SUPPORTING INFORMATION

Designing Functionally Substituted Pyridine-Carbohydrazides for Potent Antibacterial and Devouring Antifungal Effect on Multidrug Resistant (MDR) Strains

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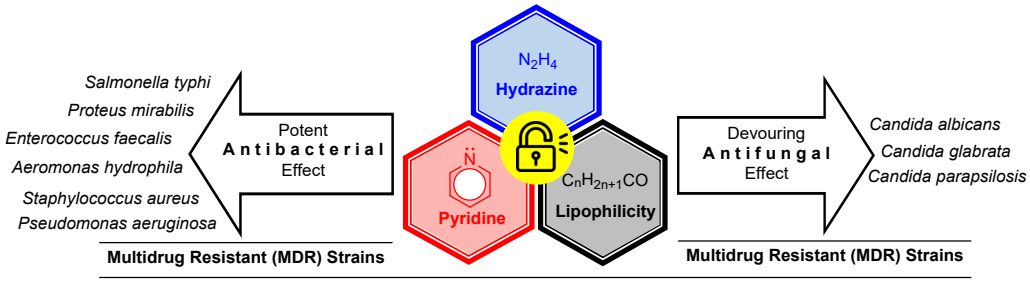

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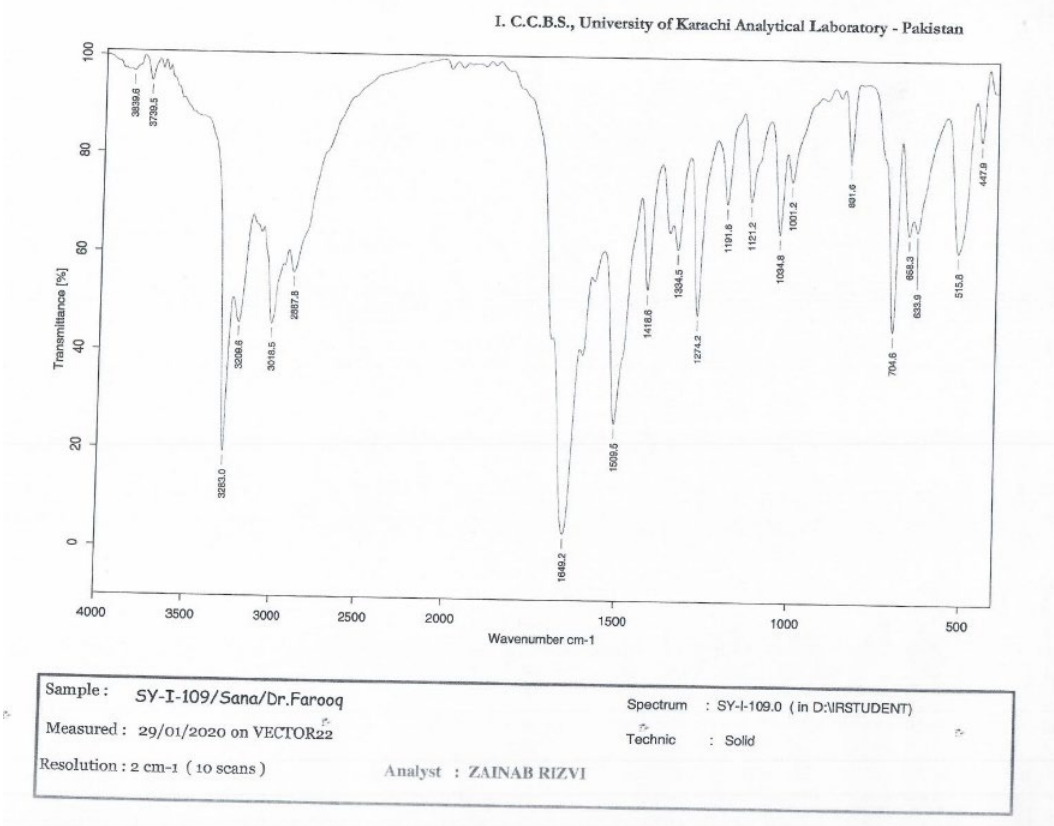


Figure S1. IR spectrum of *N*'-Acetylpridine-3-carbohydrazide (**3**)

