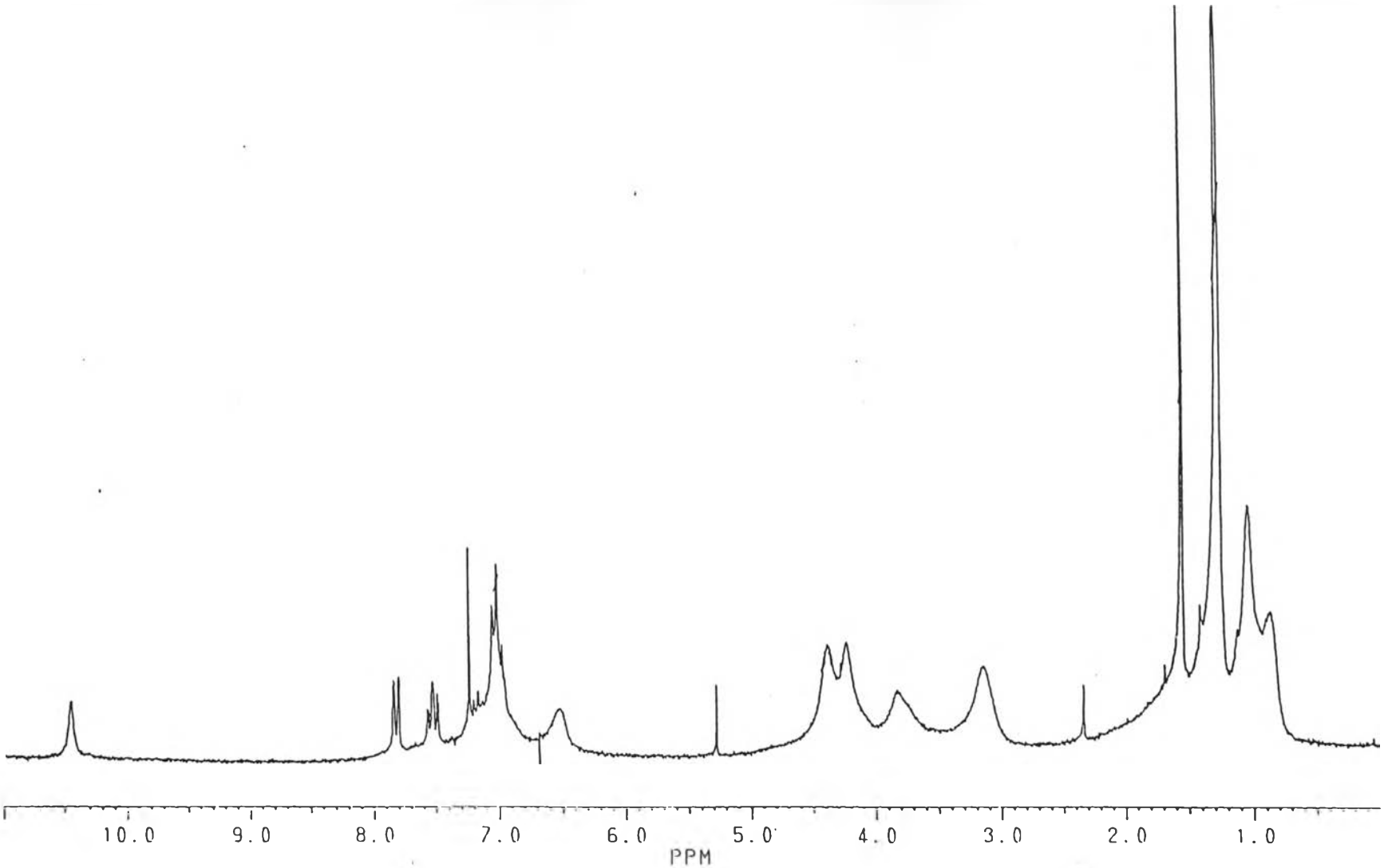

Figure A.3 ^{1}H NMR ($CDCl_3$) spectrum of 25,27-di-((2-ethoxy)benzaldehyde)-26,28-dimethoxy-*p-tert*-butylcalix[4]arene (**5**).

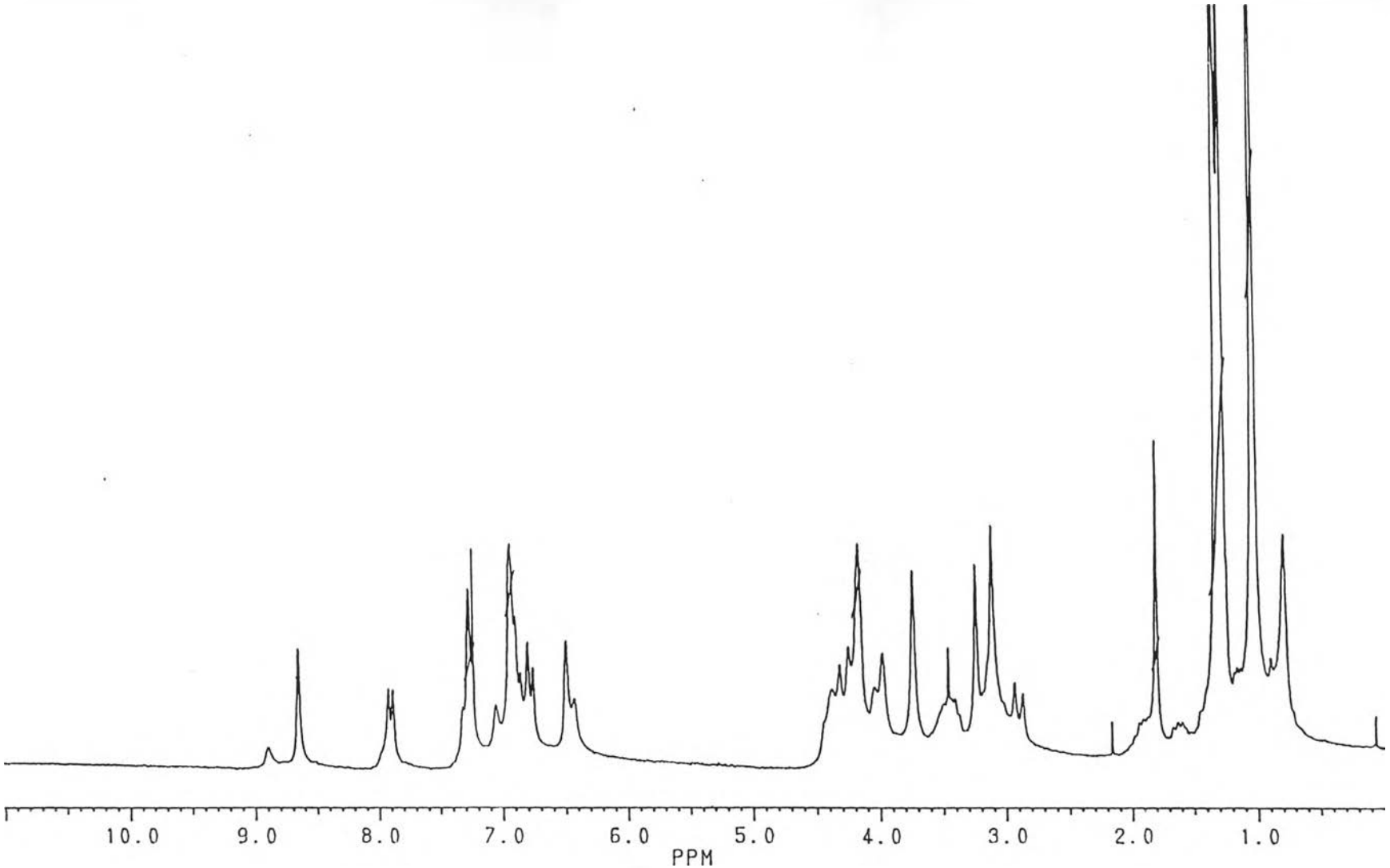

Figure A.4 ^{1}H NMR ($CDCl_3$) spectrum of 25,27-[*N,N'*-di-((2-ethoxy)benzyl)propylenediimine-26,28-dimethoxy-*p-tert*-butylcalix[4]arene (6).

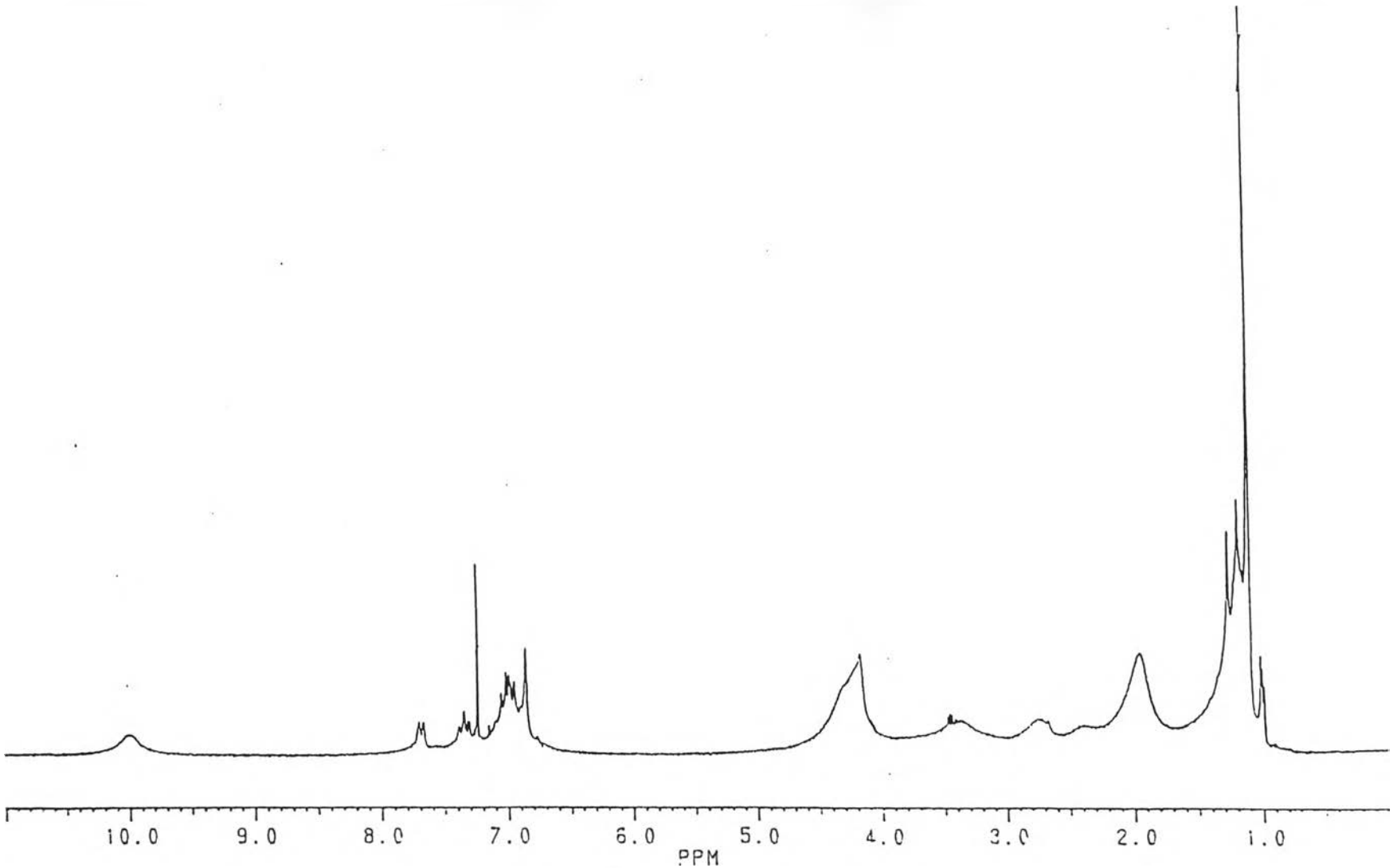

Figure A.5 ^{1}H NMR ($CDCl_3$) spectrum of 25,27-[*N*,*N'*-di-((2-ethoxy)benzyl)propylenediamine-26,28-dimethoxy-*p*-*tert*-butylcalix[4]arene dihydrochloride (7).

