One Pot Synthesis of 2-Hydroxy Pyrrolidine derivatives

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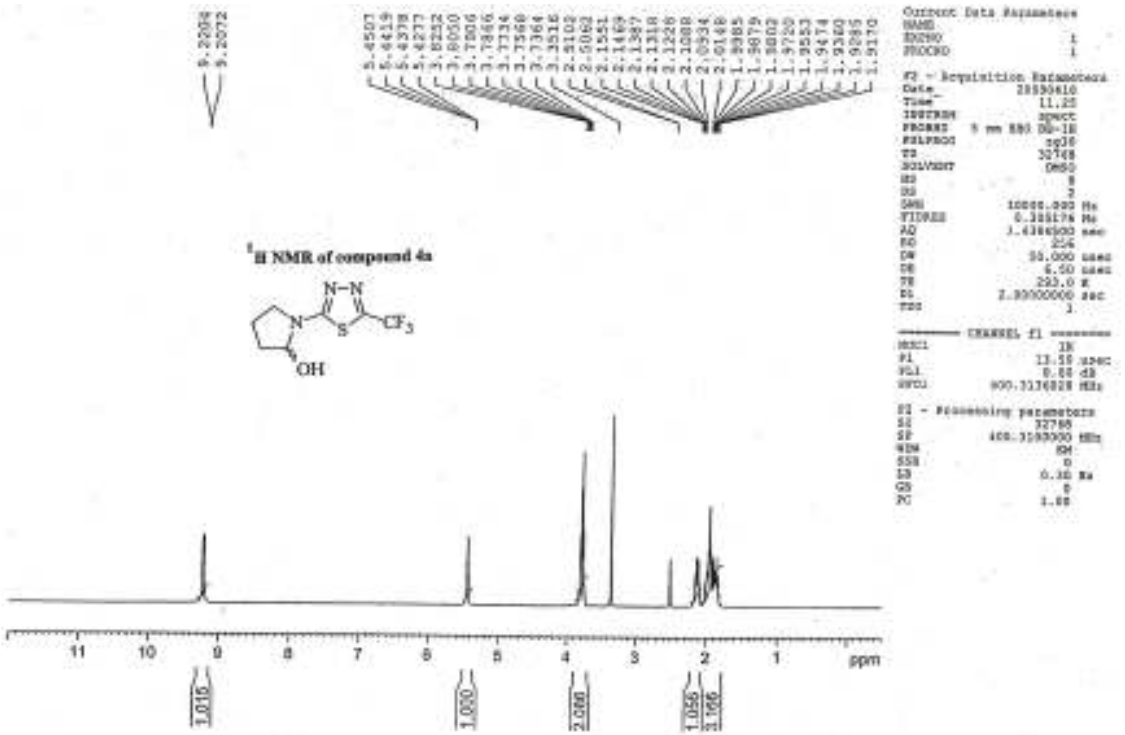
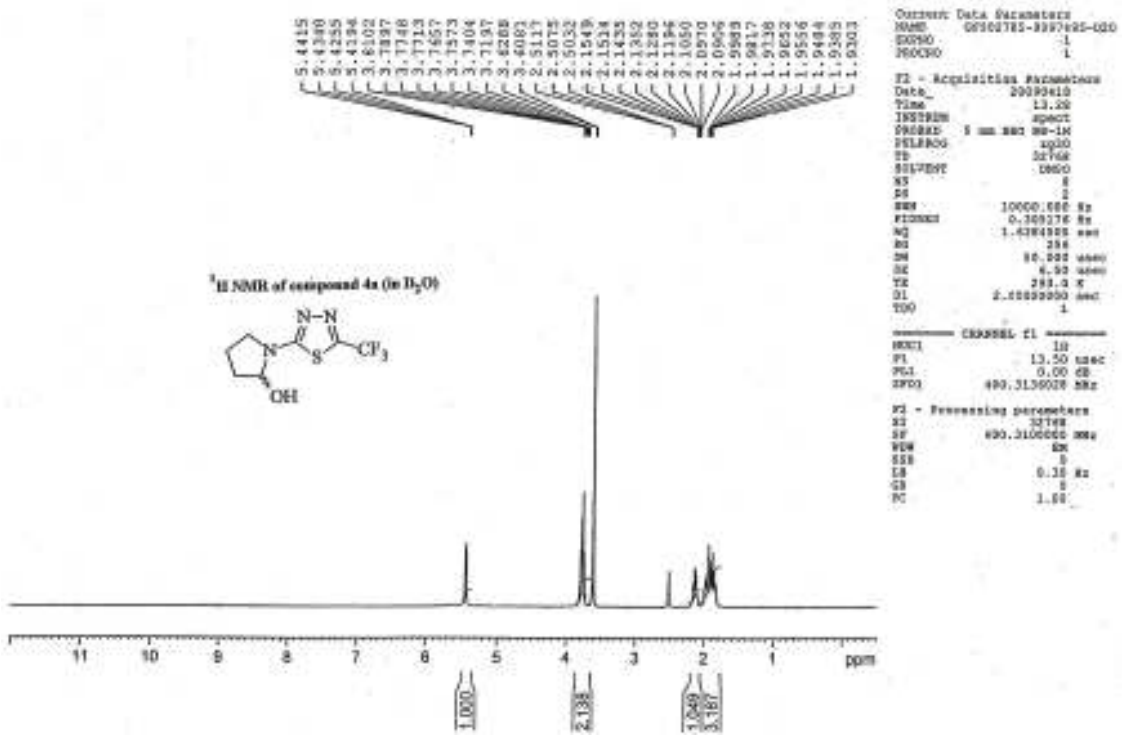
[3]Bioorganics and Applied Materials Pvt. Ltd., Bangalore, India

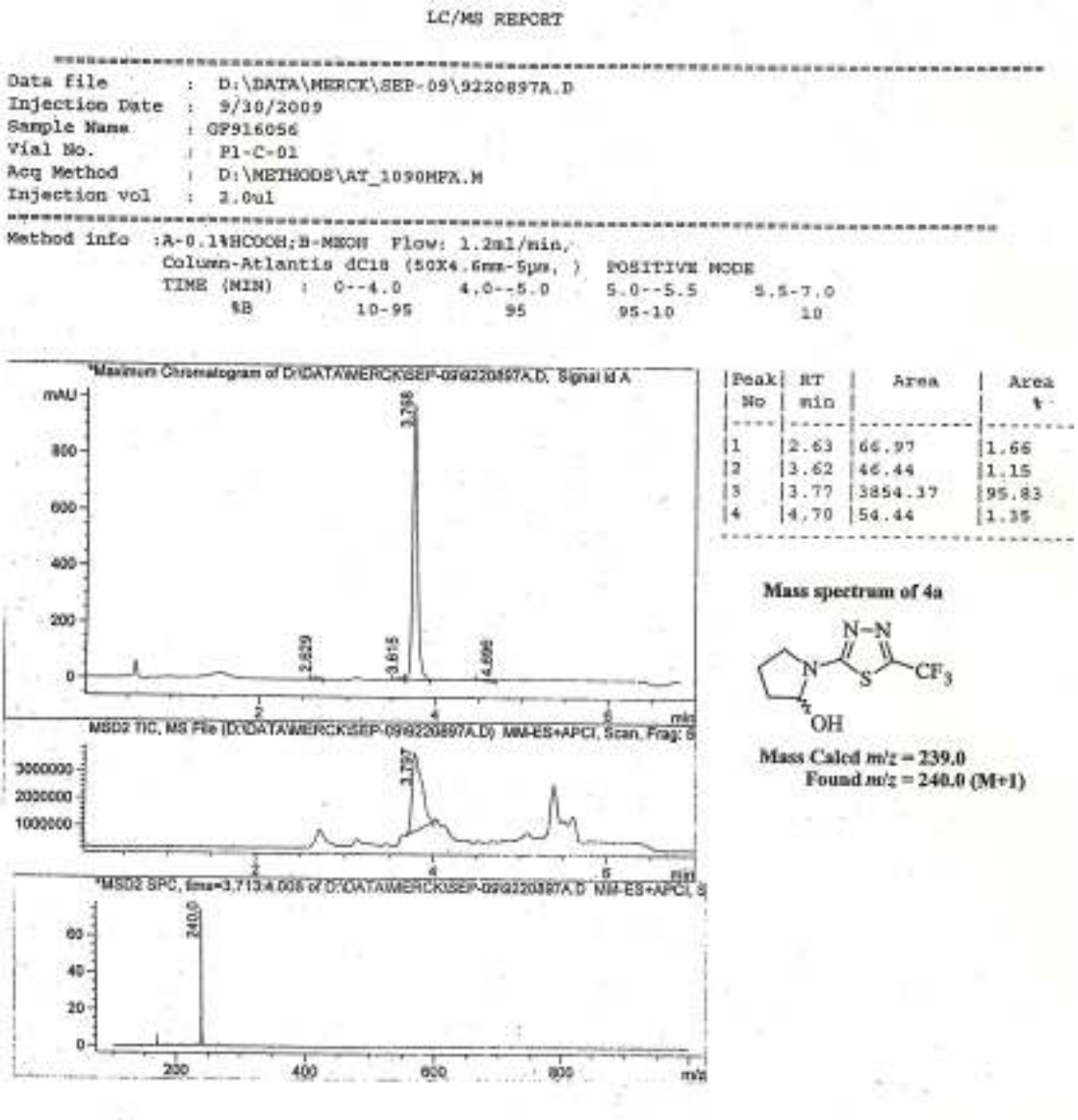
Table of Contents **Page**



1. ^{1}H-NMR Spectrum of 1-[5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl] pyrrolidin-2-ol 4a.



2. ^{1}H-NMR Spectrum of 1-[5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl] pyrrolidin-2-ol 4a in D_2O.