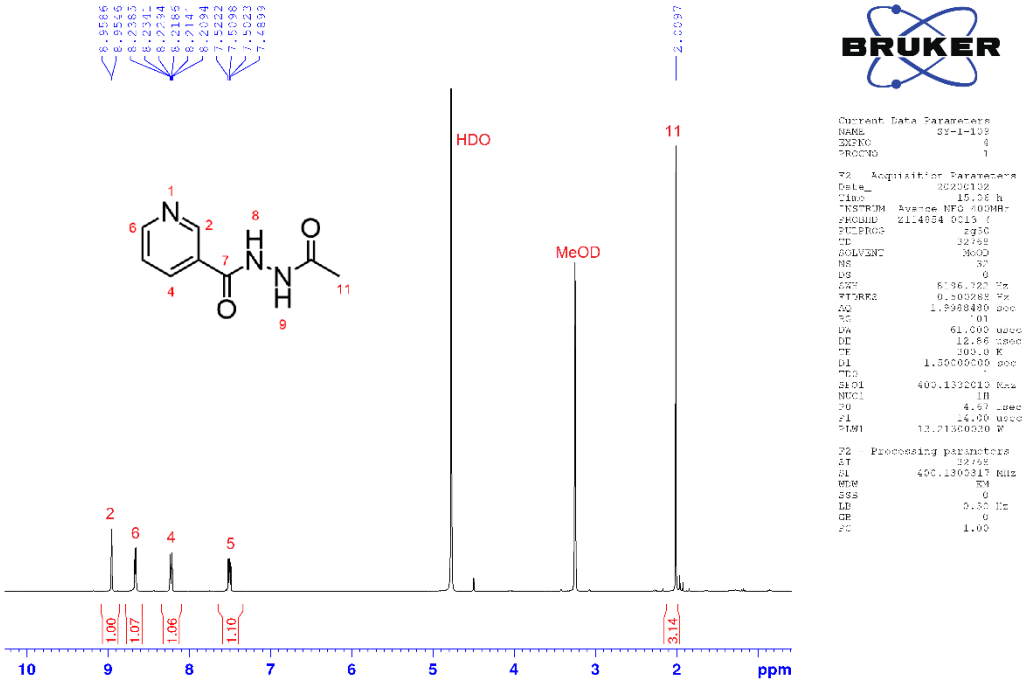


Figure S2. ^{1}H-NMR spectrum of *N*'-Acetylpridine-3-carbohydrazide (**3**)

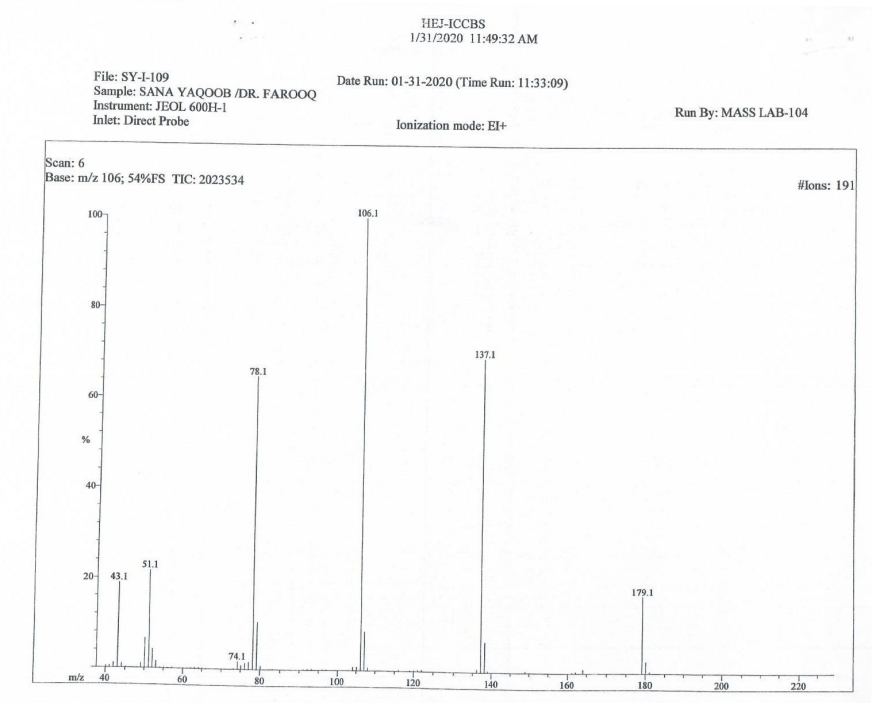


Figure S3. LR-MS (EI) spectrum of *N*'-Acetylpridine-3-carbohydrazide (**3**)