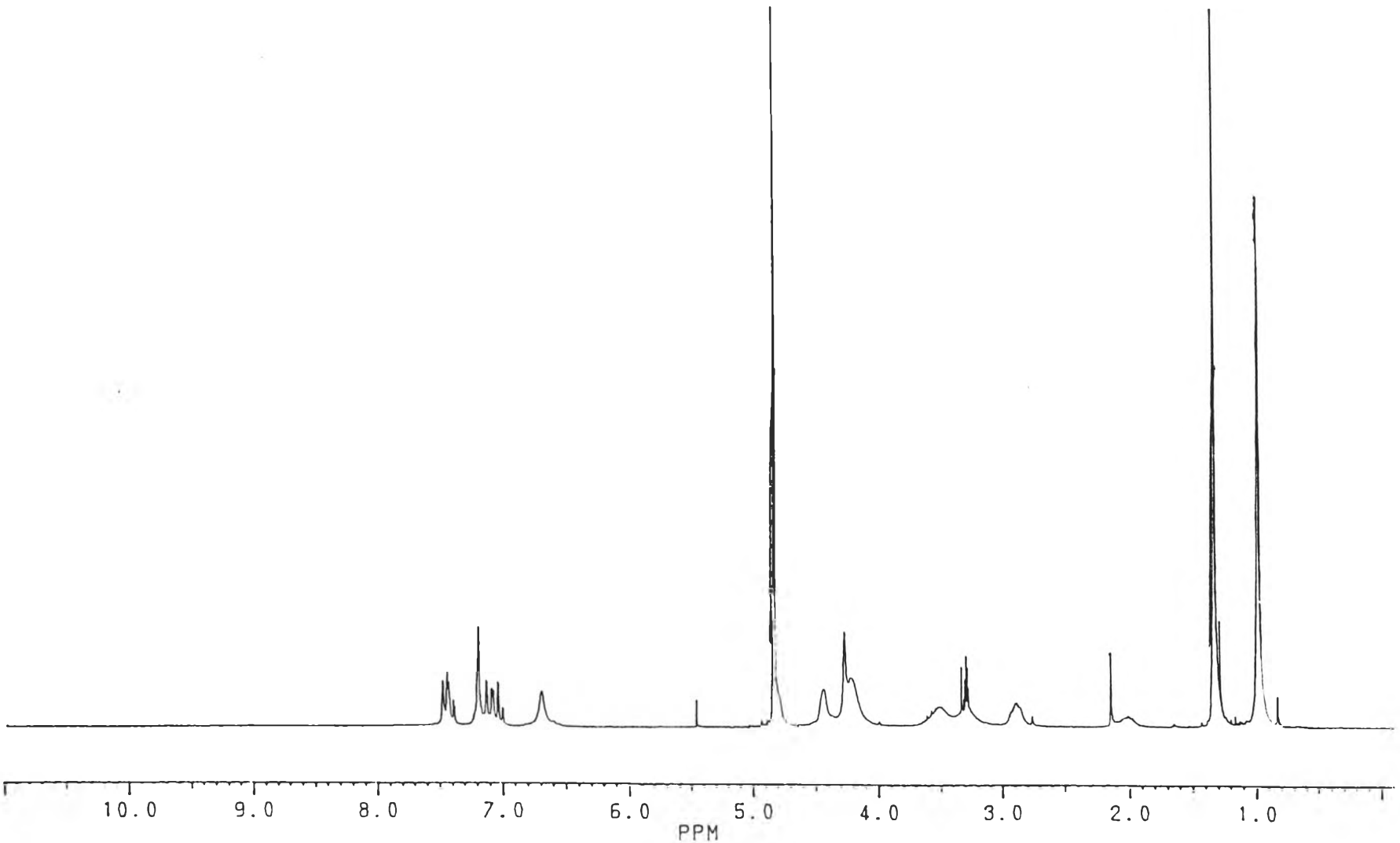

Figure A.6 ^{1}H NMR (CD_3OD) spectrum of 7.

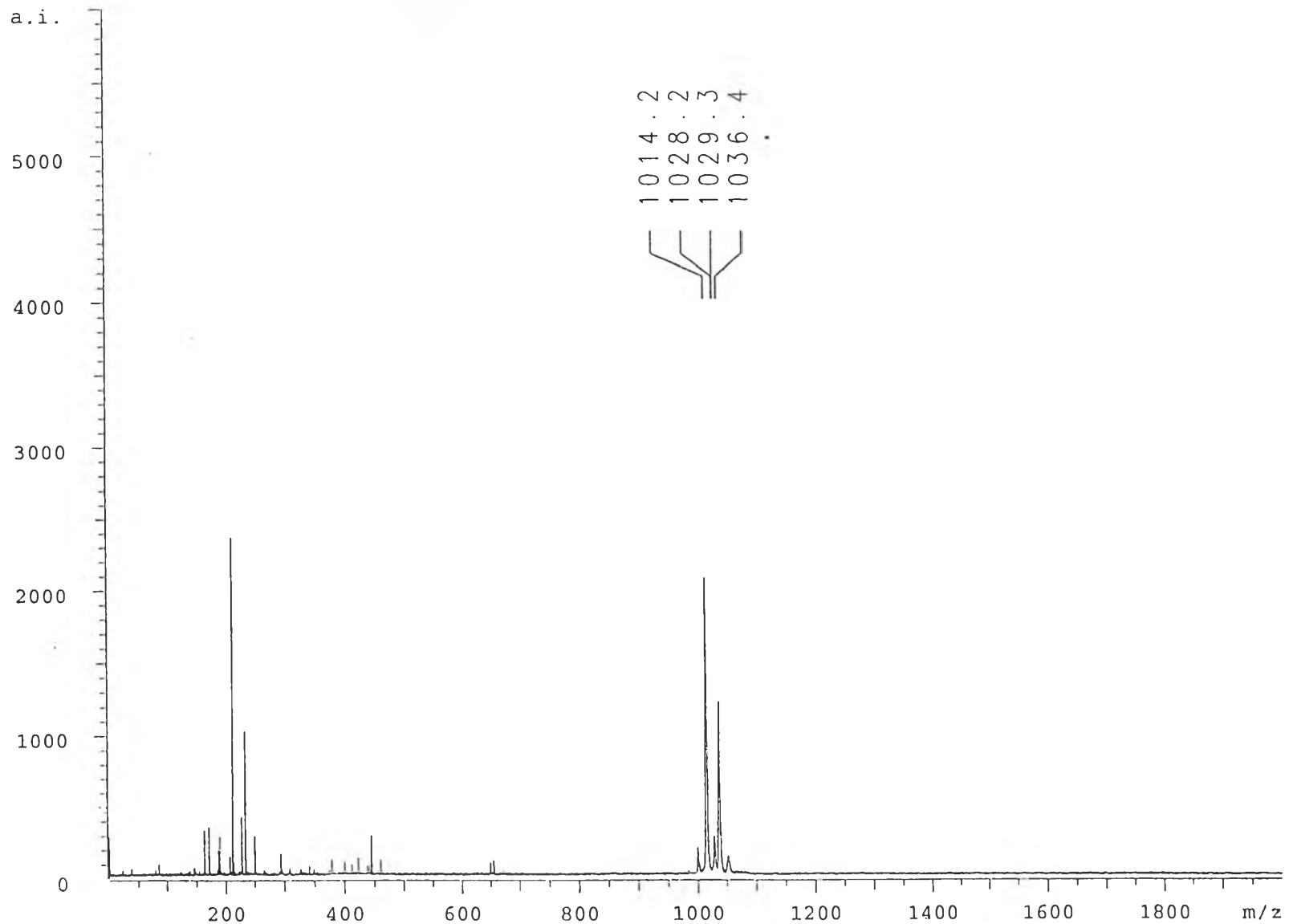

Figure A.7 MALDI-TOF mass spectrum of 7.

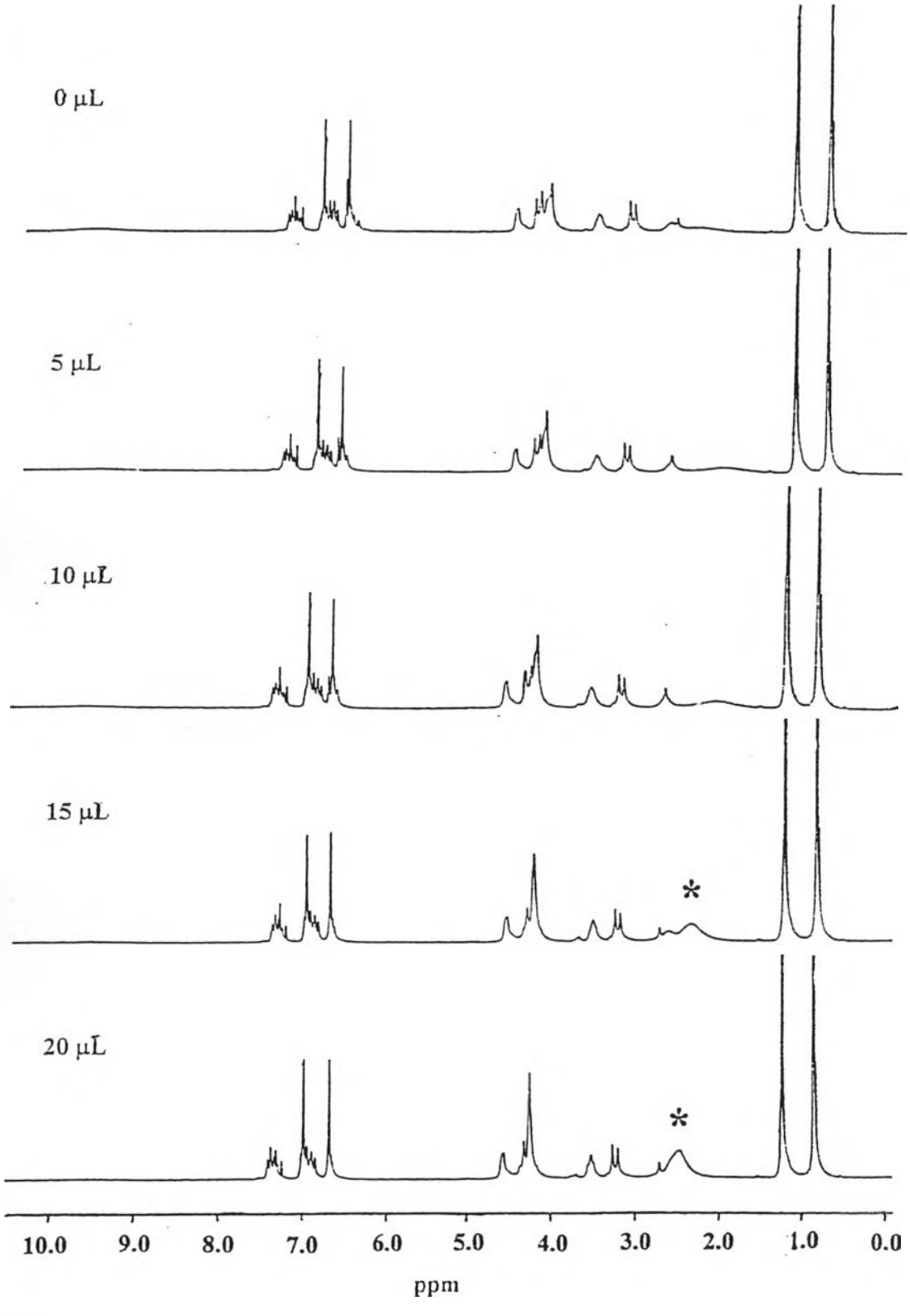

Figure A.8 ^{1}H NMR spectra of compound 9 in $CDCl_3$ when various amount of CD_3OD was added (Parts of HOAr-*t*-C_4H_9 and ROAr-*t*-C_4H_9 were cut off.).