3. Mass Spectrum of 1-[5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl] pyrrolidin-2-ol 4a

analytic functional testing
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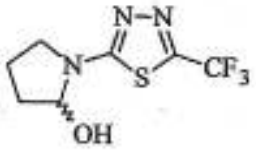
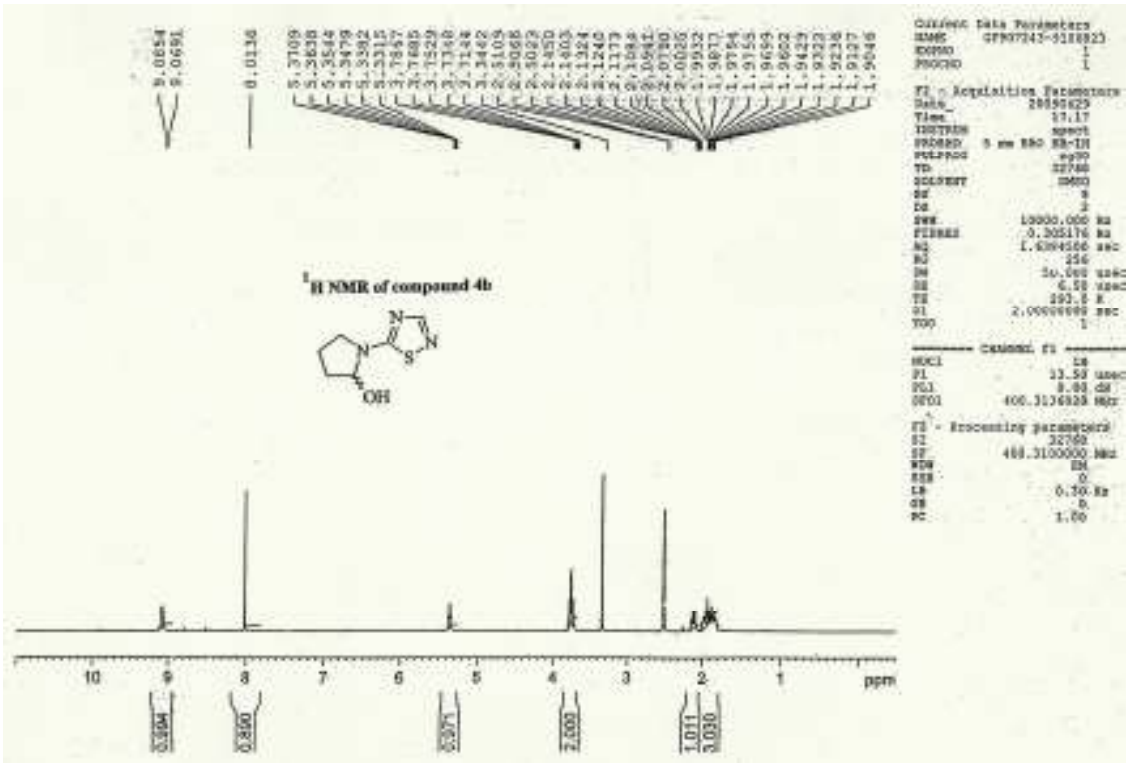
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
12 GI948070,9199955	35.29	3.443	17.50	13.672
13 GI948070,9199955	35.68	3.284	17.87	15.628
Mean value [%]	35.49	3.364	17.68	14.650
Deviation, abs. [%]	0.27	0.112	0.26	1.384
Delta [%]	0.39	0.158	0.37	1.957

Elemental analysis of compound 4a



4. Elemental Analysis of 1-[5-(trifluoromethyl)-1,3,4-thiadiazol-2-yl] pyrrolidin-2-ol 4a



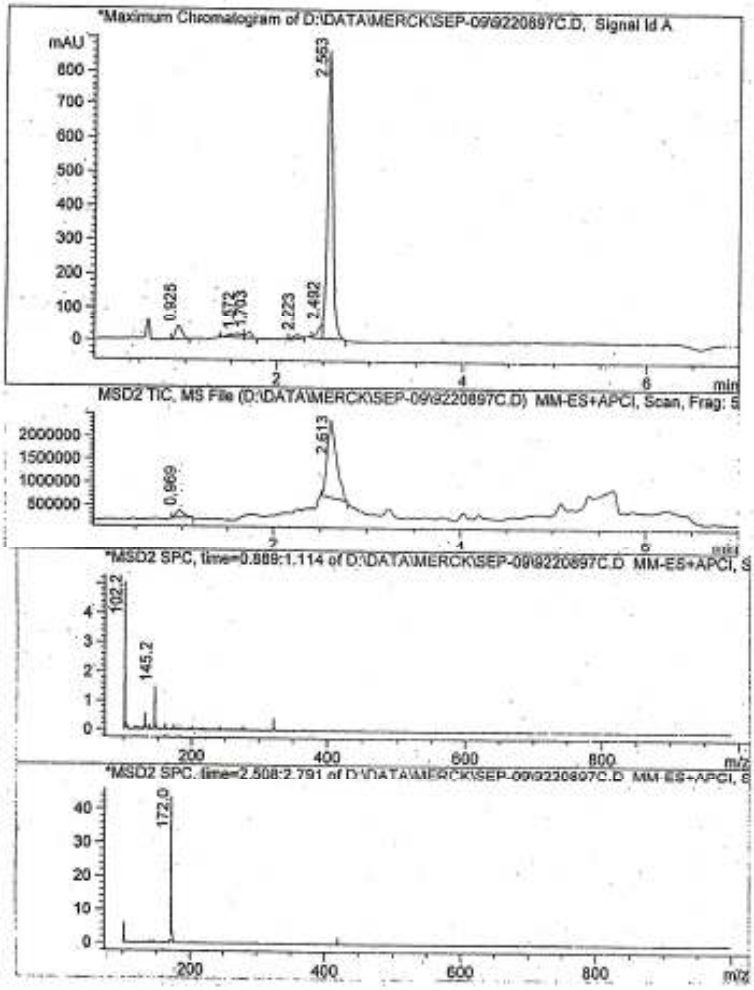
5. ^{1}H-NMR Spectrum of 1-(1,2,4-thiadiazol-5-yl)pyrrolidin-2-ol 4b**.**

LC/MS REPORT

Data file : D:\DATA\MERCK\SEP-09\9220897C.D
Injection Date : 9/30/2009
Sample Name : GP916056
Vial No. : P1-C-03
Acq Method : D:\METHODS\AT_1090MFA.M
Injection vol : 2.0ul

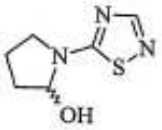
Method info :A-0.1%HCOOH;B-MEOH Flow: 1.2ml/min,
Column-Atlantis dC18 (50X4.6mm-5µm,) POSITIVE MODE

TIME (MIN)	0--4.0	4.0--5.0	5.0--5.5	5.5-7.0
%B	10-95	95	95-10	10



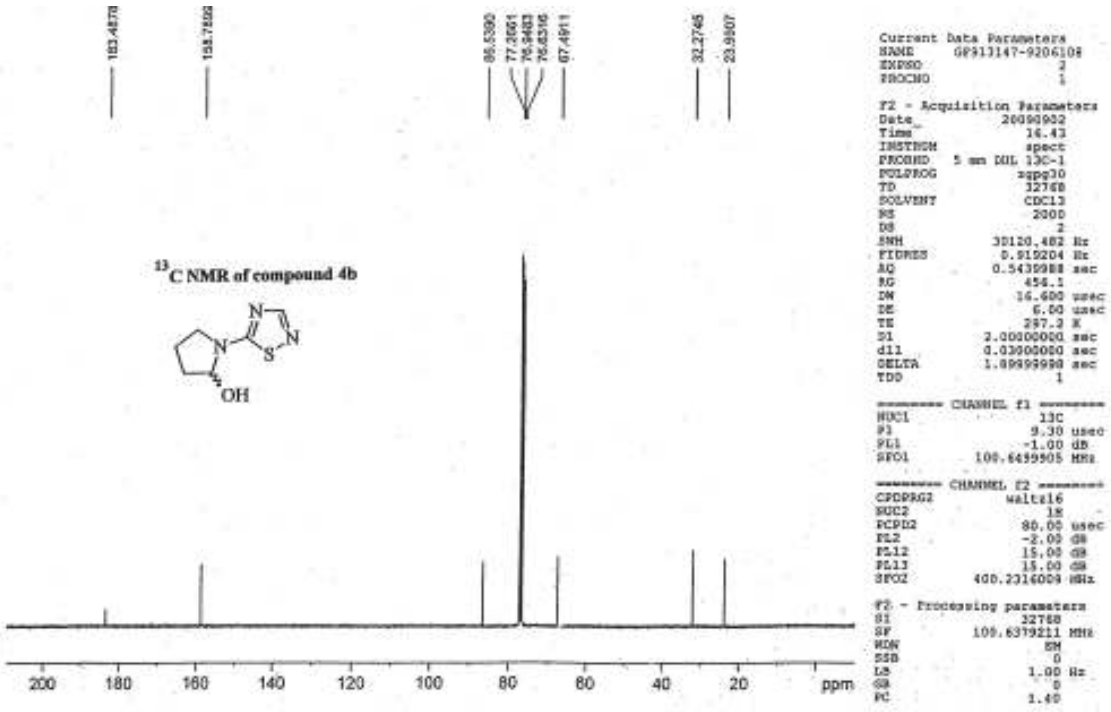
Peak No	RT min	Area	Area %
1	0.92	205.61	4.95
2	1.57	118.73	2.86
3	1.70	77.00	1.85
4	2.22	70.65	1.70
5	2.49	148.52	3.58
6	2.56	3532.57	85.06

Mass spectrum of 4b



Mass Calcd *m/z* = 171.0
Found *m/z* = 172.0 (M+1)

6. Mass Spectrum of 1-(1,2,4-thiadiazol-5-yl)pyrrolidin-2-ol 4b.



7. ^{13}C Spectrum of 1-(1,2,4-thiadiazol-5-yl)pyrrolidin-2-ol 4b.

Document: 310809 (VarioMICRO) from: --.--.-- (modified)

analytic functional testing
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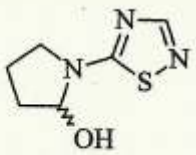
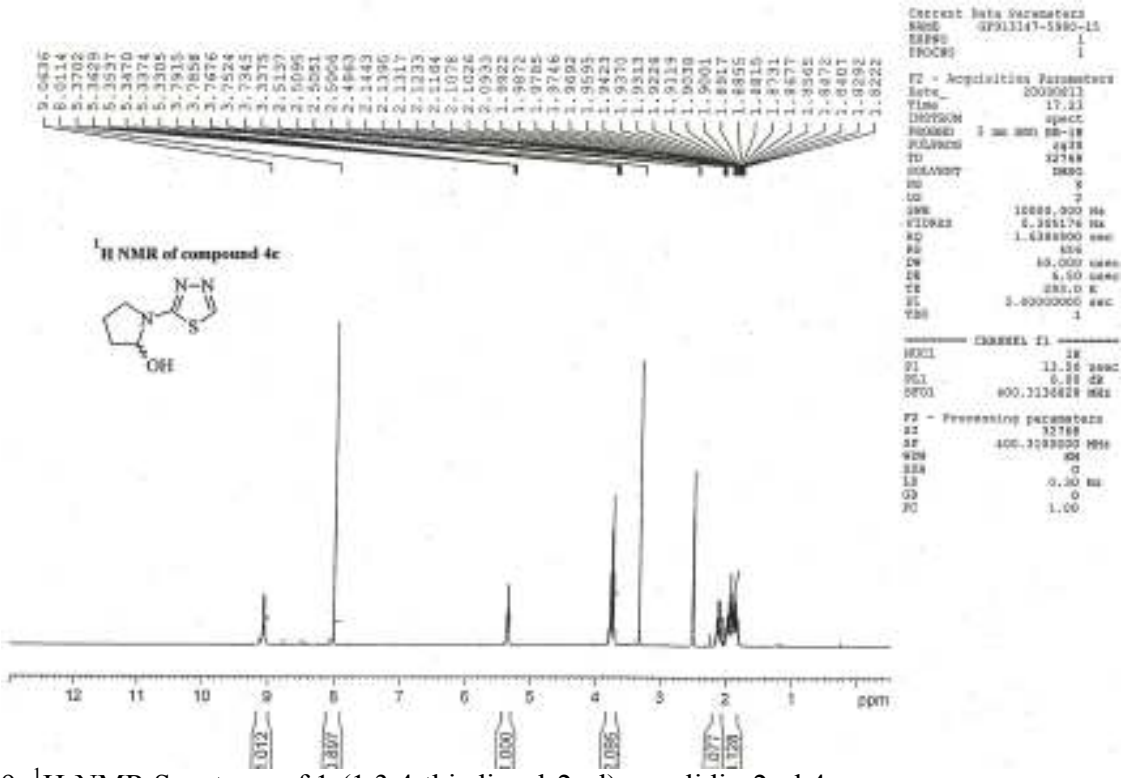
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
16 GF913706-9204586	42.12	5.081	25.13	17.800
17 GF913706-9204586	41.99	5.131	25.06	18.452
Mean value [%]	42.06	5.106	25.10	18.126
Deviation, abs. [%]	0.09	0.036	0.05	0.461
Delta [%]	0.13	0.051	0.08	0.652