File : D:\Data\sy-i-109-190220-c9.RAW
Full ms [49.500 - 750.500] - Range: 67.000 - 750.500
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
67.0558	1.2	67.0548	15.7	1.1	2.5	C_5H_7
69.0704	3.3	69.0704	-0.5	-0.0	1.5	C_5H_9
70.0772	3.8	70.0783	-14.4	-1.0	1.0	C_5H_{10}
71.0853	2.0	71.0861	-10.9	-0.8	0.5	C_5H_{11}
74.0468	1.4	74.0480	-16.0	-1.2	1.0	$C_3H_6O_2N$
76.0176	15.4	76.0187	-14.2	-1.1	5.5	C_6H_4N
		76.0160	21.1	1.6	1.0	$C_3H_4O_2$
77.0255	38.5	77.0265	-14.1	-1.1	5.0	C_5H_3N
		77.0239	20.7	1.6	0.5	$C_3H_5O_2$
78.0332	60.0	78.0344	-14.8	-1.2	4.5	C_5H_4N
		78.0317	19.6	1.5	0.0	C_4H_4O
79.0402	12.4	79.0422	-25.0	-2.0	4.0	C_5H_5N
		79.0382	25.9	2.0	0.0	$H_3O_2N_2$
81.0699	1.7	81.0704	-6.6	-0.5	2.5	C_6H_9
83.0851	2.1	83.0861	-11.5	-1.0	1.5	C_5H_{11}
90.0344	1.4	90.0344	0.0	0.0	5.5	C_6H_4N
		90.0317	29.8	2.7	1.0	$C_3H_4O_2$
91.0415	30.5	91.0422	-7.8	-0.7	5.0	C_6H_5N
		91.0395	21.7	2.0	0.5	$C_4H_5O_2$
92.0402	4.3	92.0374	29.6	2.7	5.0	C_5H_6N
97.1014	1.4	97.1017	-3.3	-0.3	1.5	C_7H_{13}
98.0467	2.5	98.0480	-13.5	-1.3	3.0	$C_4H_6O_2N$
103.0306	2.4	103.0296	9.0	0.9	6.5	$C_6H_3N_2$
104.0382	74.1	104.0374	7.5	0.8	6.0	$C_6H_4N_2$
105.0570	13.1	105.0578	-7.7	-0.8	5.0	C_7H_7N
		105.0552	17.8	1.9	0.5	$C_5H_5O_2$
106.0288	67.4	106.0293	-4.9	-0.5	5.5	$C_6H_4O_2N$
		106.0266	20.3	2.2	1.0	$C_5H_6O_2$
107.0342	5.8	107.0344	-2.4	-0.3	0.5	$C_5H_7O_2$
		107.0331	10.1	1.1	1.0	$C_5H_5O_2N$
		107.0371	-27.5	-2.9	5.0	C_6H_5ON
112.1258	1.1	112.1252	5.5	0.6	1.0	C_8H_{16}
119.0481	6.5	119.0483	-2.2	-0.3	6.0	$C_8H_5N_2$
		119.0497	-13.4	-1.6	5.5	C_9H_7O
		119.0457	20.4	2.4	1.5	$C_5H_5O_2N$
120.0331	2.7	120.0324	5.9	0.7	6.0	C_8H_6ON
		120.0297	28.2	3.4	1.5	$C_5H_6O_2N$
123.0321	1.6	123.0320	0.7	0.1	5.0	C_7H_7ON
		123.0293	22.5	2.8	0.5	$C_7H_5O_2$
125.0279	1.7	125.0265	10.9	1.4	9.0	$C_6H_3N_2$
137.0590	24.3	137.0589	0.4	0.1	5.0	C_8H_7ON
		137.0603	-9.4	-1.3	4.5	C_9H_9O
		137.0562	20.0	2.7	0.5	$C_7H_7O_2N$
138.0622	2.1	138.0641	-13.7	-1.9	0.0	$C_7H_{10}O_2N$
146.0333	1.4	146.0328	4.0	0.6	3.0	$C_7H_8O_2N$
		146.0354	-14.4	-2.1	7.5	$C_8H_6ON_2$
		146.0368	-23.6	-3.4	7.0	$C_9H_6O_2$
147.0417	1.4	147.0406	7.4	1.1	2.5	$C_7H_7O_2N$
		147.0433	-10.8	-1.6	7.0	$C_8H_5ON_2$
		147.0446	-19.9	-2.9	6.5	$C_9H_5O_2$
149.0230	1.8	149.0225	3.0	0.4	7.0	$C_8H_5ON_2$
		149.0239	-6.1	-0.9	6.5	$C_9H_5O_2$
		149.0198	20.9	3.1	2.5	$C_7H_9O_2N$
		149.0265	-24.0	-3.6	11.0	$C_{11}H_3N$
161.0573	88.0	161.0562	6.6	1.1	2.5	$C_8H_9O_2N$
		161.0589	-10.0	-1.6	7.0	$C_9H_7ON_2$
		161.0603	-18.3	-3.0	6.5	$C_{10}H_9O_2$
162.0611	9.2	162.0641	-18.2	-2.9	2.0	$C_8H_{10}O_2N_2$
179.0688	6.6	179.0695	-3.7	-0.7	6.0	$C_9H_9O_2N_2$
		179.0708	-11.2	-2.0	5.5	$C_{10}H_{11}O_2$
		179.0668	11.2	2.0	1.5	$C_8H_9O_3N_2$
		179.0735	-26.2	-4.7	10.0	$C_{11}H_9N$