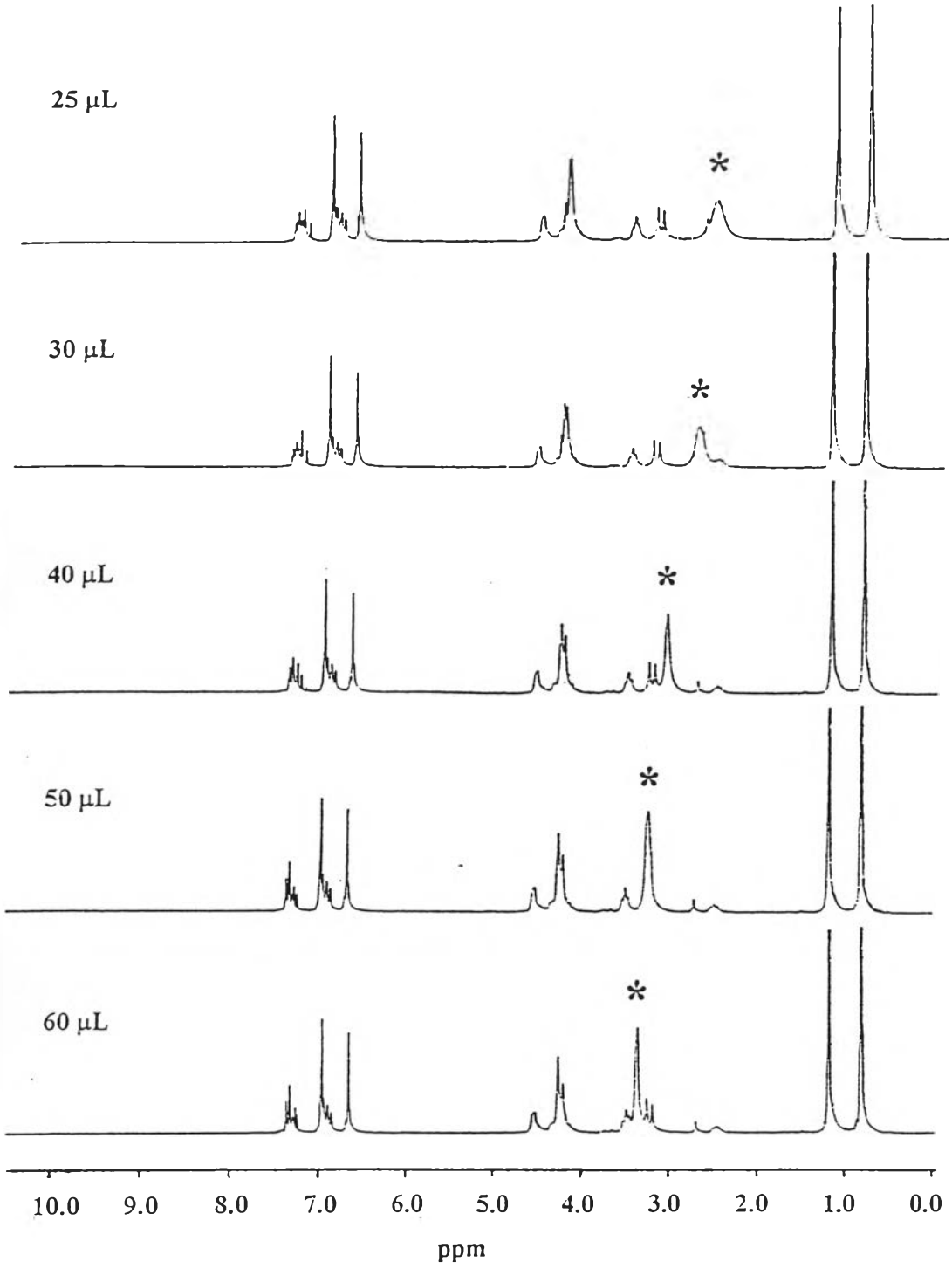

Figure A.8 (continued).

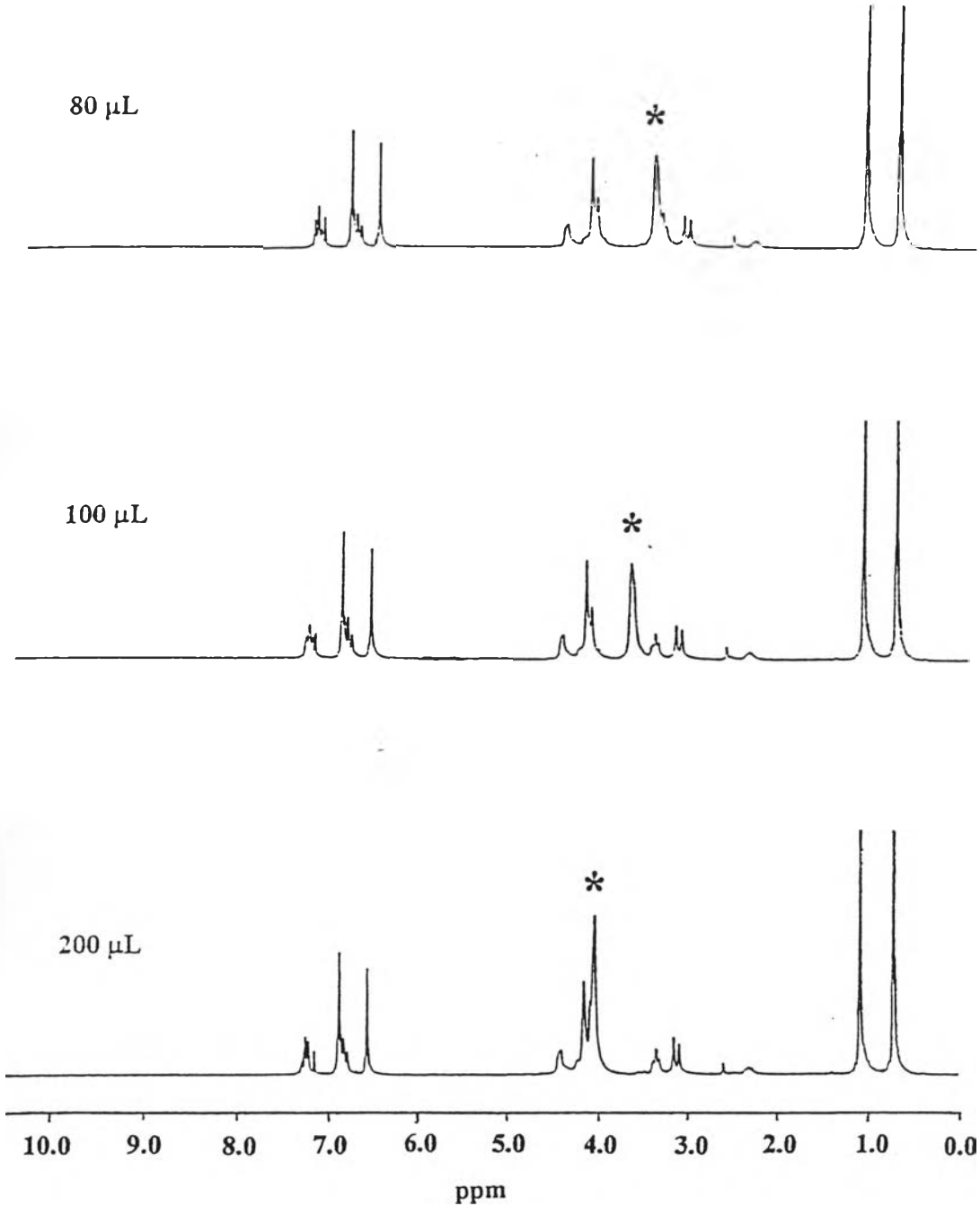

Figure A.8 (continued).

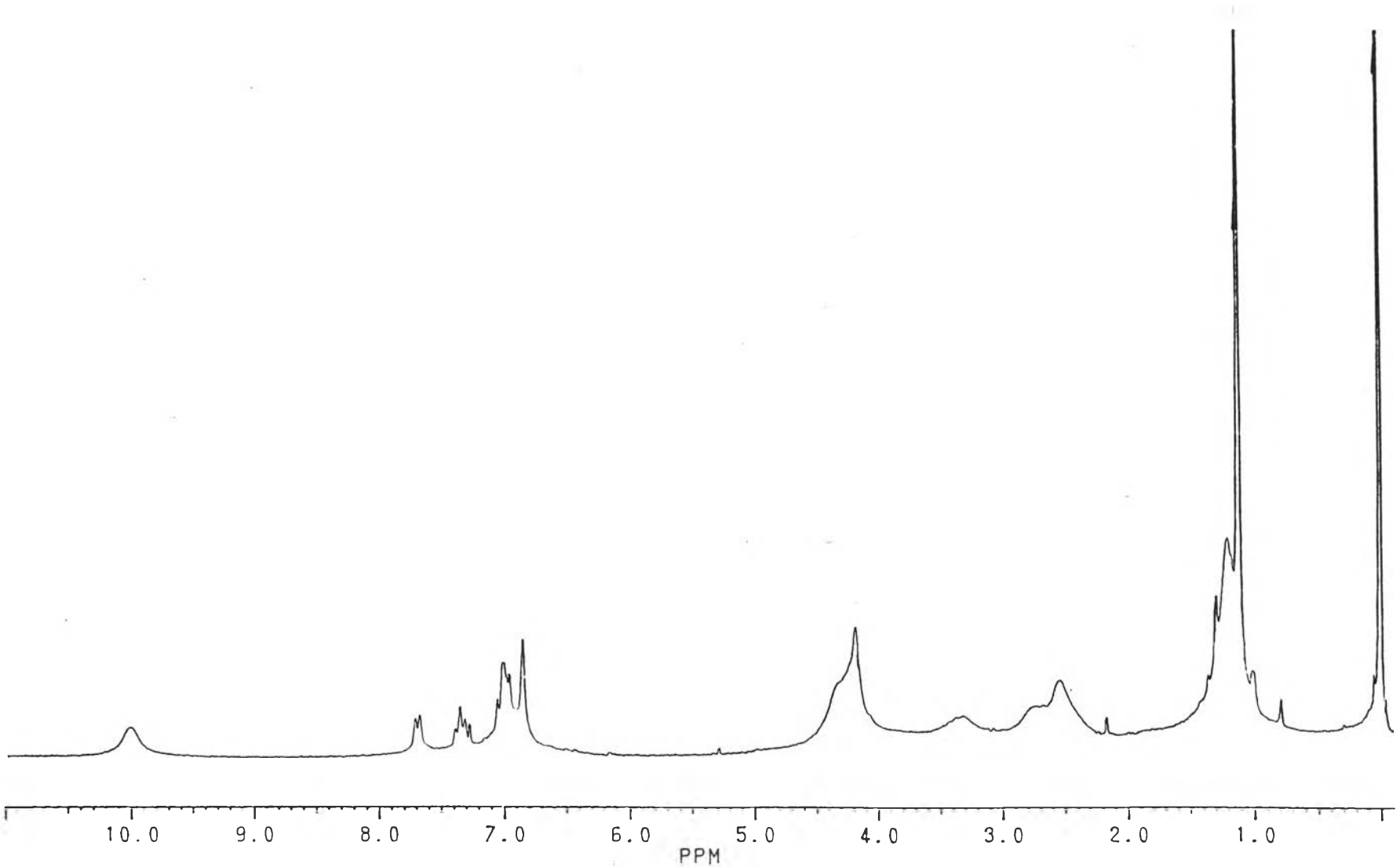

Figure A.9 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 5 μL of DMSO-d_6 was added.