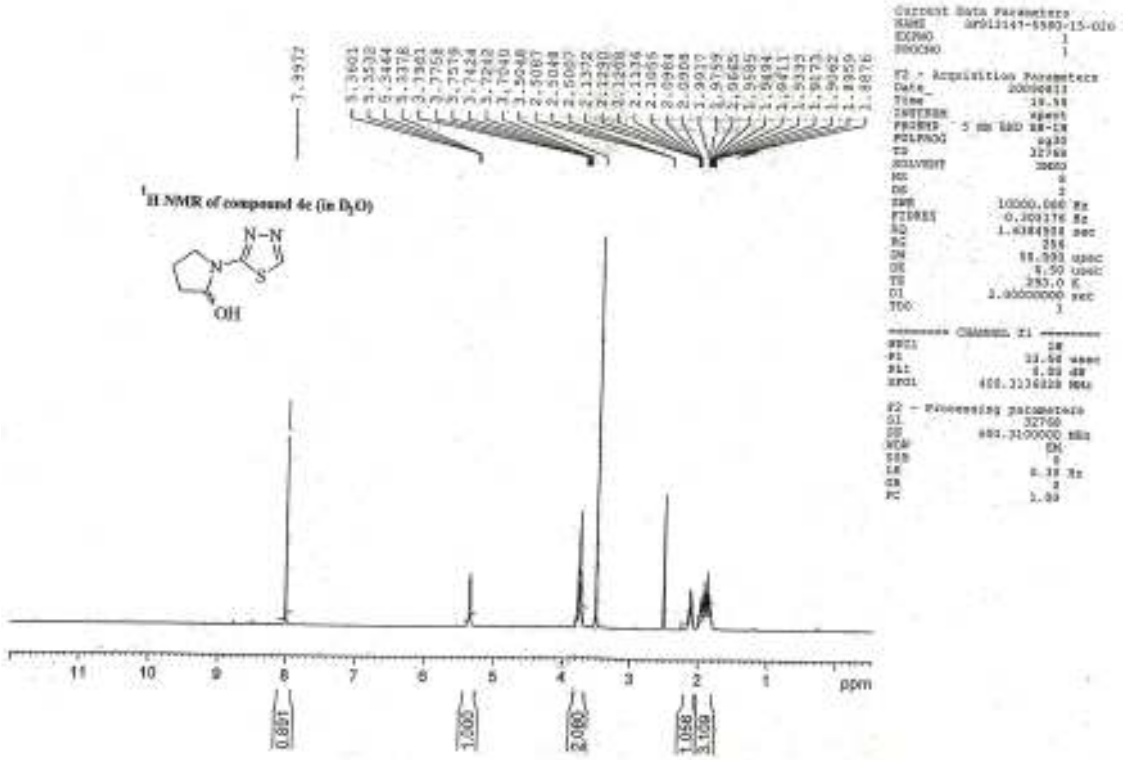
Elemental analysis of compound 4b



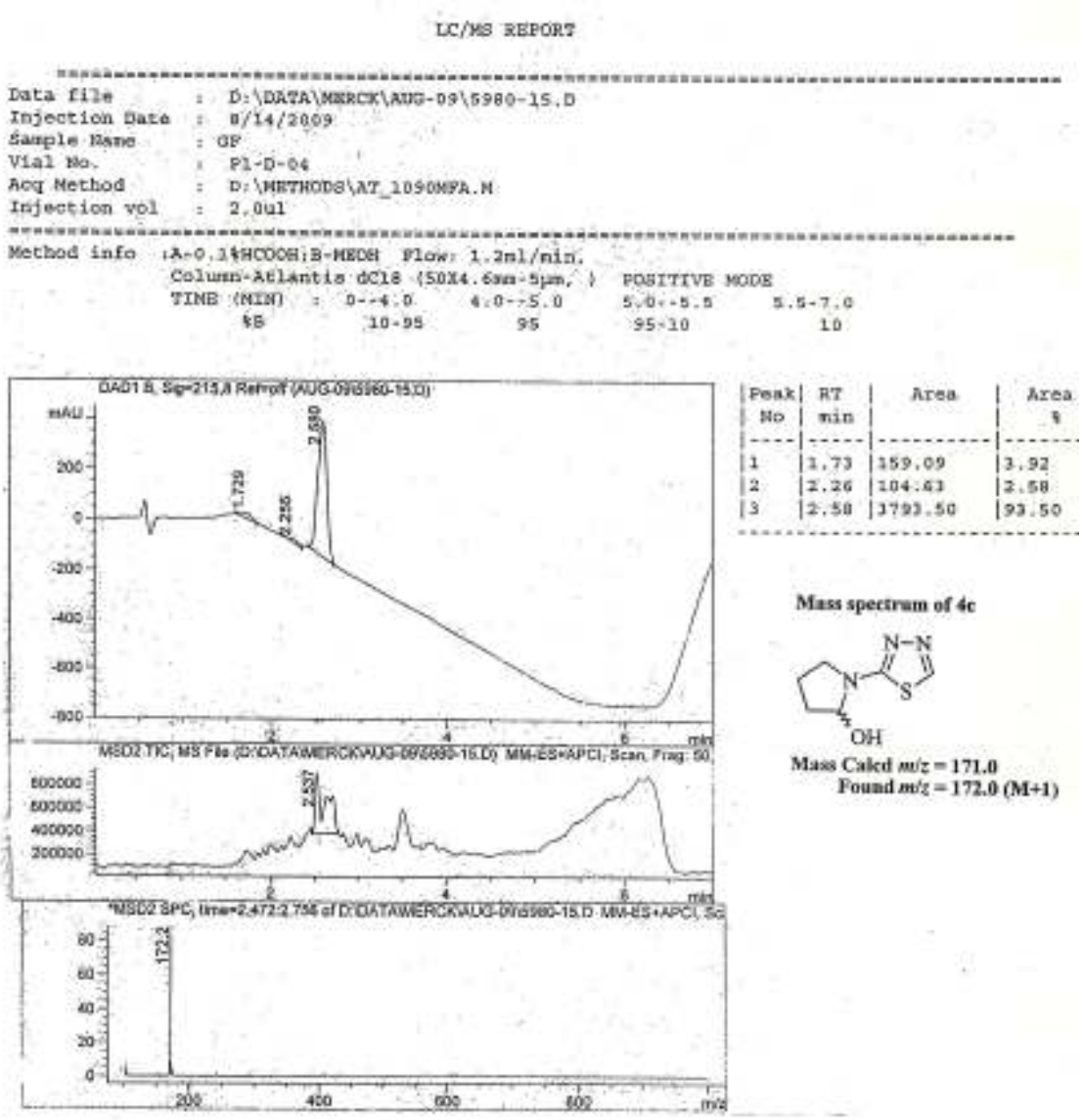
8. Elemental Analysis of 1-(1,2,4-thiadiazol-5-yl)pyrrolidin-2-ol 4b.



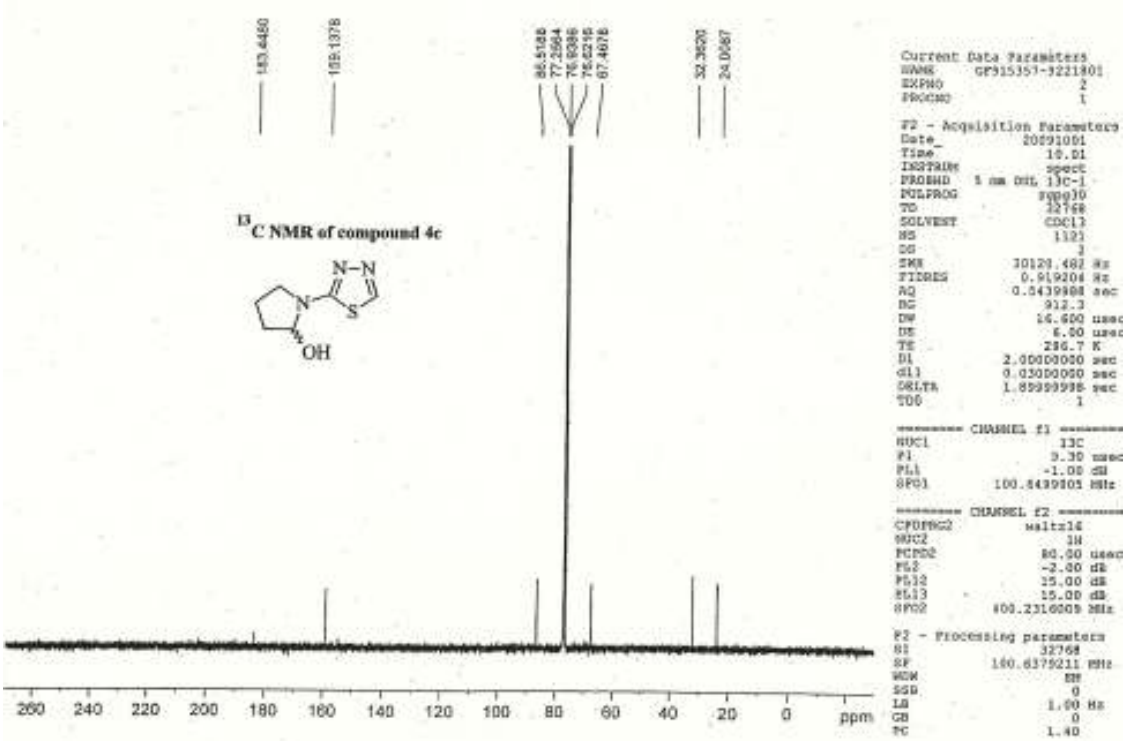
9. ^{1}H-NMR Spectrum of 1-(1,3,4-thiadiazol-2-yl)pyrrolidin-2-ol 4c.