Figure S4. HR-MS (EI) spectral data of *N*'-Acetylpridine-3-carbohydrazide (**3**)

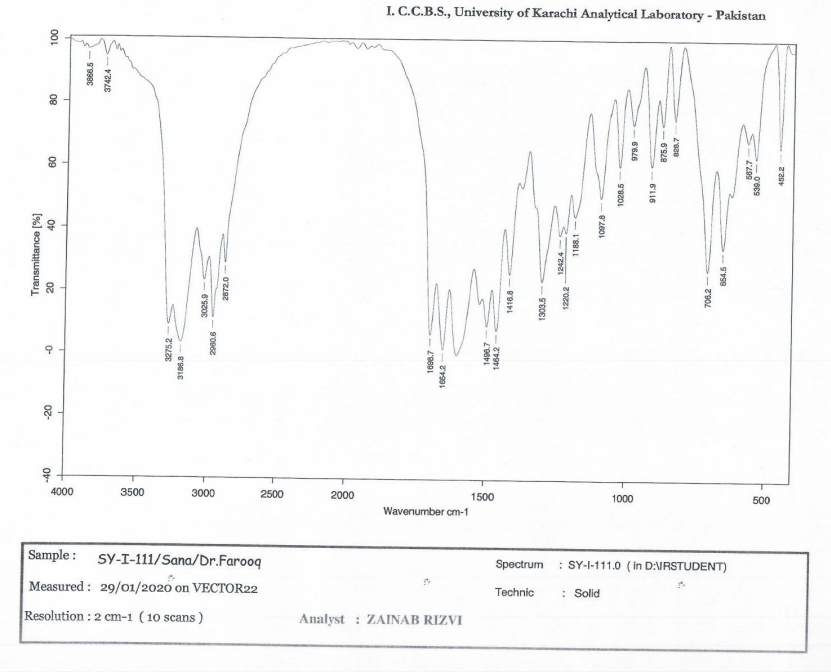


Figure S5. IR spectrum of *N*'-Butyrylpridine-3-carbohydrazide (**4**)