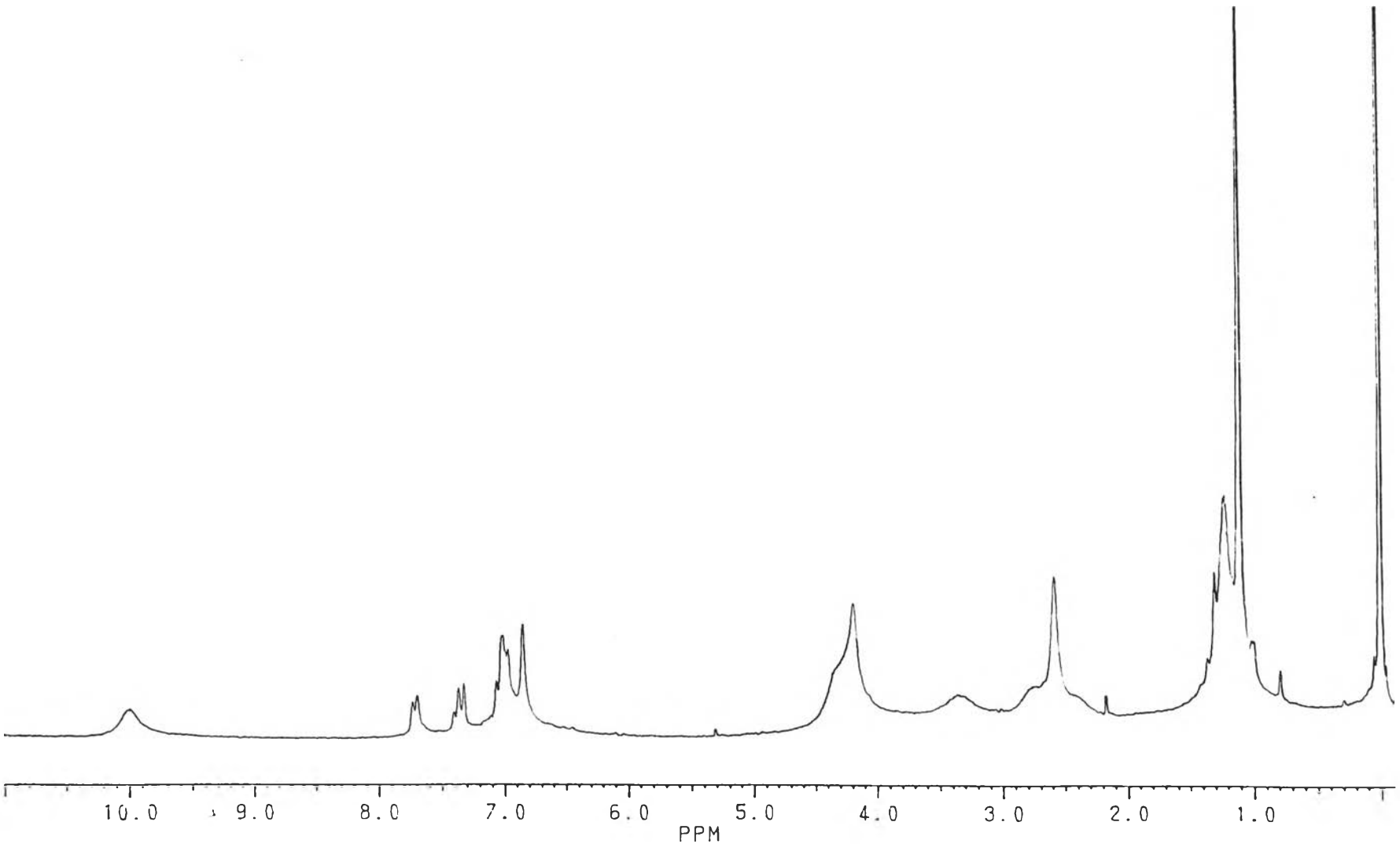

Figure A.10 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 10 μL of DMSO-d_6 was added.

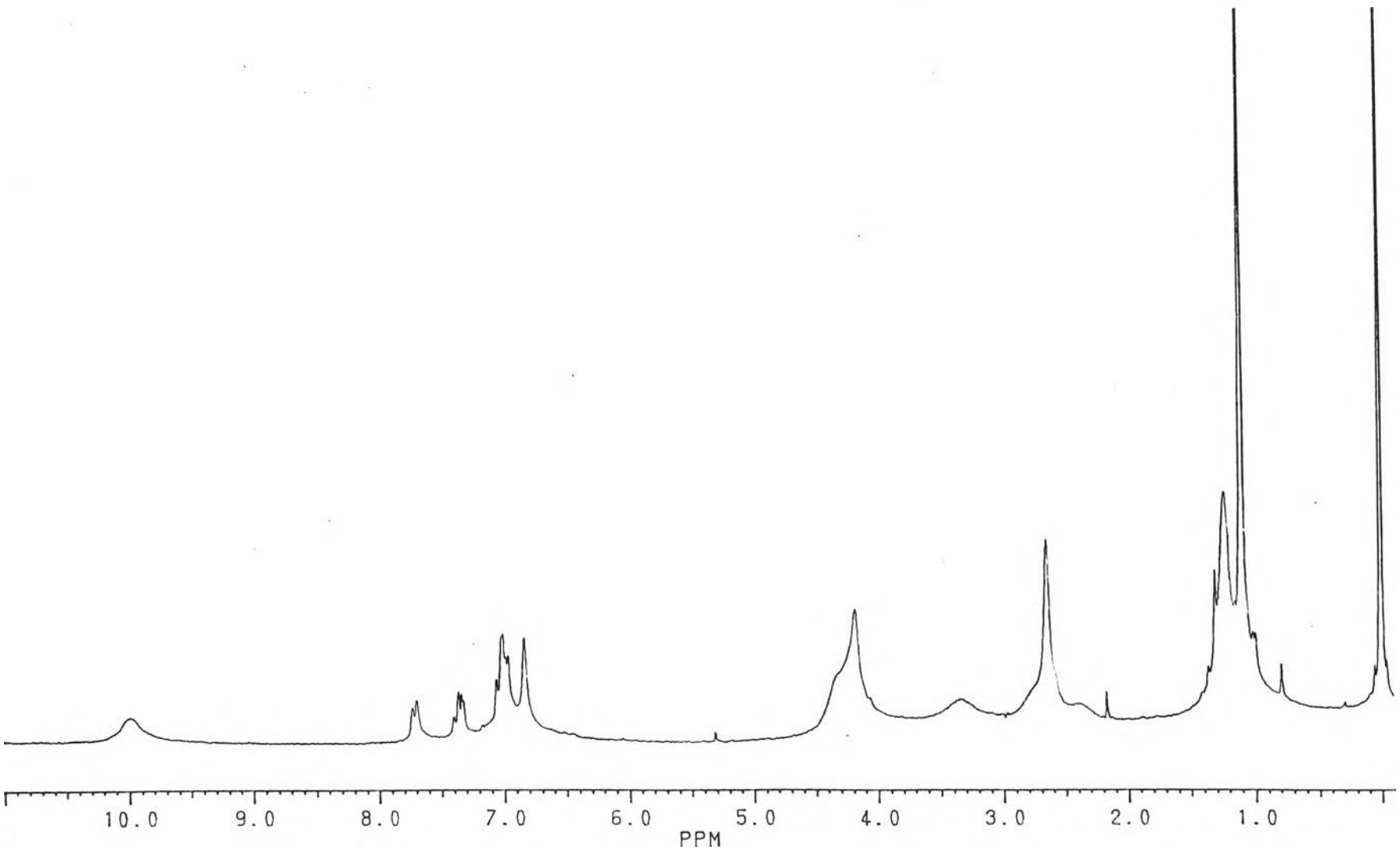

Figure A.11 ^{1}H-NMR spectrum of 7 in $CDCl_3$ when 15 μL of DMSO-d_6 was added.

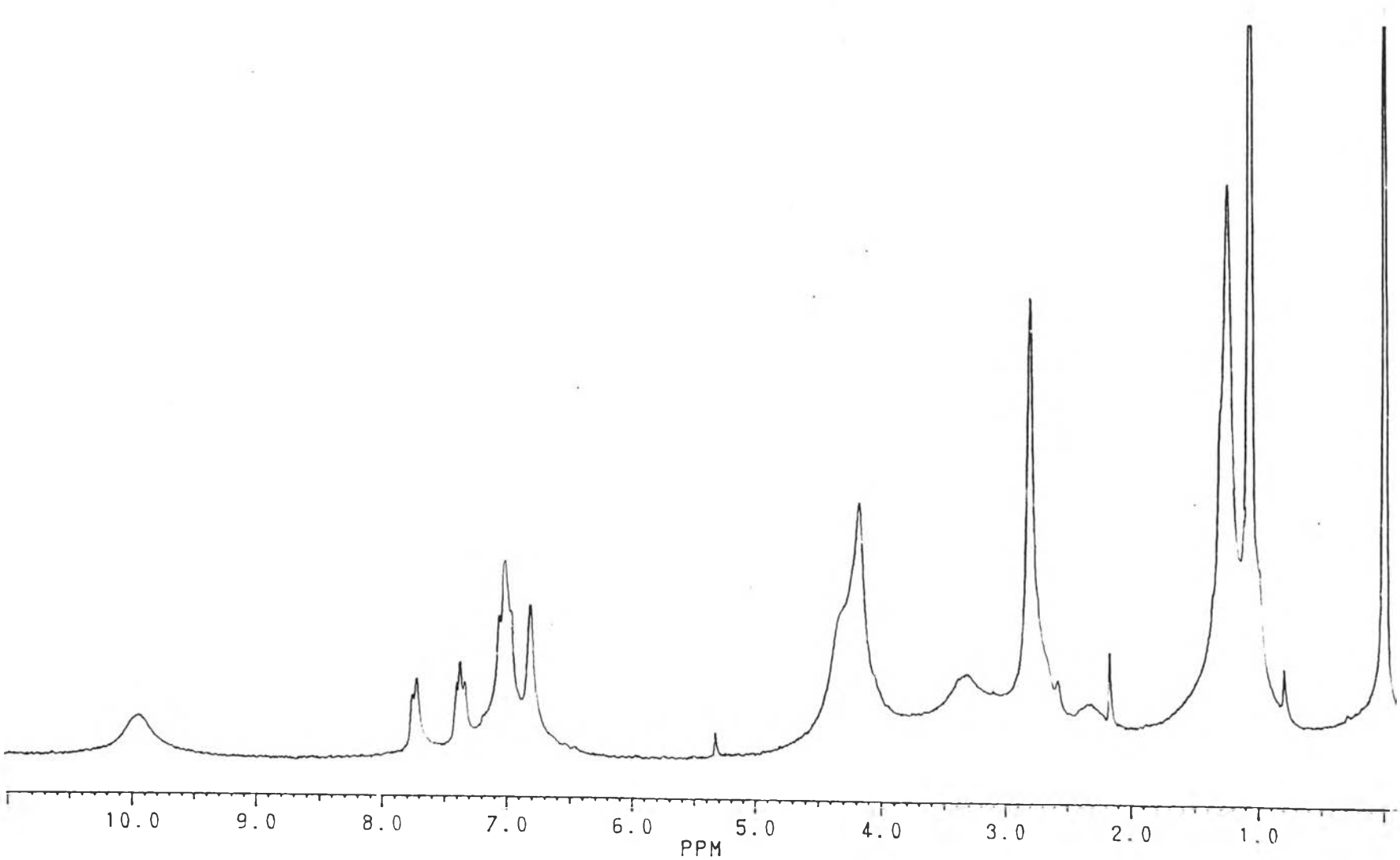

Figure A.12 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 20 μL of DMSO-d_6 was added.