10. ^{1}H-NMR Spectrum of 1-(1,3,4-thiadiazol-2-yl)pyrrolidin-2-ol 4c in D_2O.



11. Mass Spectrum of 1-(1,3,4-thiadiazol-2-yl)pyrrolidin-2-ol 4c.



12. ^{13}C Spectrum of 1-(1,3,4-thiadiazol-2-yl)pyrrolidin-2-ol 4c.

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analytic functional testing
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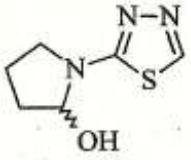
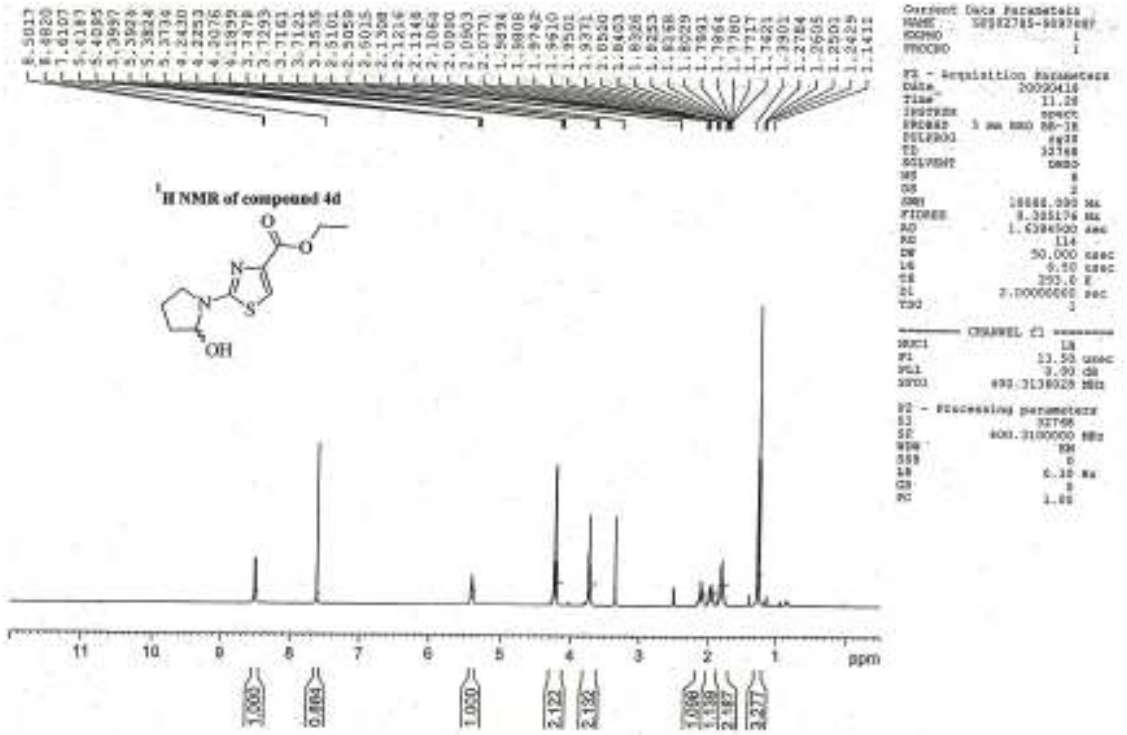
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
16 GF913706-9204586	42.12	5.081	25.13	17.800
17 GF913706-9204586	41.99	5.131	25.06	18.452
Mean value [%]	42.06	5.106	25.10	18.126
Deviation, abs. [%]	0.09	0.036	0.05	0.461
Delta [%]	0.13	0.051	0.08	0.652

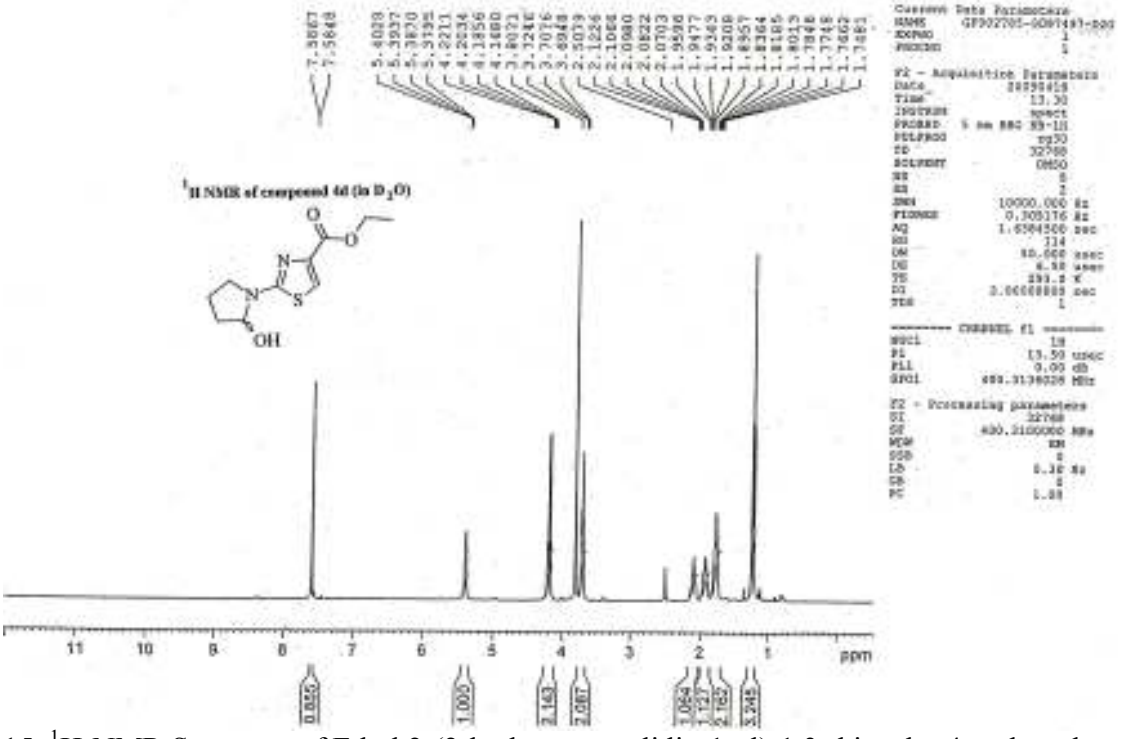
Elemental analysis of compound 4c



13. Elemental Analysis of 1-(1,3,4-thiadiazol-2-yl)pyrrolidin-2-ol 4c.



14. ^{1}H-NMR Spectrum of Ethyl 2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol e-4-carboxylate 4d.



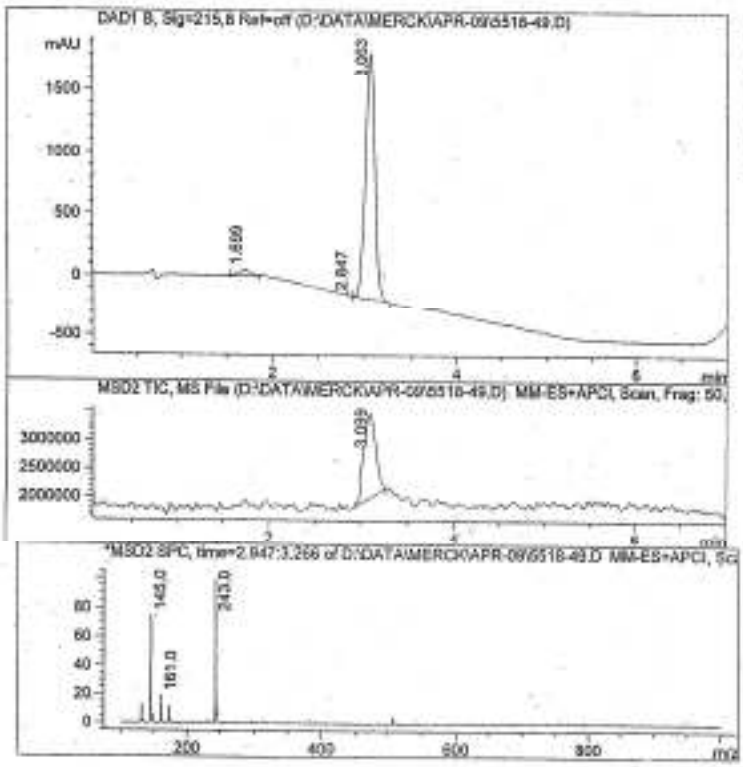
15. ^{1}H-NMR Spectrum of Ethyl 2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol e-4-carboxylate 4d in D_2O.

MM : 1.000

LC/MS REPORT

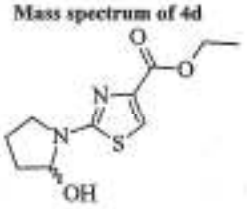
Data file : D:\DATA\MERCK\APR-09\5518-49.D
Injection Date : 4/15/2009
Sample Name : GI922476
Vial No. : P1-F-04
Acq Method : C:\CHEM32\1\METHODS\AT_3070MPA.M
Injection vol : 2.0ul

Method info : A-0.1%HCOOH;B-MEOH Flow: 1.2ml/min,
Column-Atlantis dC18 (50X4.6mm-5µm,) POSITIVE MODE
TIME (MIN) : 0--4.0 4.0--5.0 5.0--5.5 5.5-7.0
%B 10-95 95 95-10 10



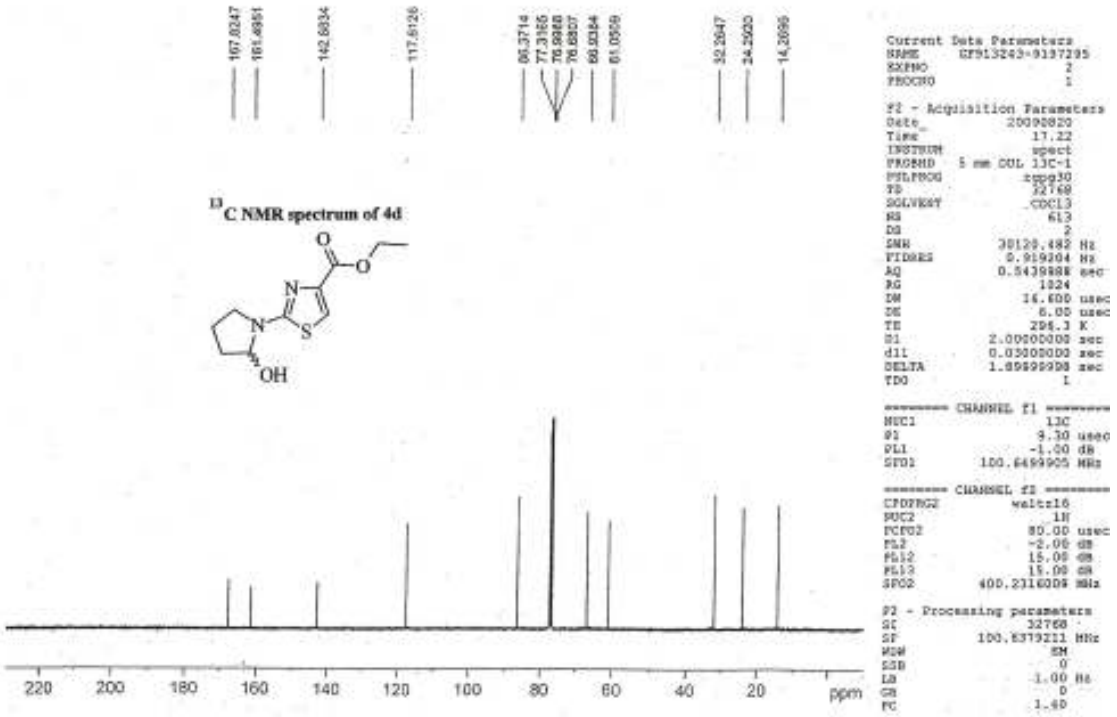
Peak No	RT min	Area	Area %
1	1.70	501.27	3.46
2	2.85	18.85	0.13
3	3.06	13954.60	96.41

Mass spectrum of 4d



Mass Caled *m/z* = 242.0
Found *m/z* = 243.0 (M+1)

16. Mass Spectrum of Ethyl 2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol e-4-carboxylate 4d.



17. ^{13}C Spectrum of Ethyl 2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol e-4-carboxylate 4d.