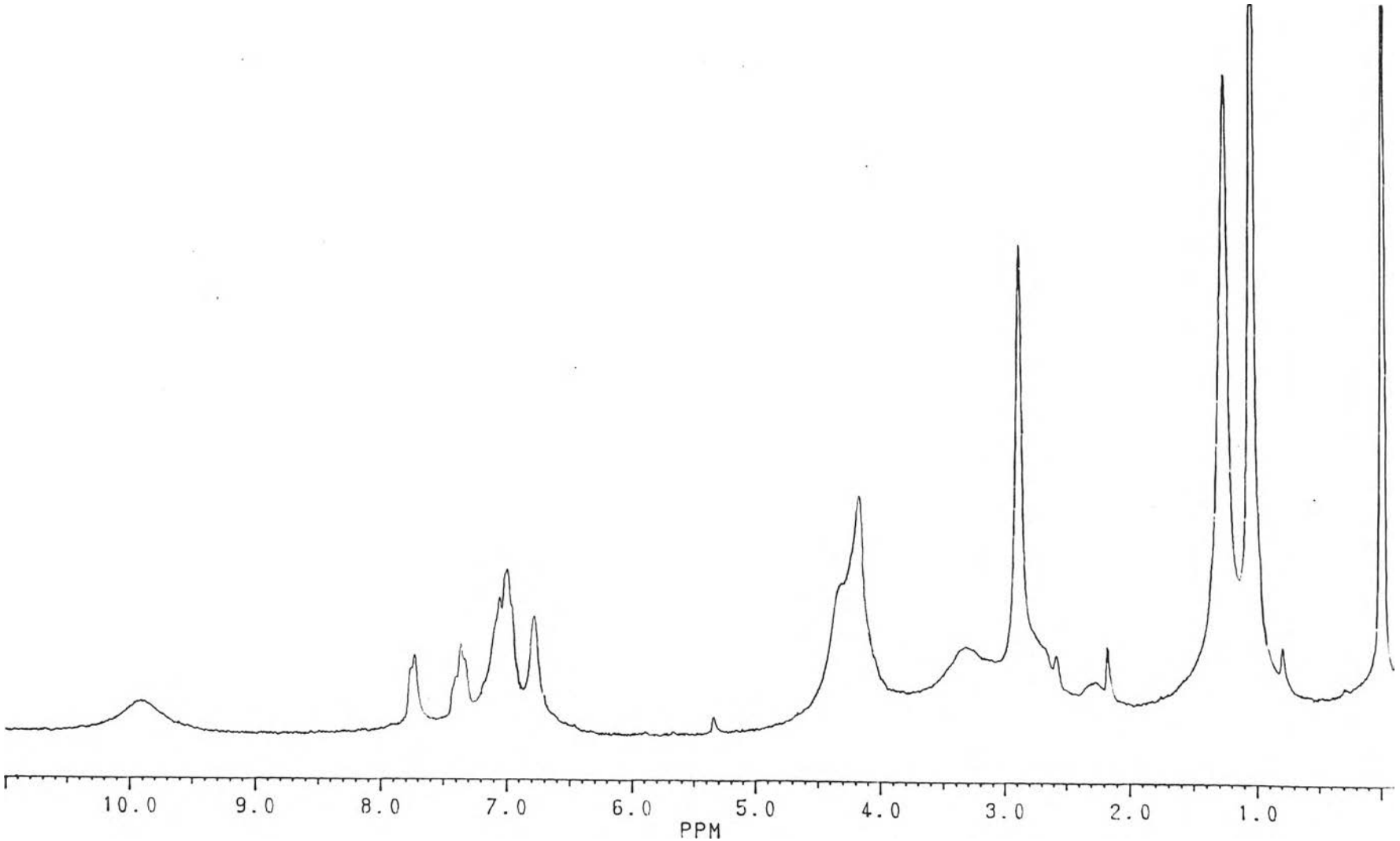

Figure A.13 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 25 μL of DMSO-d_6 was added.

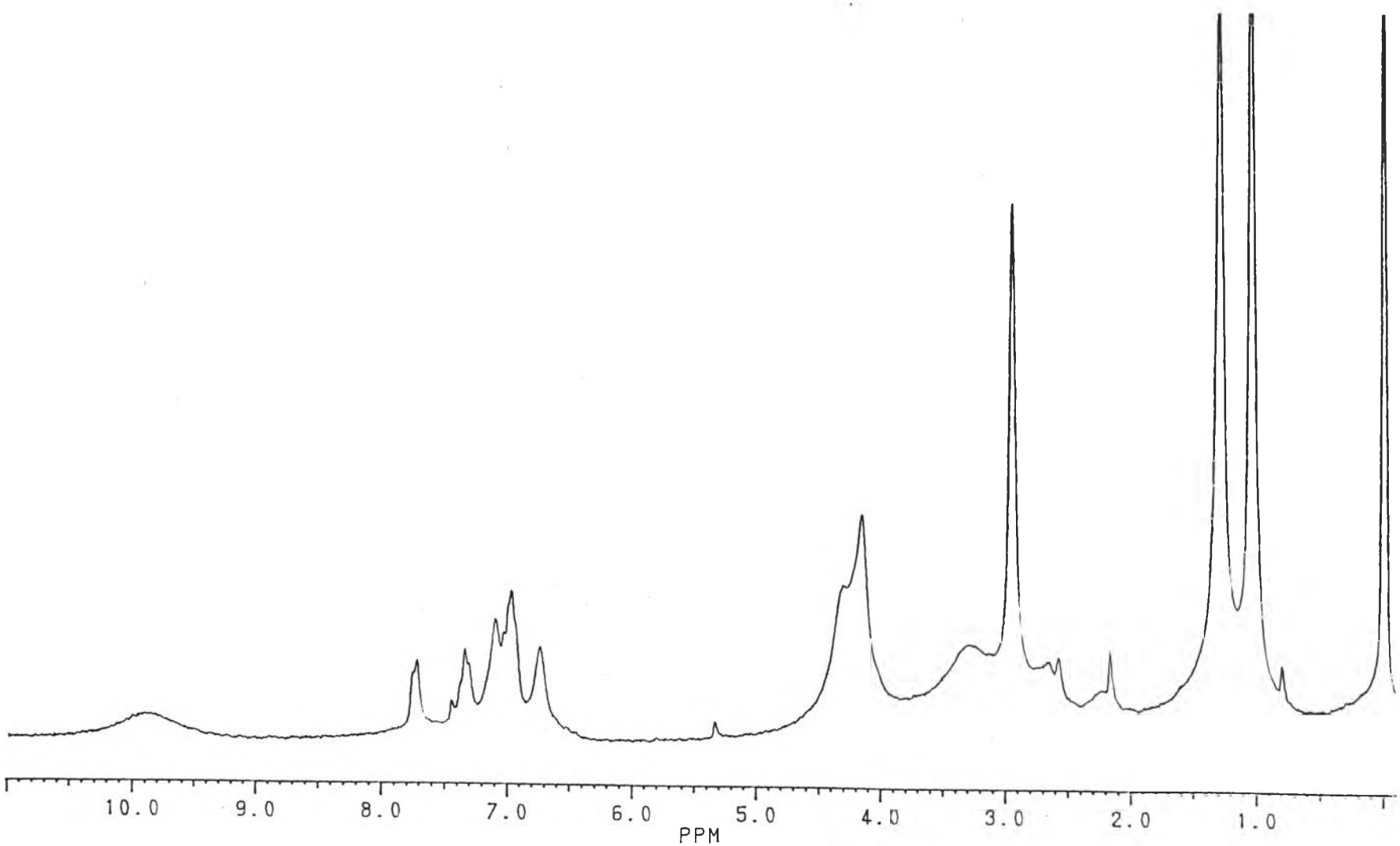

Figure A.14 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 30 μL of DMSO-d_6 was added

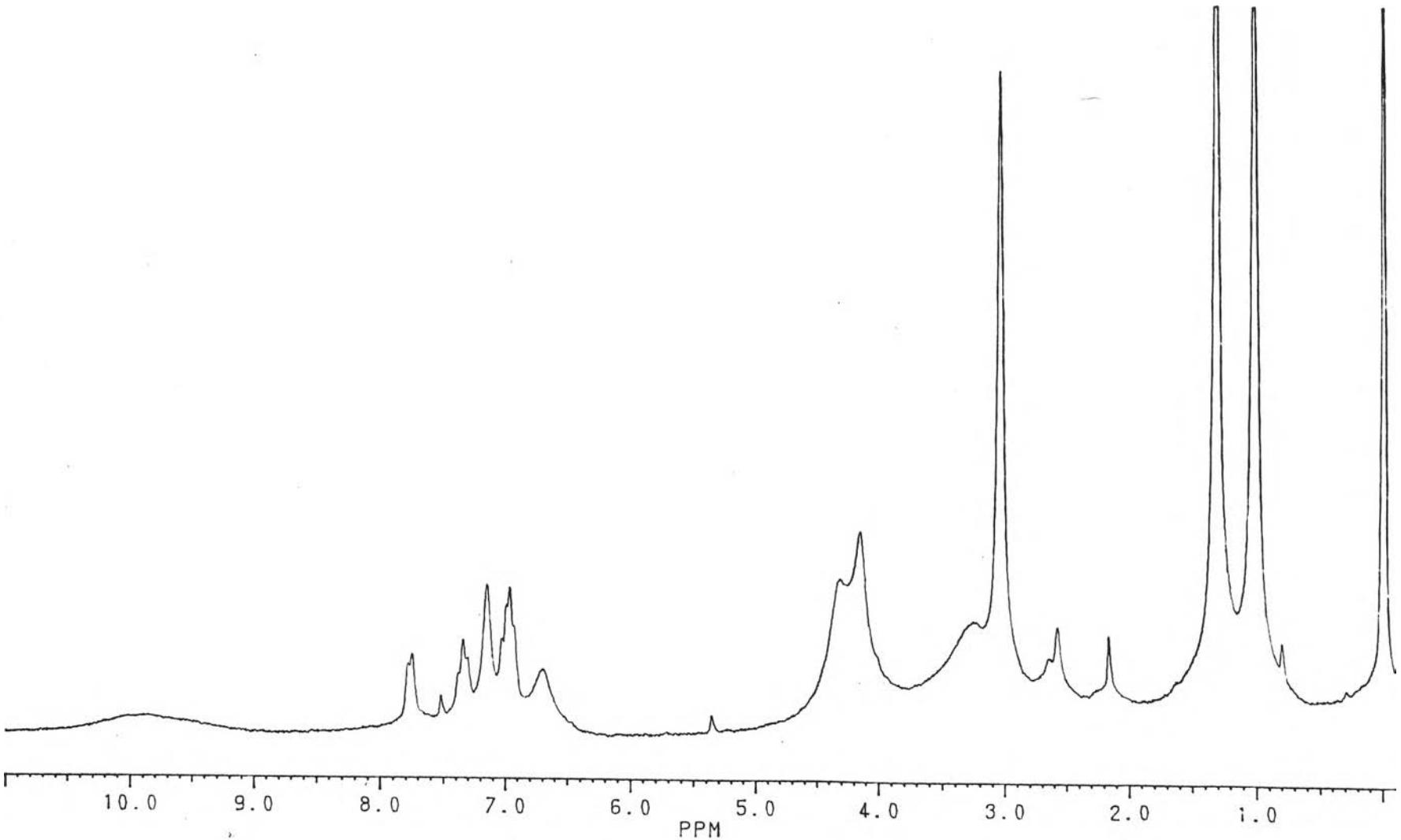

Figure A.15 ^{1}H NMR spectrum of 7 in $CDCl_3$ when 40 μL of DMSO-d_6 was added.