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analytic functional testing
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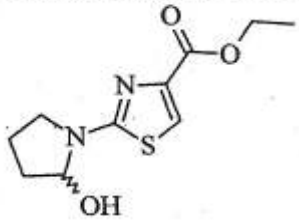
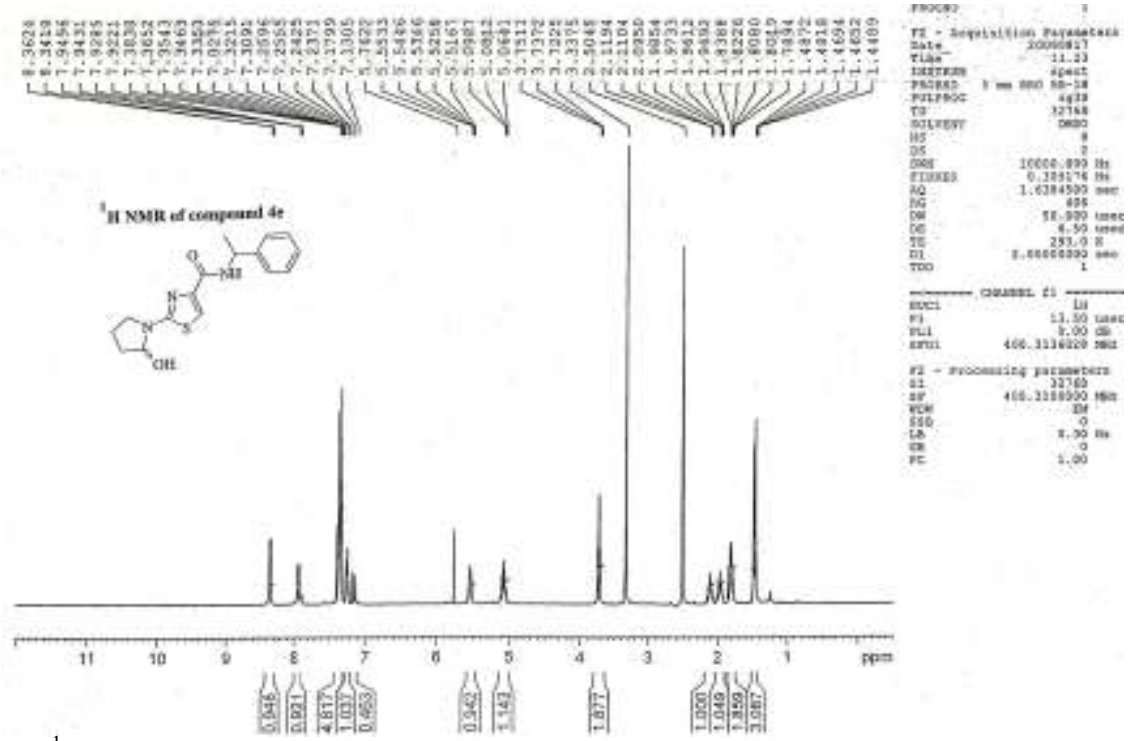
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
19 GF913706-9204586A	48.87	5.568	11.93	13.021
20 GF913706-9204586A	48.87	5.599	11.40	13.456
Mean value [%]	48.87	5.583	11.66	13.239
Deviation, abs. [%]	0.00	0.022	0.37	0.307
Delta [%]	0.00	0.031	0.53	0.434

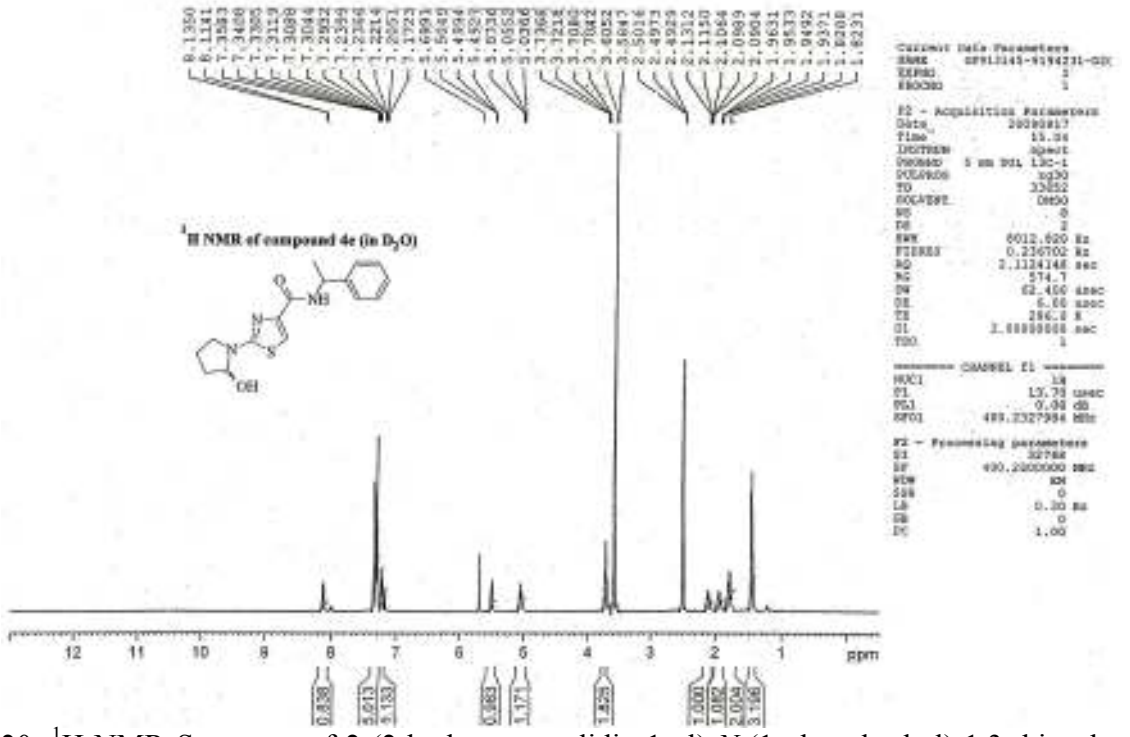
Elemental analysis of compound 4d



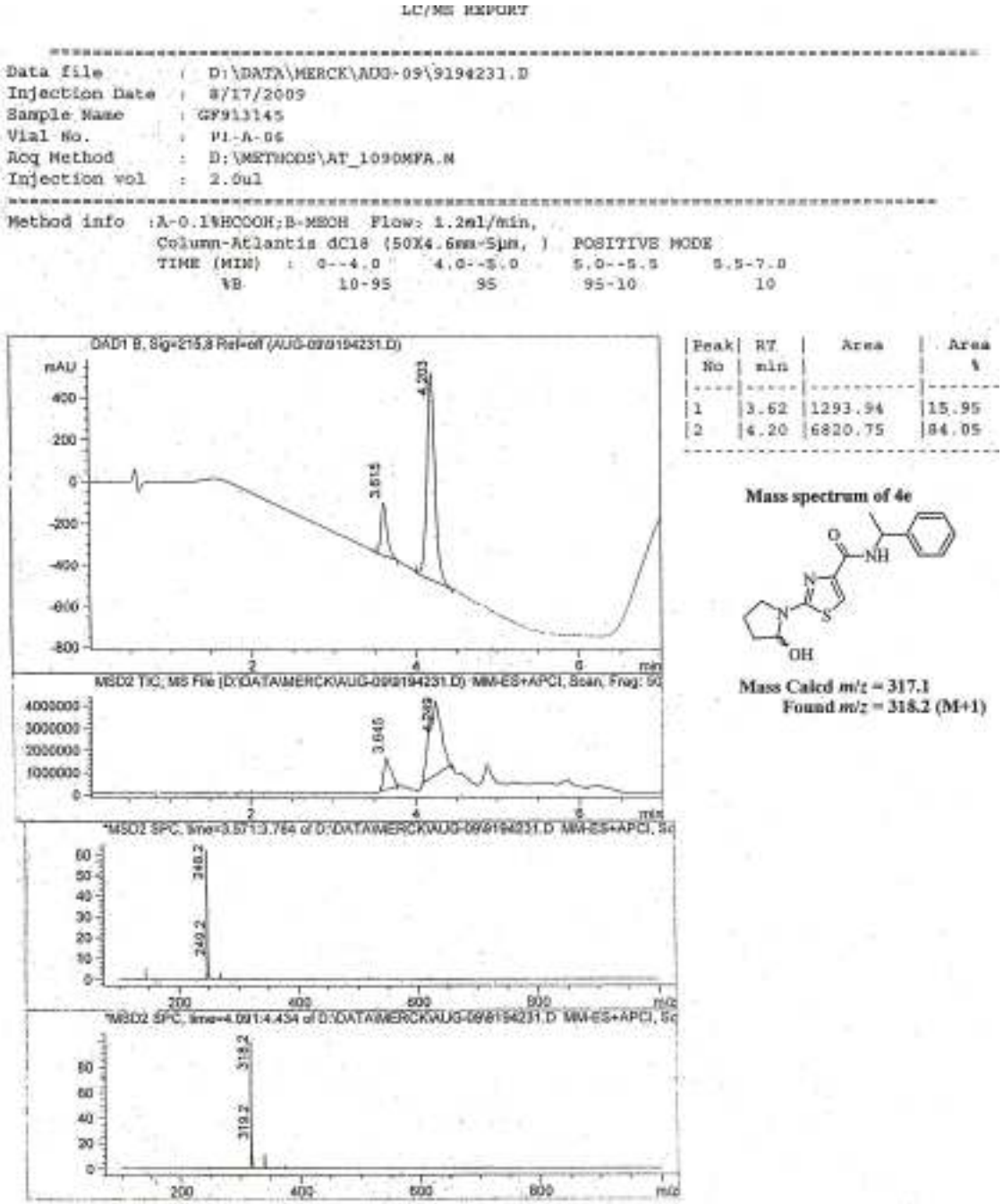
18. Elemental Analysis of Ethyl 2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol e-4-carboxylate 4d.