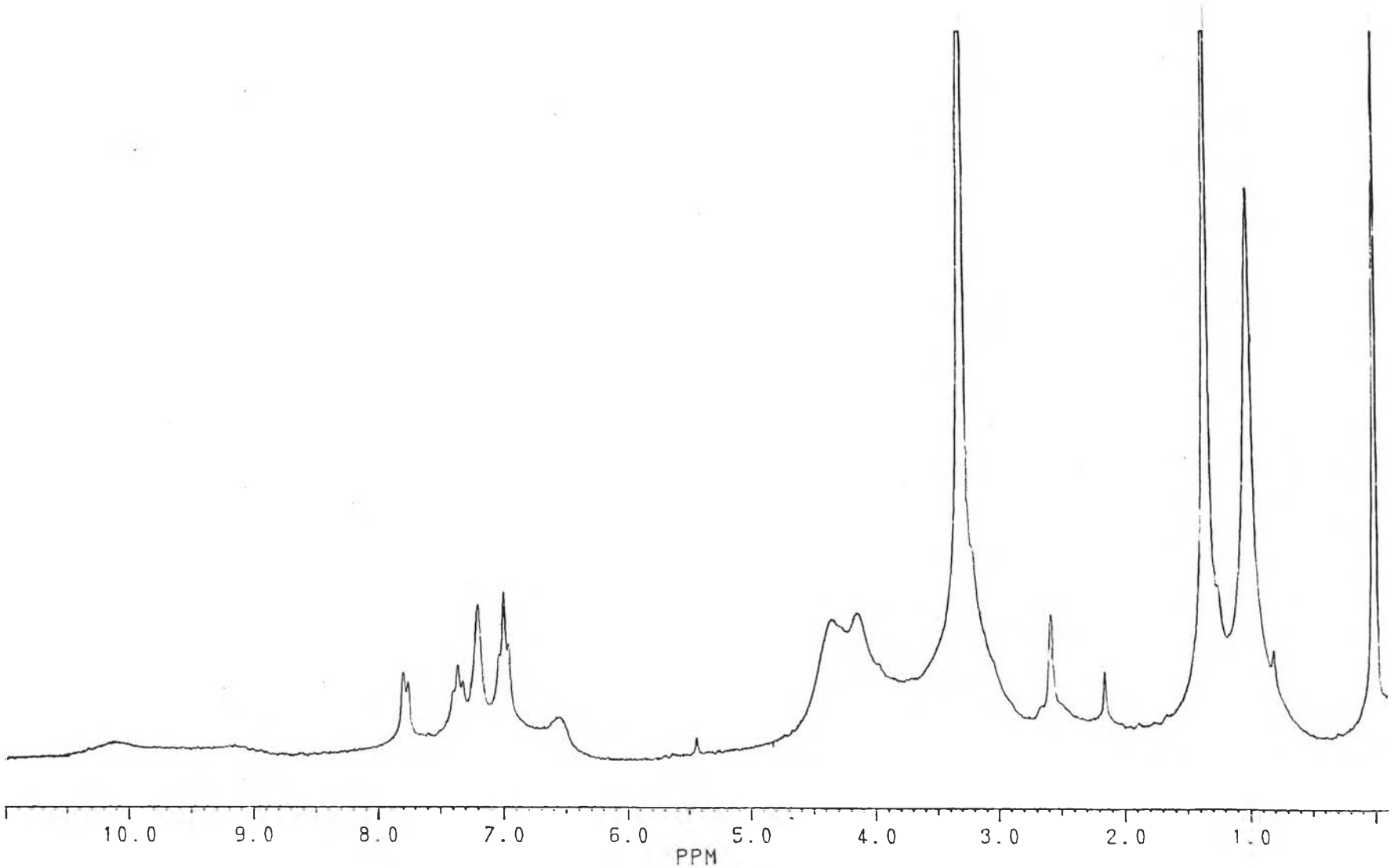

Figure A.16 ^{1}H-NMR spectrum of 7 in $CDCl_3$ when 100 μL of DMSO-d_6 was added.

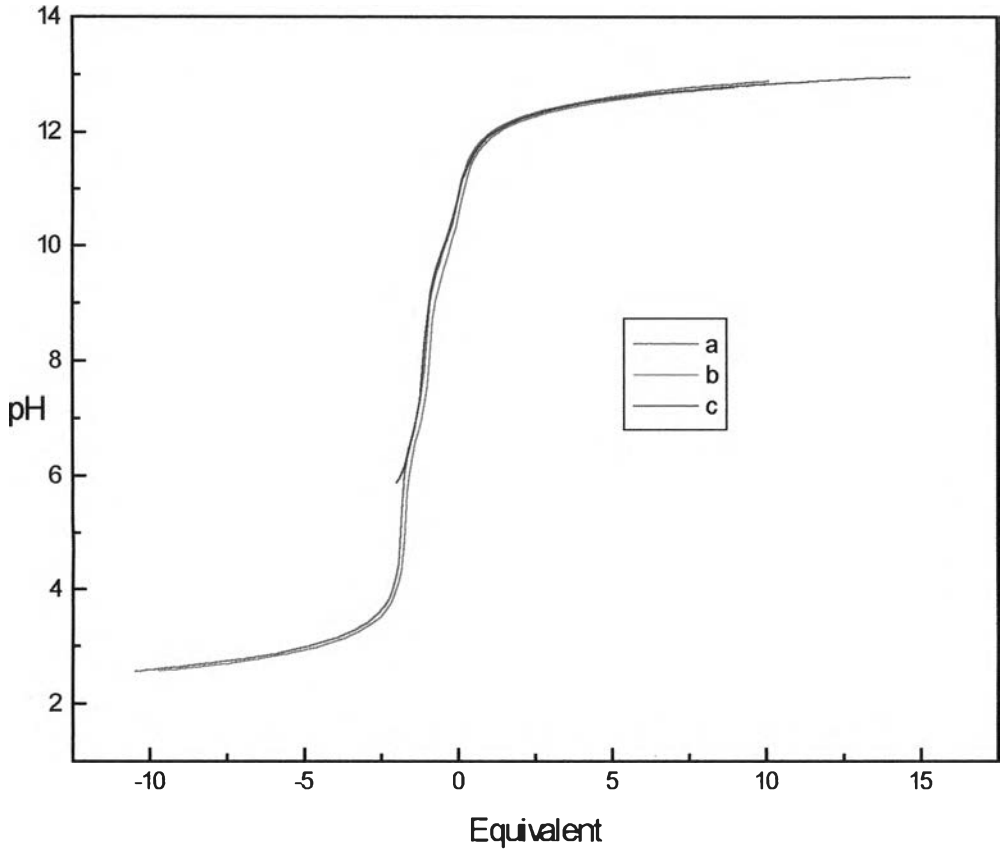

Figure A.17 Potentiometric titration curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 23 °C, based on the initial concentration ratio of **L** : proton as follows : a) 0.456 mM : 4.892 mM, b) 0.460 mM :4.568 mM and c) 0.301 mM : 0.602 mM. Equivalent is defined as the ratio of $(n_{OH^-}-n_{acid})$ to n_{ligand}.

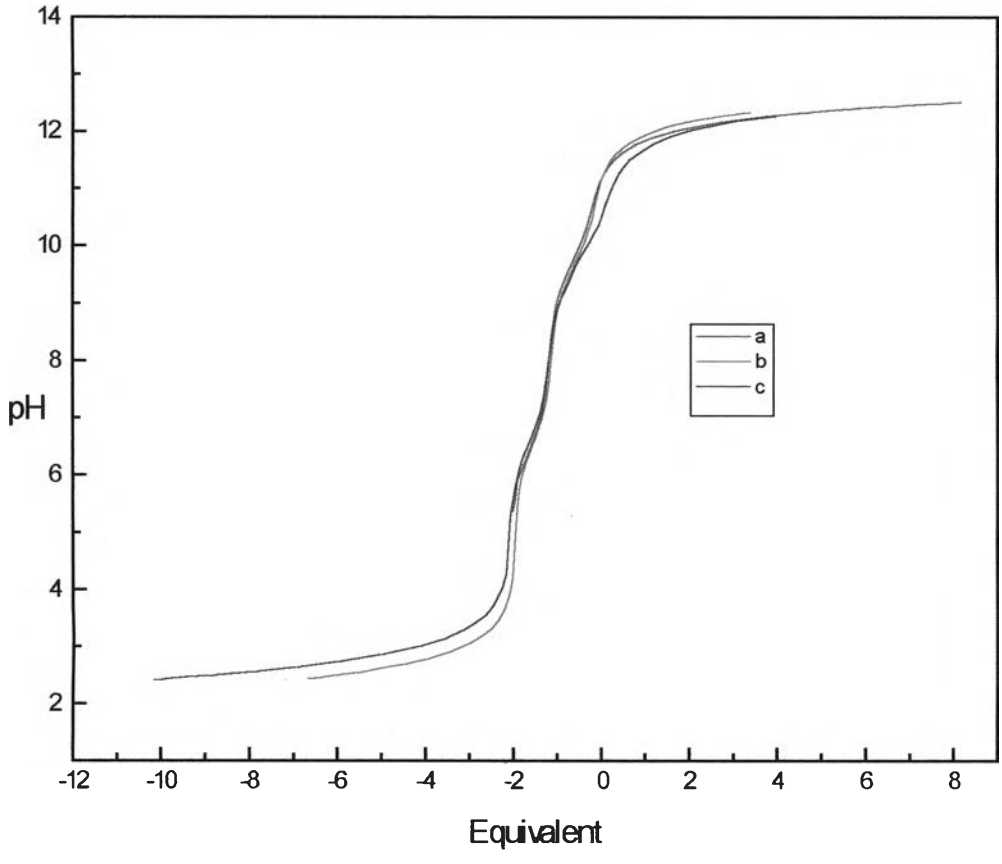

Figure A.18 Potentiometric titration curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$, at 25 °C, based on the initial concentration ratio of **L** : proton as follows : a) 0.454 mM : 0.909 mM, b) 0.909 mM : 6.166 mM and c) 0.542 mM : 4.995 mM. Equivalent is defined as the ratio of $(n_{OH^-}-n_{acid})$ to n_{ligand}.

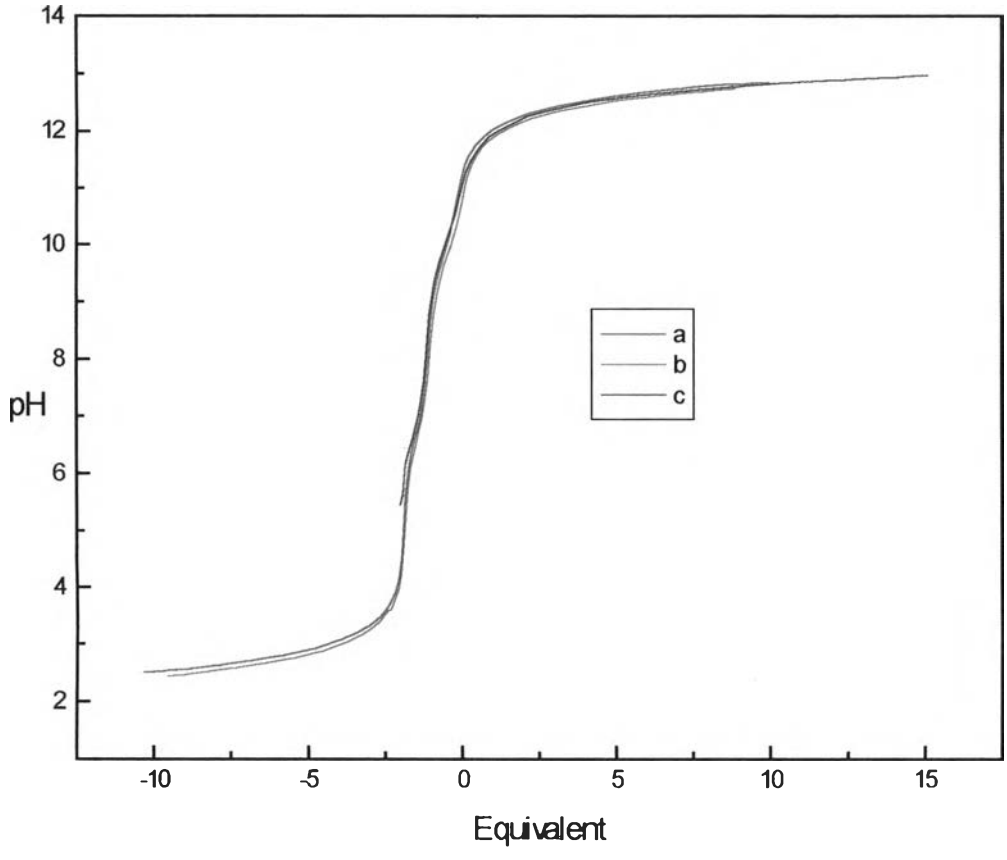

Figure A.19 Potentiometric titration curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 27 °C, based on the initial concentration ratio of **L** : proton as follows : a) 0.459 mM : 4.845 mM, b) 0.463 mM : 4.526 mM and c) 0.303 mM : 0.606 mM. Equivalent is defined as the ratio of $(n_{OH^-}-n_{acid})$ to n_{ligand}.