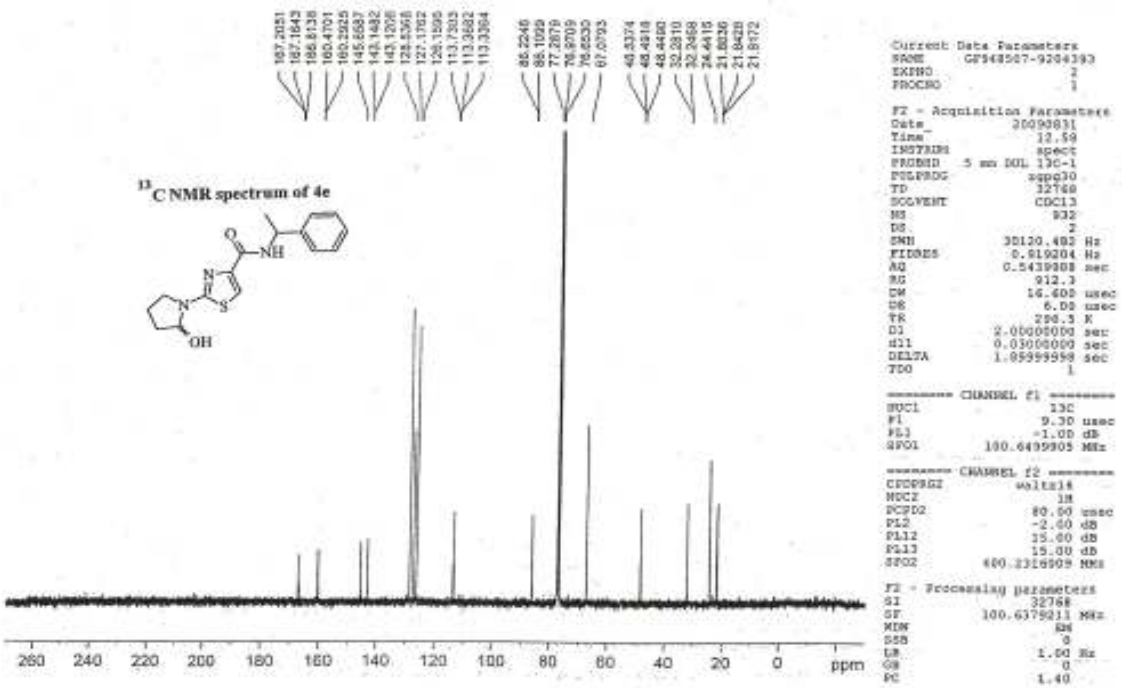
19. ^{1}H-NMR Spectrum of 2-(2-hydroxypyrrolidin-1-yl)-*N*-(1-phenyl ethyl)-1,3-thiazole-4-carboxamide 4e.



20. ^{1}H-NMR Spectrum of 2-(2-hydroxypyrrolidin-1-yl)-*N*-(1-phenyl ethyl)-1,3-thiazole-4-carboxamide 4e in D_2O.



21. Mass Spectrum of 2-(2-hydroxypyrrolidin-1-yl)-*N*-(1-phenyl ethyl)-1,3-thiazole-4-carboxamide 4e.



22. ^{13}C Spectrum of 2-(2-hydroxypyrrolidin-1-yl)-*N*-(1-phenyl ethyl)-1,3-thiazole-4-carboxamide 4e.

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analytic functional testing
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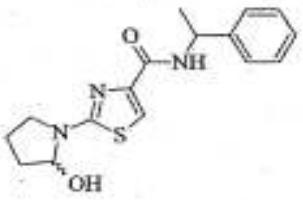
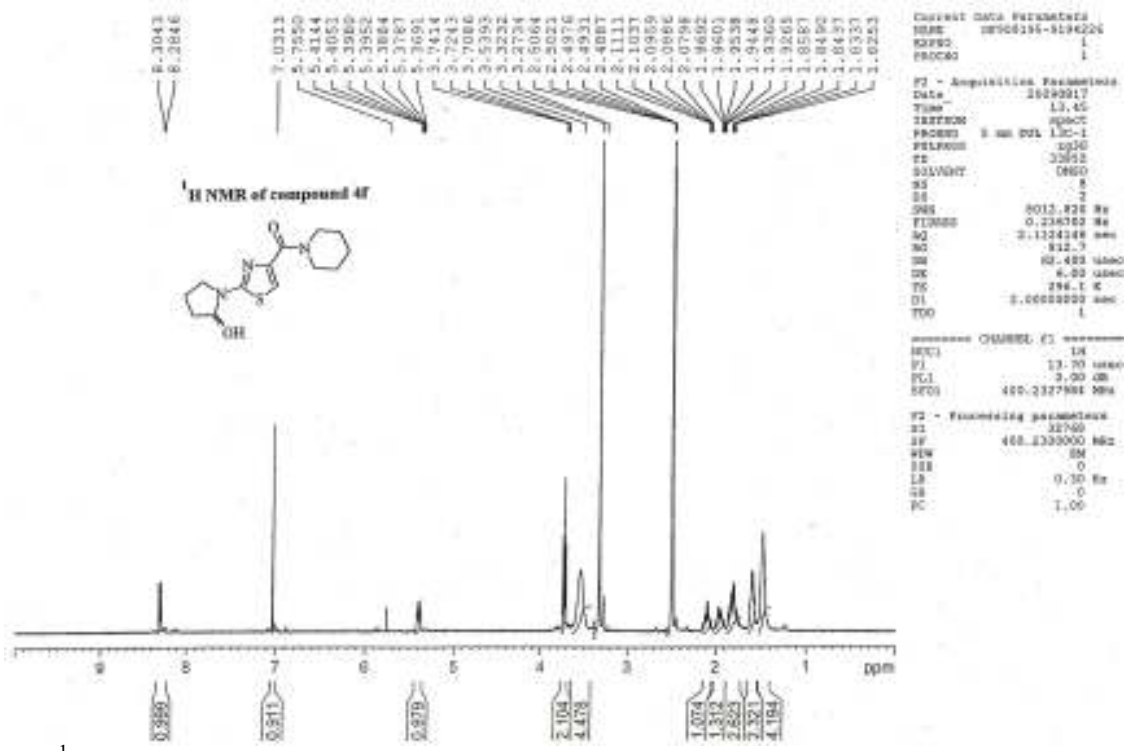
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
26 GI948507-9201886A	57.90	5.822	12.58	10.121
27 GI948507-9201886A	58.82	5.904	12.93	10.064
Mean value [%]	58.36	5.863	12.76	10.093
Deviation, abs. [%]	0.65	0.058	0.25	0.041
Delta [%]	0.92	0.082	0.36	0.057