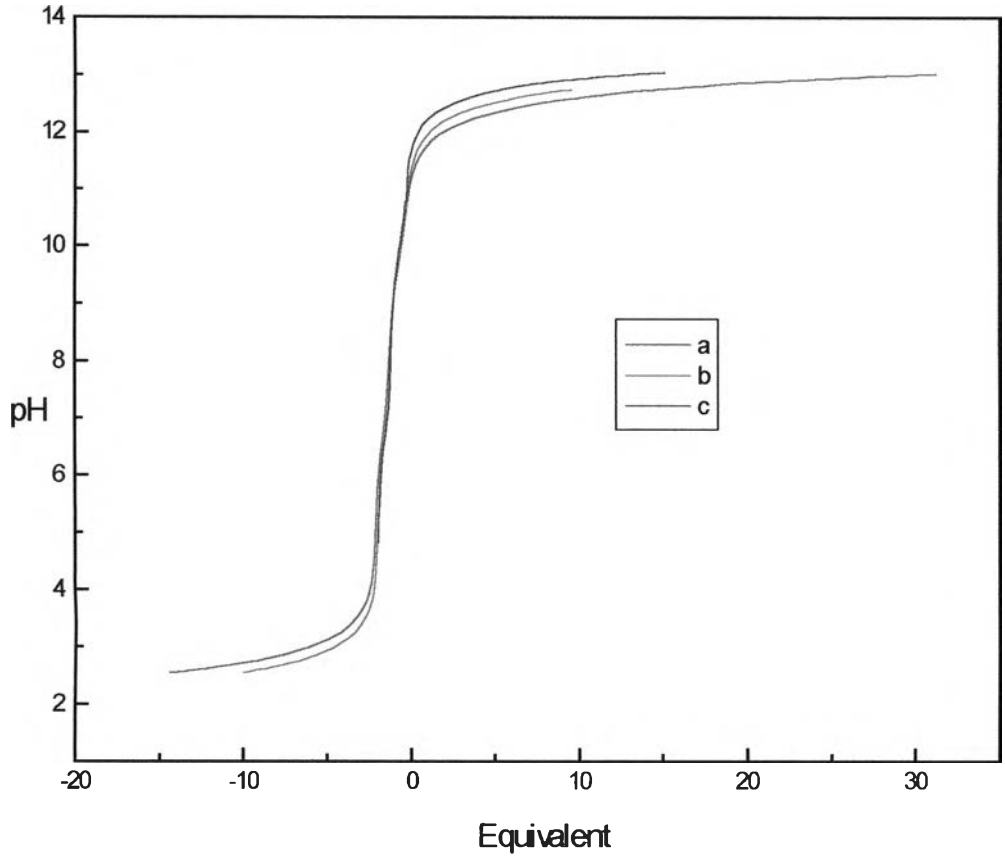

Figure A.20 Potentiometric titration curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 30 °C, based on the initial concentration ratio of **L** : proton as follows : a) 0.297 mM : 4.372 mM, b) 0.459 mM : 4.695 mM and c) 0.505 mM : 1.011 mM. Equivalent is defined as the ratio of $(n_{OH^-}-n_{acid})$ to n_{ligand}.

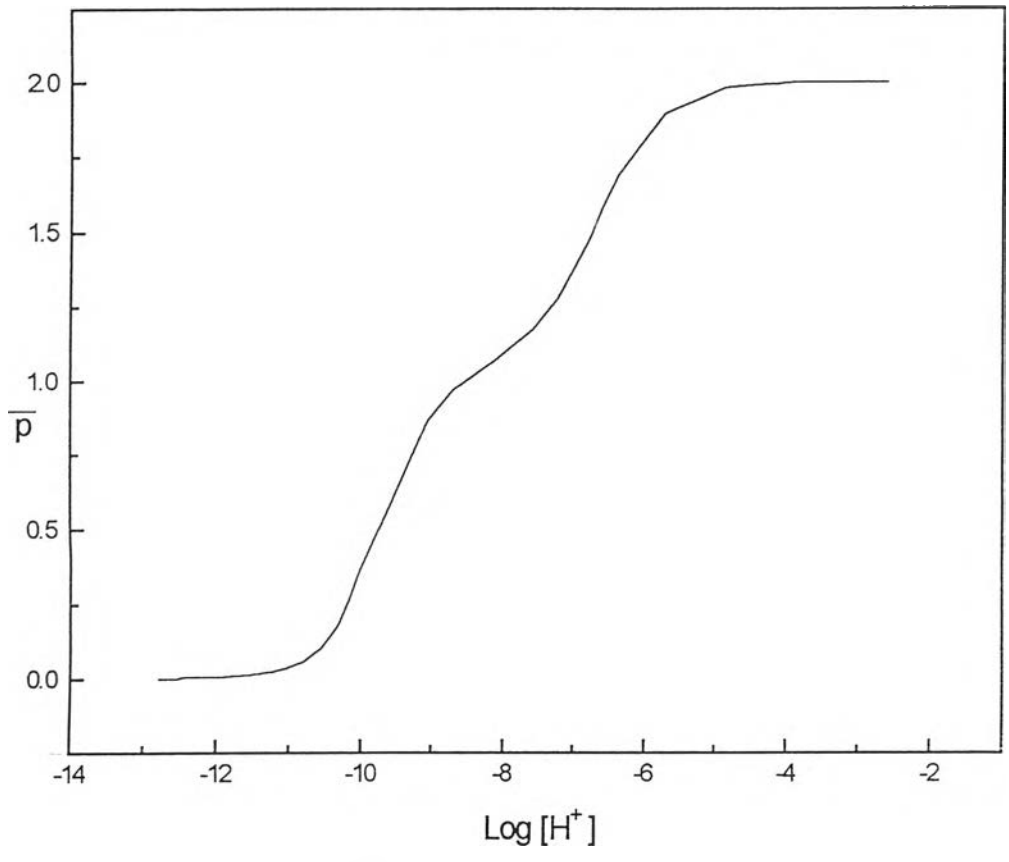

Figure A.21 Plot between $\bar{p}$ and log [H^+] for **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 23 °C, based on the initial concentration ratio of the ligand **L** to proton of 0.460 mM : 4.568 mM.

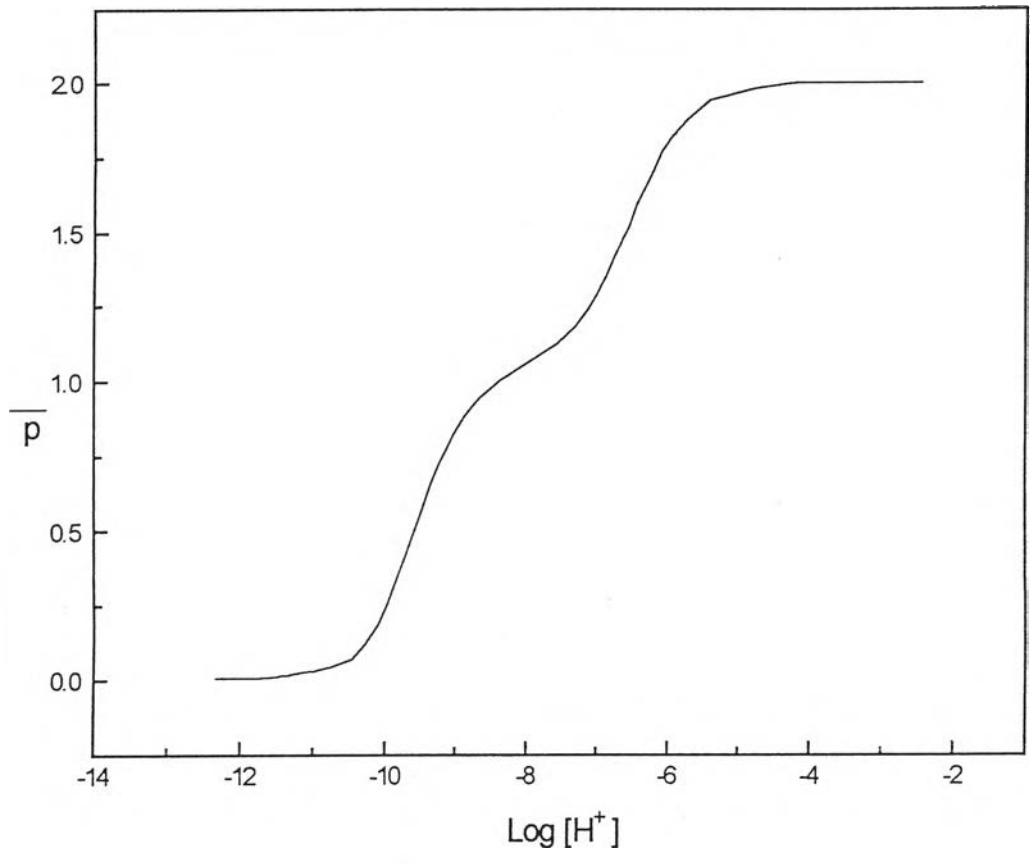

Figure A.22 Plot between $\bar{p}$ and log [H^+] for **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 25 °C, based on the initial concentration ratio of the ligand **L** to proton of 0.909 mM : 6.166 mM.

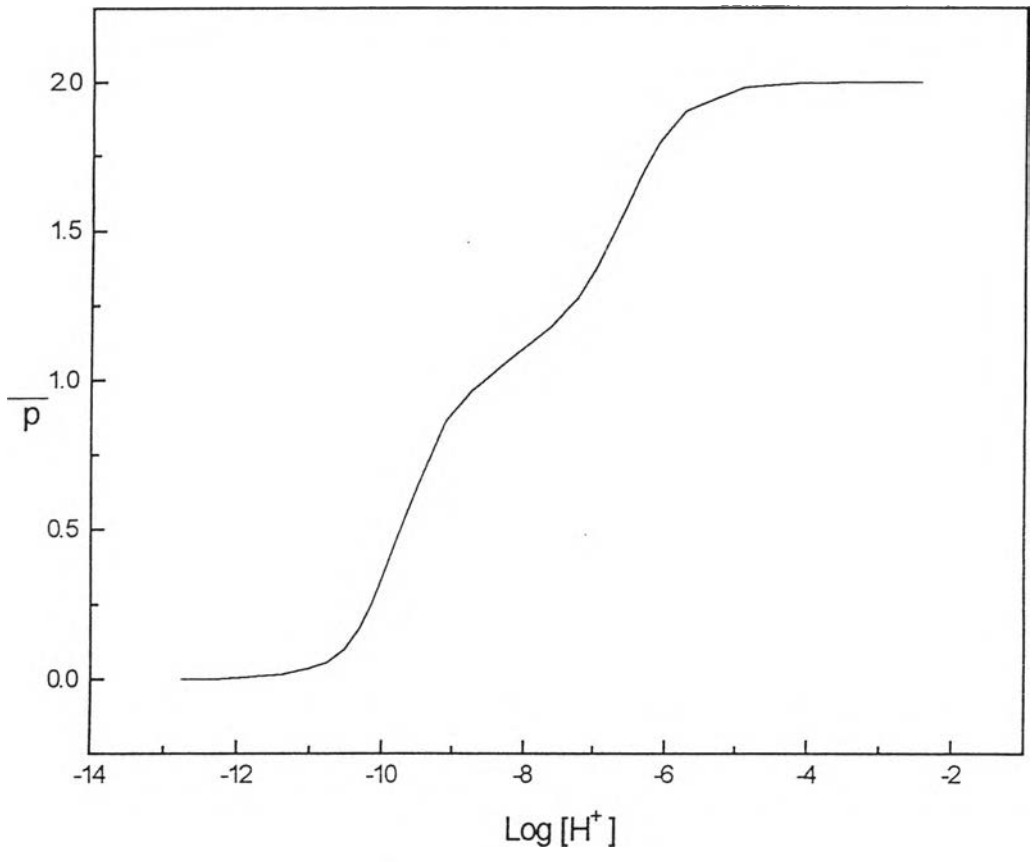

Figure A.23 Plot between $\bar{p}$ and log [H^+] for **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 27 °C, based on the initial concentration ratio of the ligand **L** to proton of 0.463 mM : 4.526 mM.