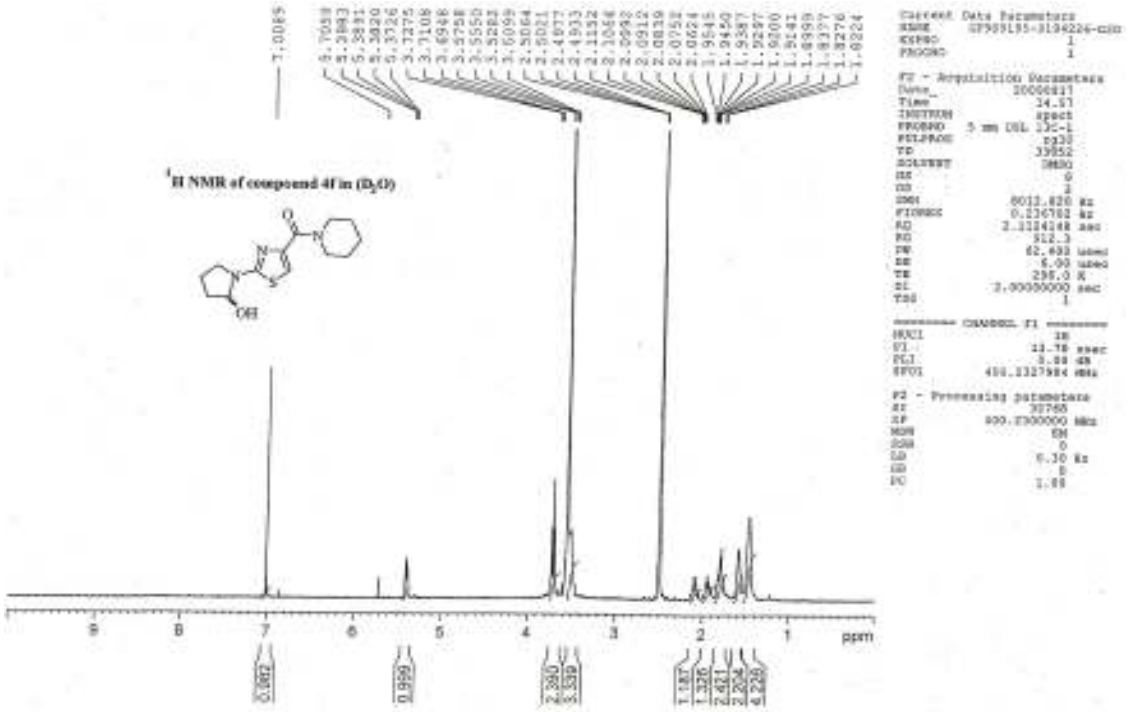
Elemental analysis of compound 4e



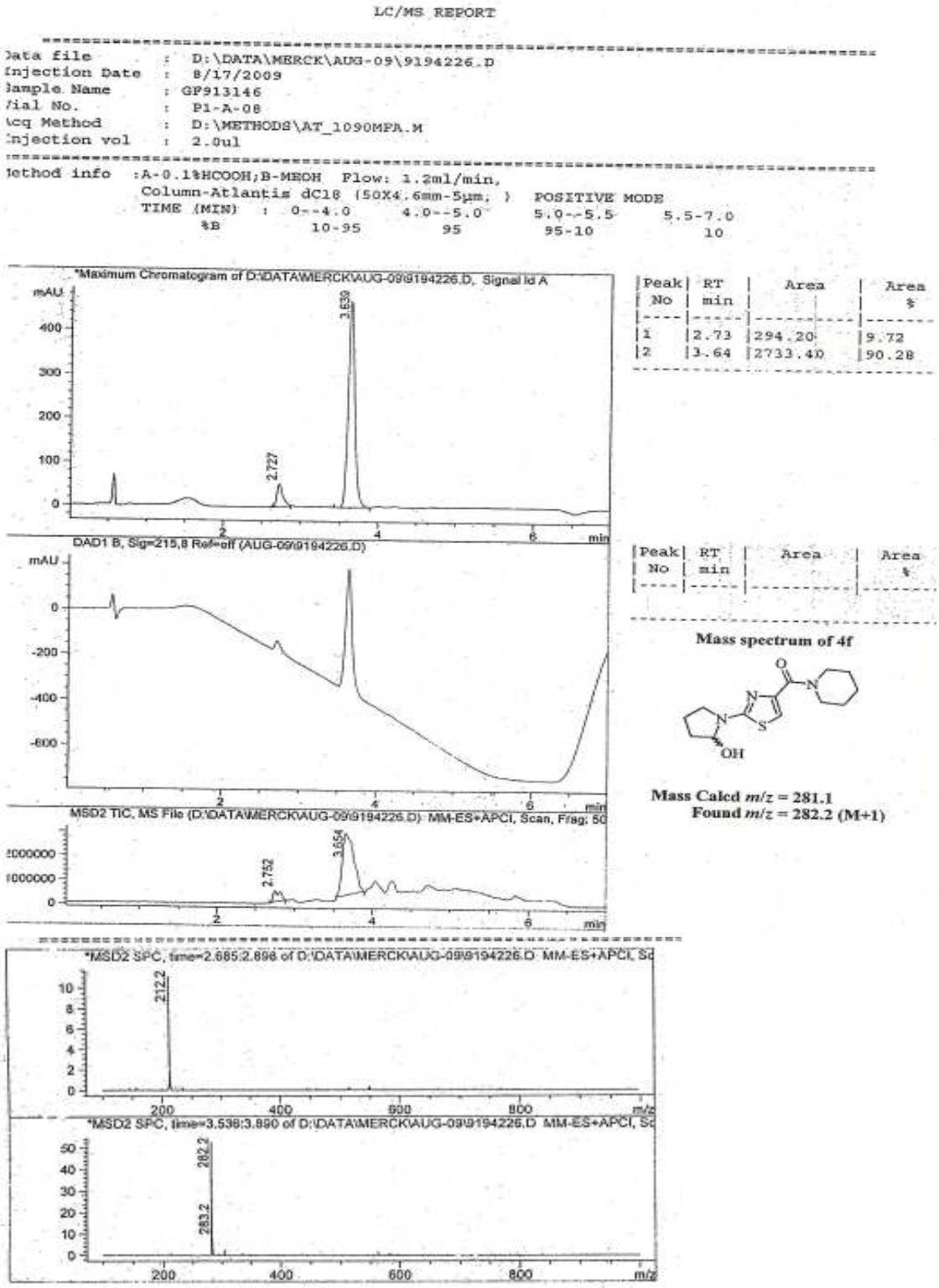
23. Elemental Analysis of 2-(2-hydroxypyrrolidin-1-yl)-*N*-(1-phenyl ethyl)-1,3-thiazole-4-carboxamide 4e.



24. ^{1}H-NMR Spectrum of [2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol-4-yl] (piperidin-1-yl)methanone 4f.



25. ^{1}H-NMR Spectrum [2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol-4-yl] (piperidin-1-yl)methanone 4f in D_2O



26. Mass Spectrum of [2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol-4-yl] (piperidin-1-yl)methanone 4f.

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analytic functional testing
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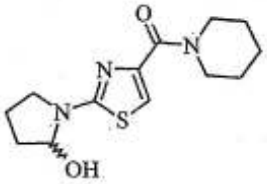
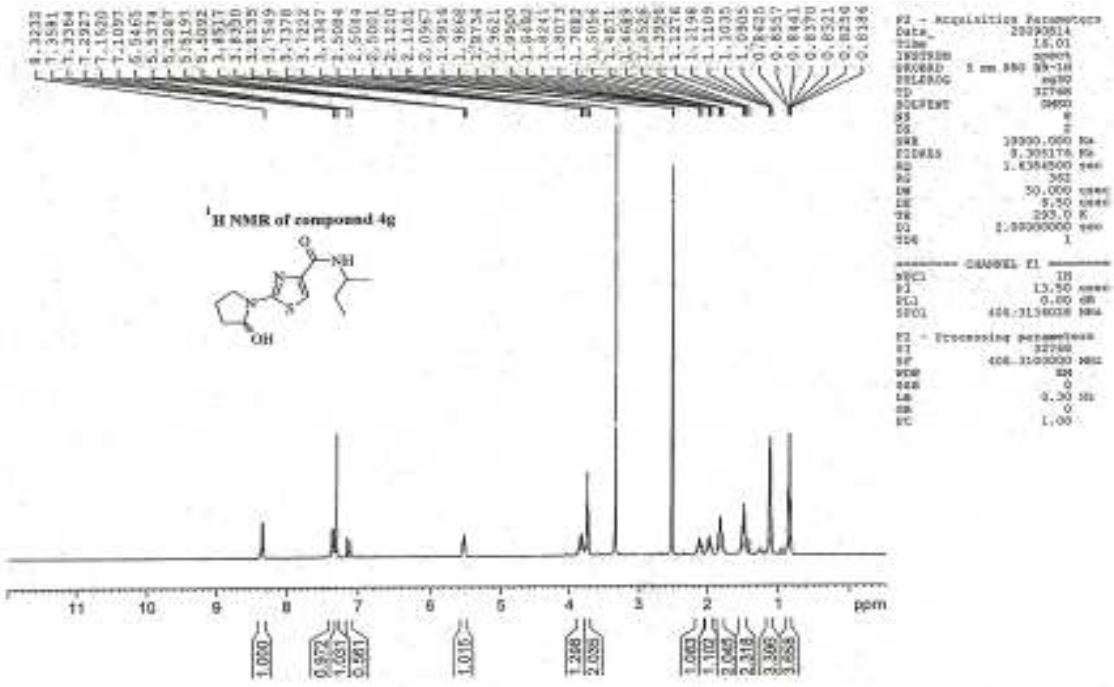
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
18 GF914663-9205240A	54.44	6.639	13.42	10.013
19 GF914663-9205240A	54.80	6.694	13.36	10.134
Mean value [%]	54.62	6.667	13.39	10.073
Deviation, abs. [%]	0.25	0.038	0.04	0.085
Delta [%]	0.36	0.054	0.06	0.121

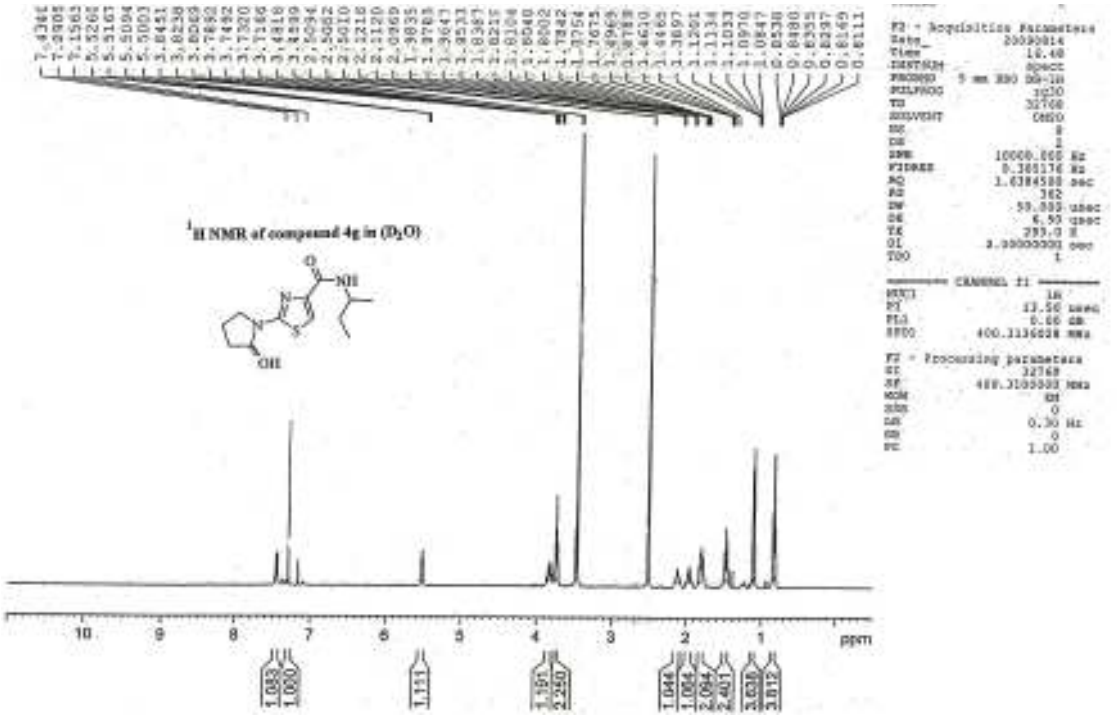
Elemental analysis of compound 4f



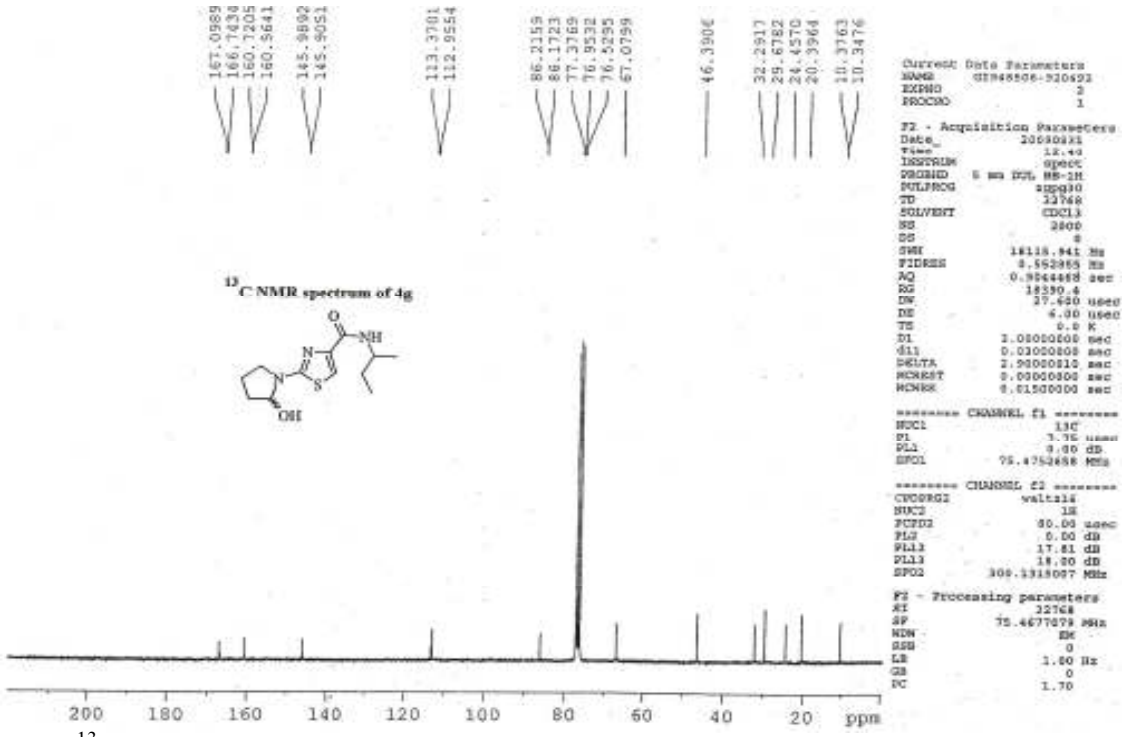
27. Elemental Analysis of [2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazol-4-yl] (piperidin-1-yl)methanone 4f.