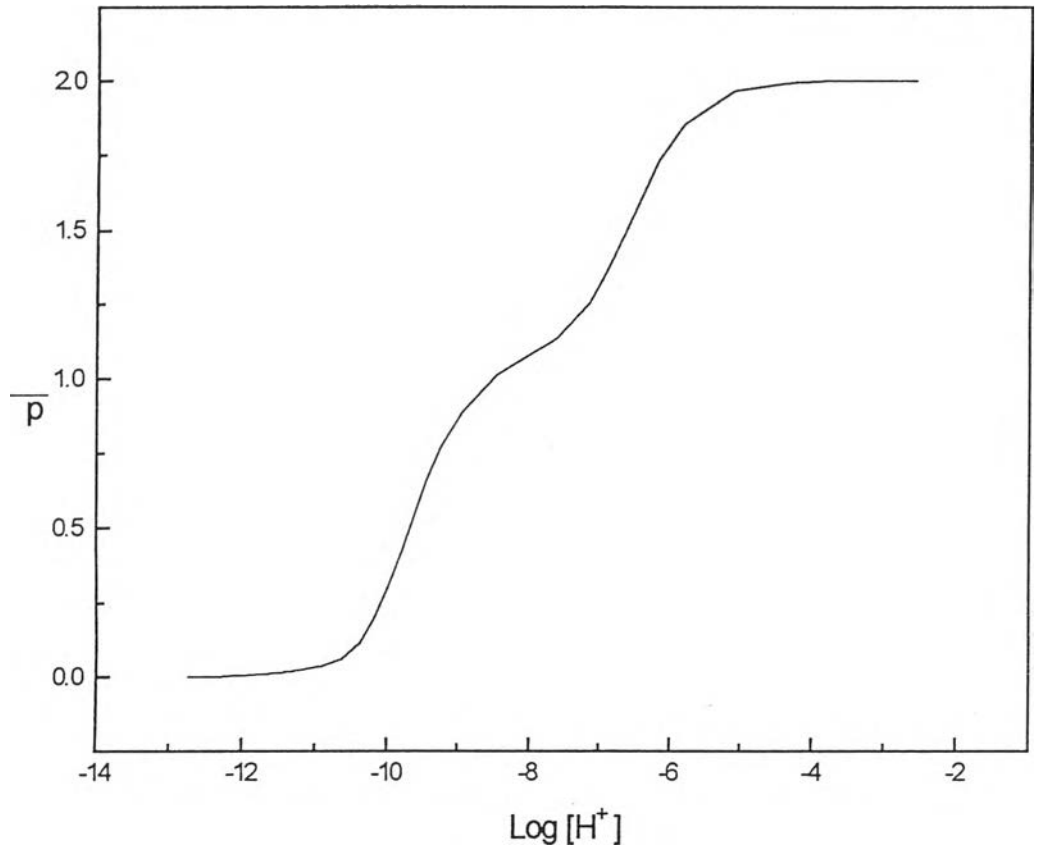

Figure A.24 Plot between $\bar{p}$ and log [H^+] for **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 30 °C, based on the initial concentration ratio of the ligand **L** to proton of 0.459 mM : 4.695 mM.

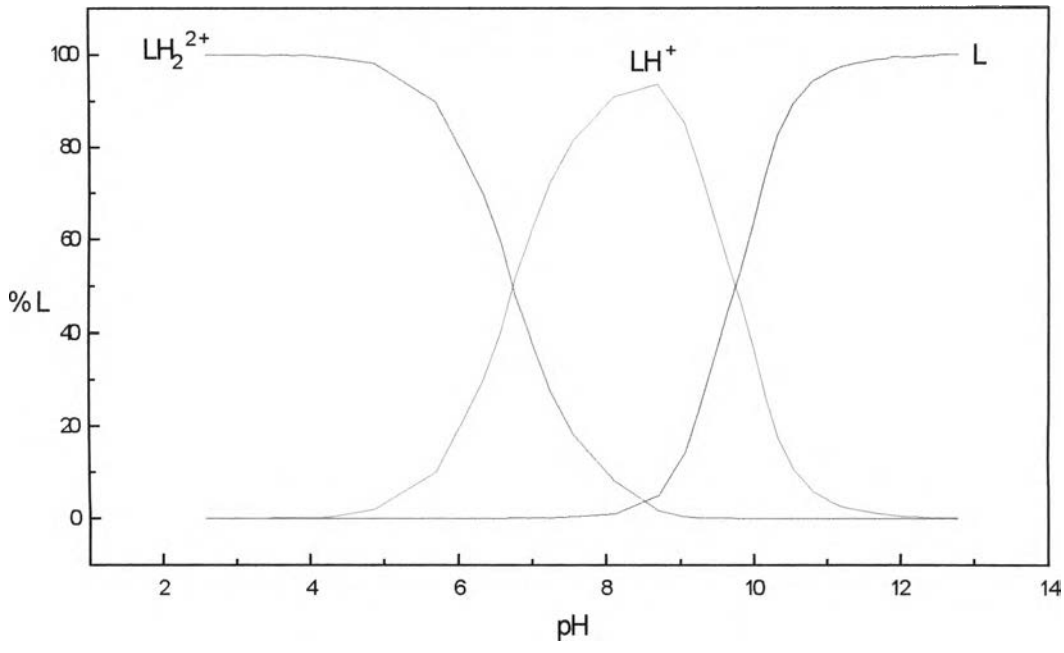

Figure A.25 Species distribution curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 23 °C, C_L = 0.460 mM.

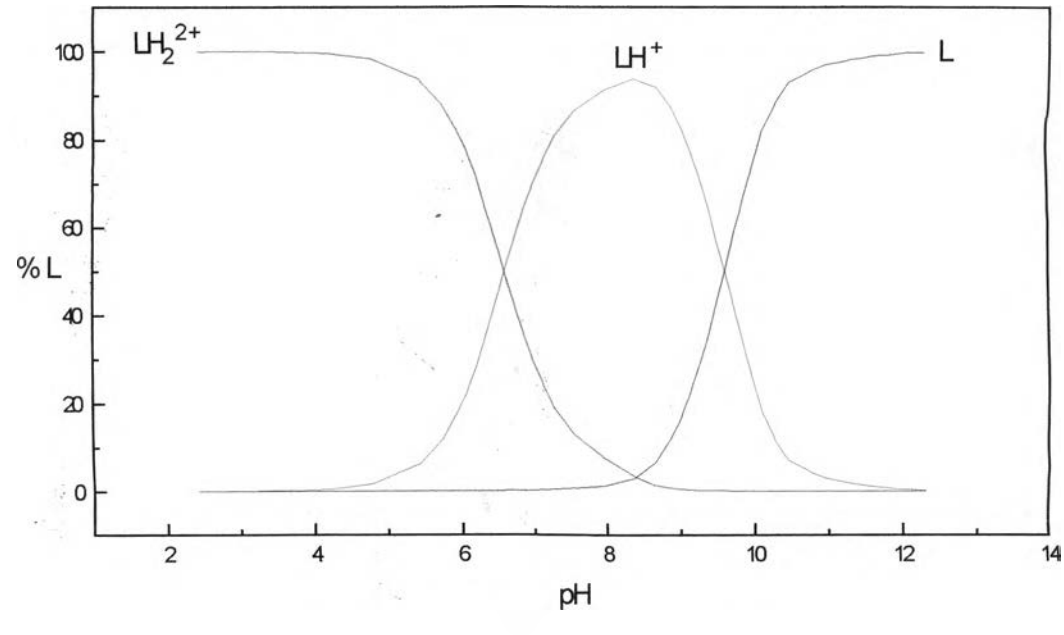

Figure A.26 Species distribution curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 25 °C, C_L = 0.909 mM.

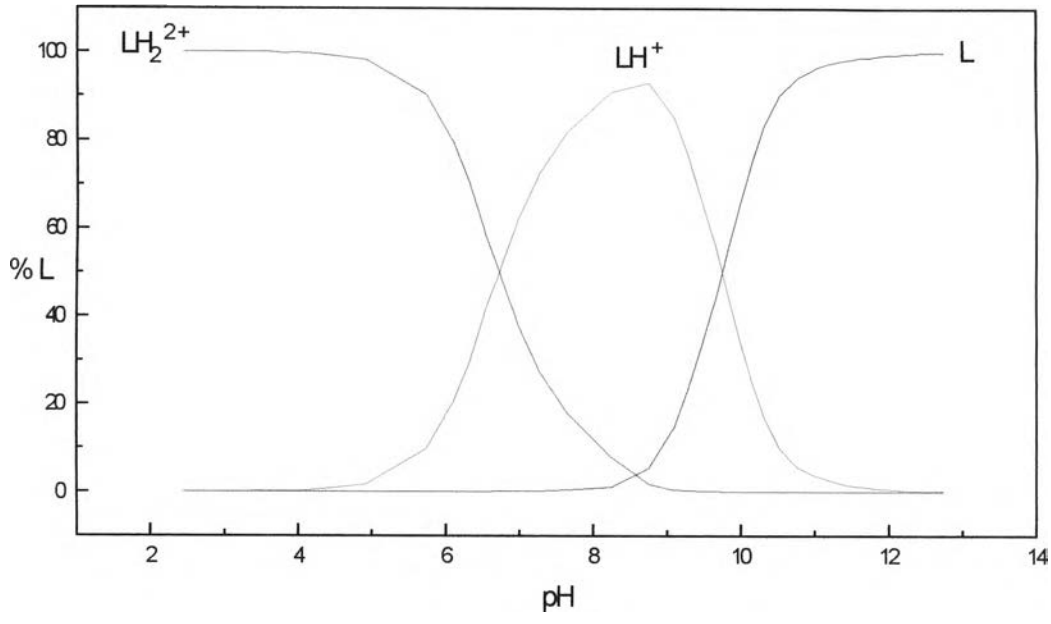

Figure A.27 Species distribution curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 27 °C, C_L = 0.463 mM.

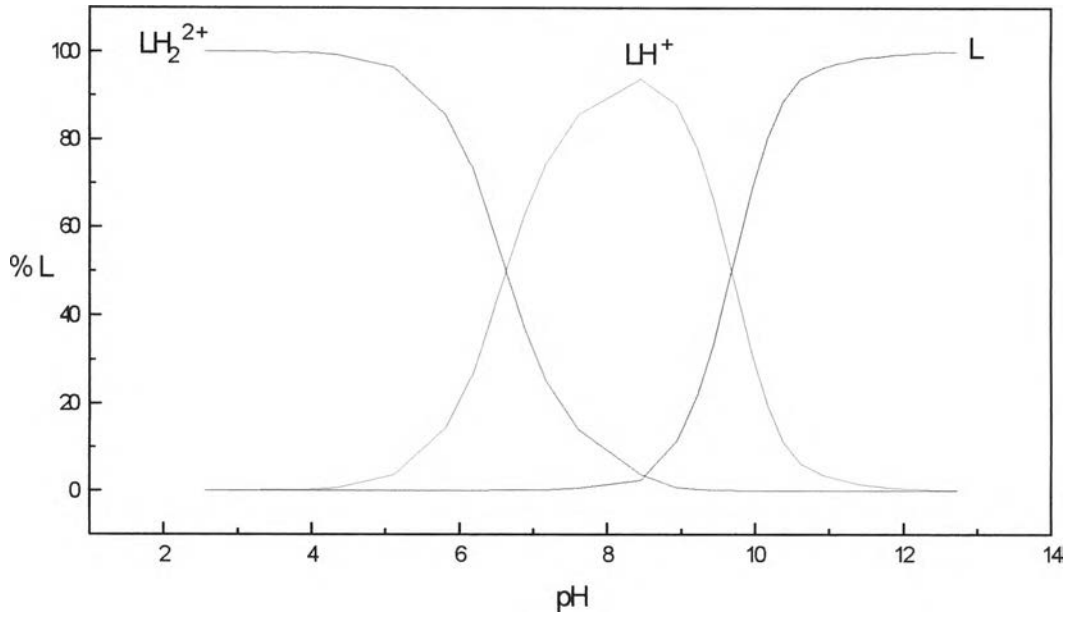

Figure A.28 Species distribution curves of **L** in the methanolic solution of $1x10^{-2}$ M $Bu_4NCF_3SO_3$ at 30 °C, C_L = 0.505 mM.

VITA

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