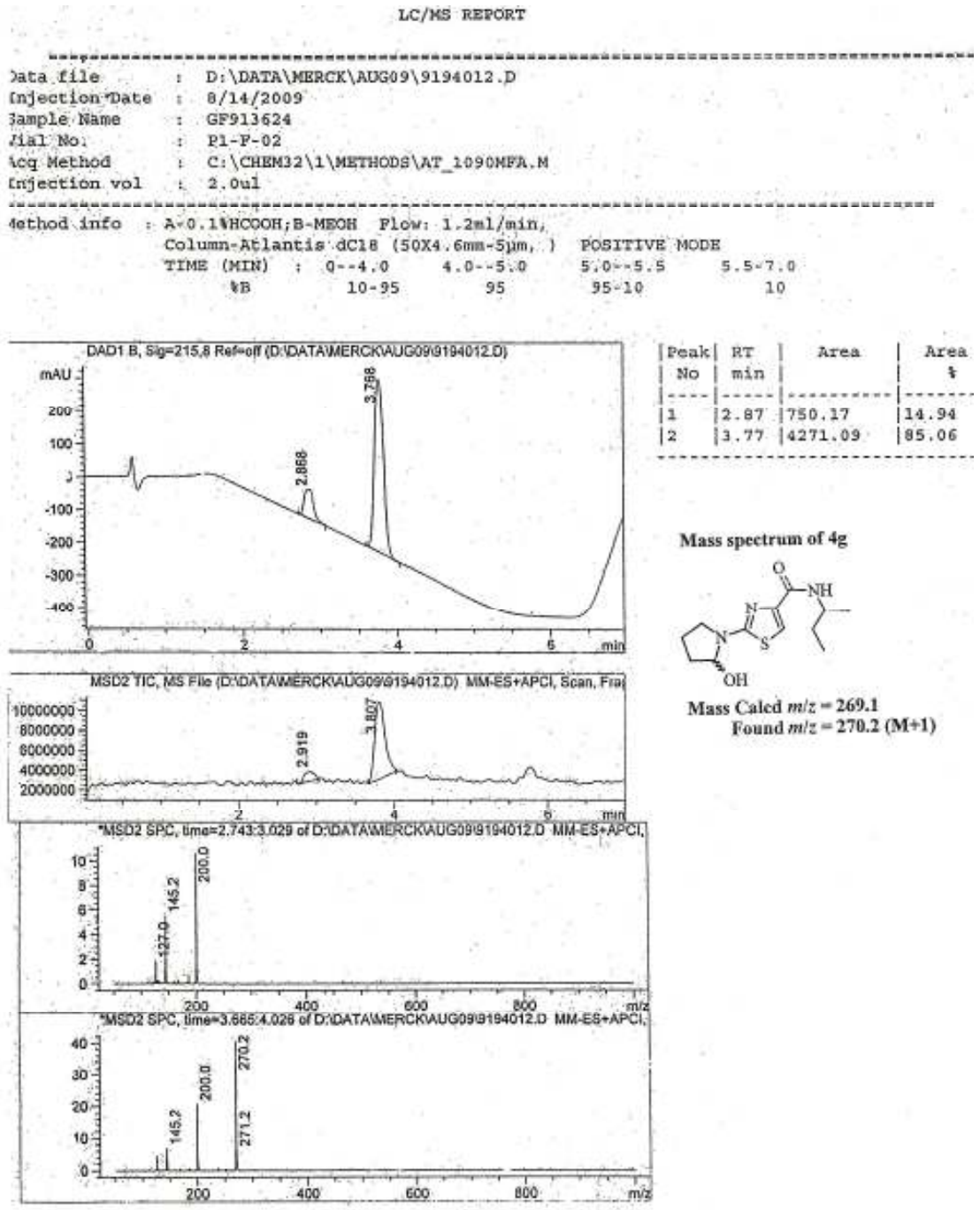
28. ^{1}H-NMR Spectrum of *N*-(butan-2-yl)-2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazole-4-carboxamide 4g.



29. ^{1}H-NMR Spectrum of *N*-(butan-2-yl)-2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazole-4-carboxamide 4g in D_2O.



30. ^{13}C Spectrum of *N*-(butan-2-yl)-2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazole-4-carboxamide 4g.



31. Mass Spectrum of *N*-(butan-2-yl)-2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazole-4-carboxamide 4g.

analytic functional testing
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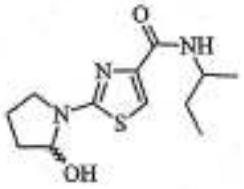
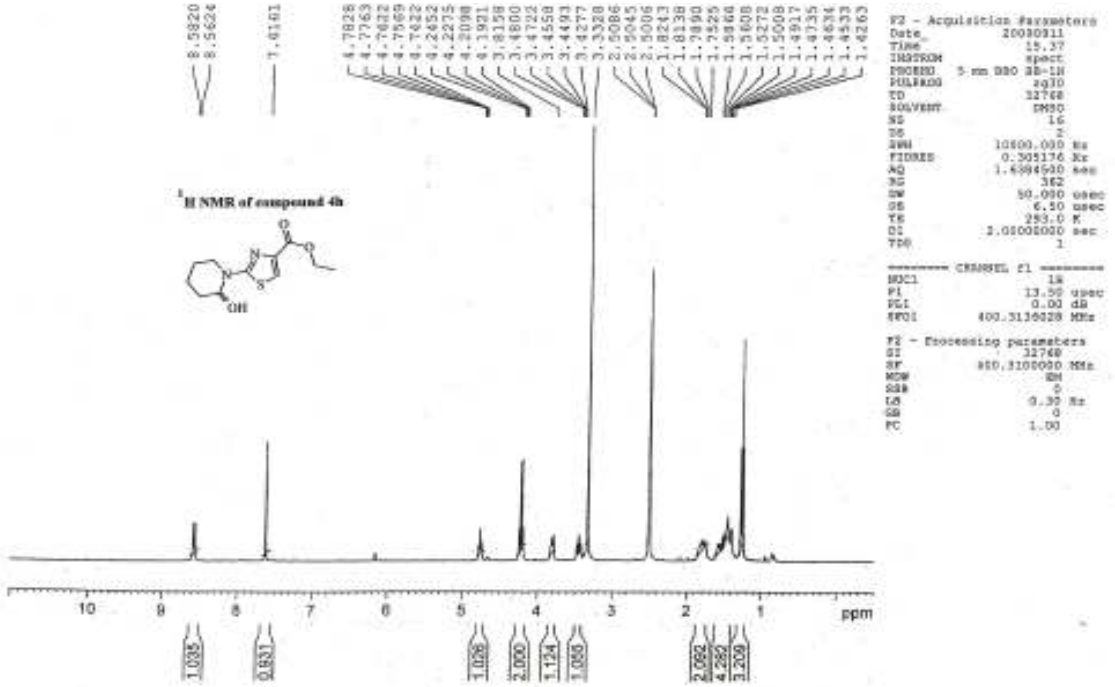
Statistic report

Name	C [%]	H [%]	N [%]	S [%]
20 GF914663-9205240	44.42	6.048	13.26	9.284
21 GF914663-9205240	42.94	5.684	12.08	9.105
Mean value [%]	43.68	5.866	12.67	9.195
Deviation, abs. [%]	1.04	0.257	0.83	0.126
Delta [%]	1.47	0.364	1.18	0.179

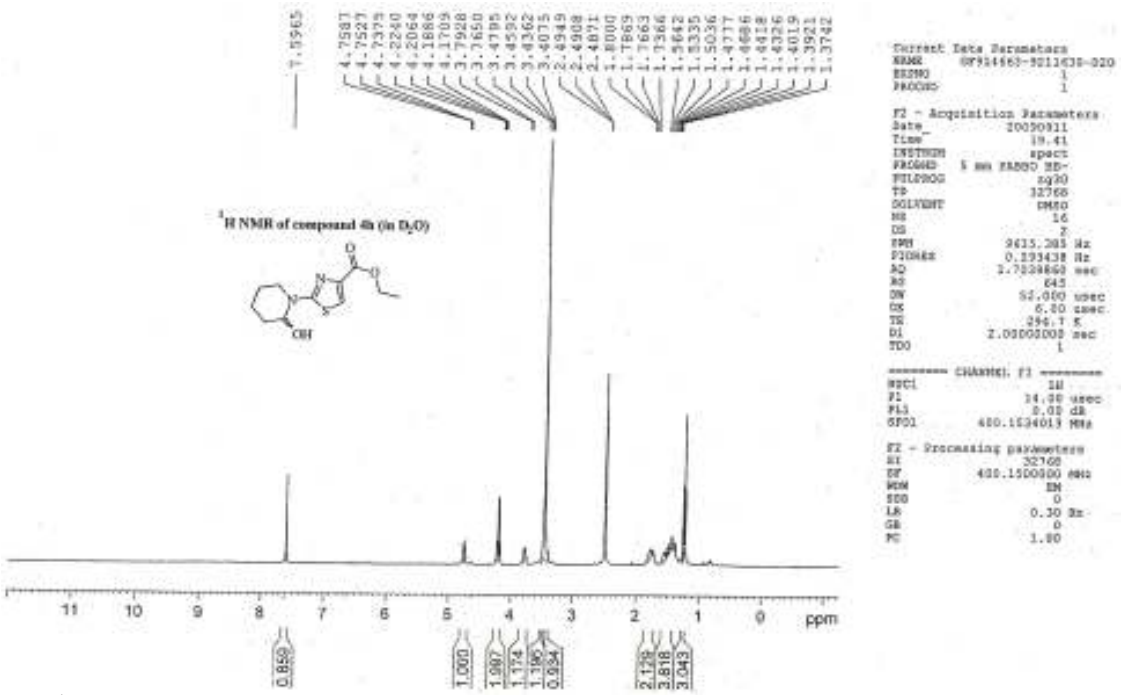
Elemental analysis of compound 4g



32. Elemental Analysis of *N*-(butan-2-yl)-2-(2-hydroxypyrrolidin-1-yl)-1,3-thiazole-4-carboxamide 4g.



33. ^{1}H-NMR Spectrum of Ethyl-2(2-hydroxypiperidin-1-yl)-1,3-thiazole-4-carboxylate 4h.



34. ^{1}H-NMR Spectrum of Ethyl-2(2-hydroxypiperidin-1-yl)-1,3-thiazole-4-carboxylate 4h in D_2O.