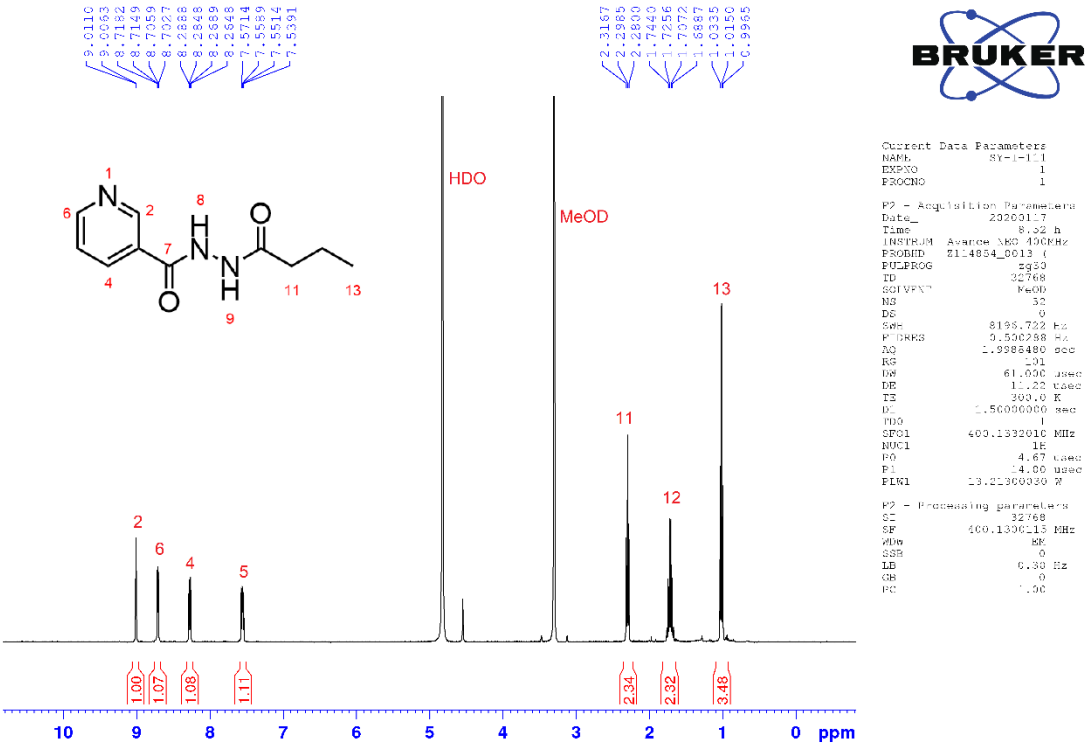


Figure S6. [1]H NMR spectrum of N'-Butyrylpridine-3-carbohydrazide (**4**)

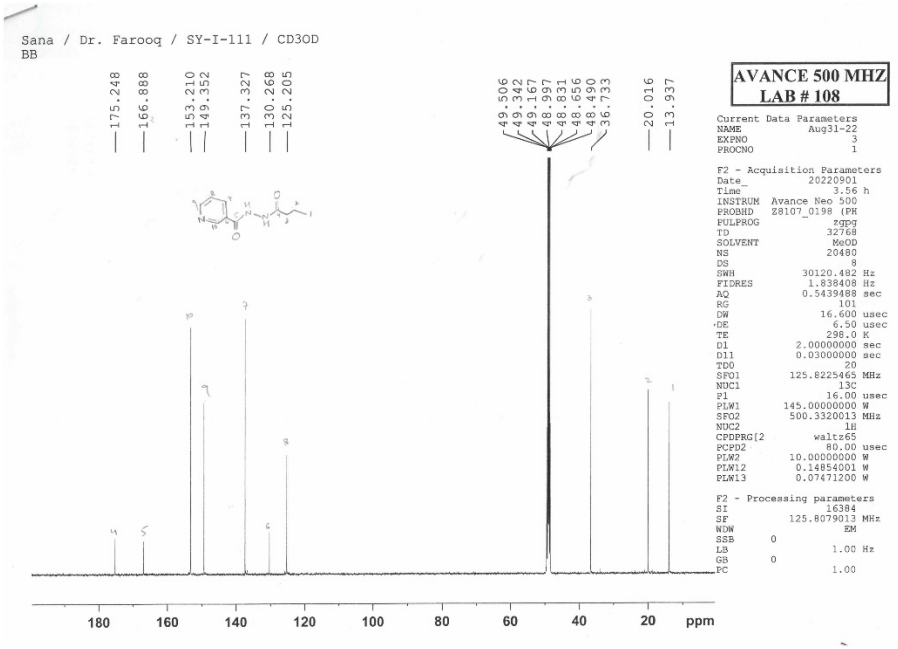


Figure S7. ^{13}C NMR spectrum of *N*'-Butyrylpridine-3-carbohydrazide (**4**)

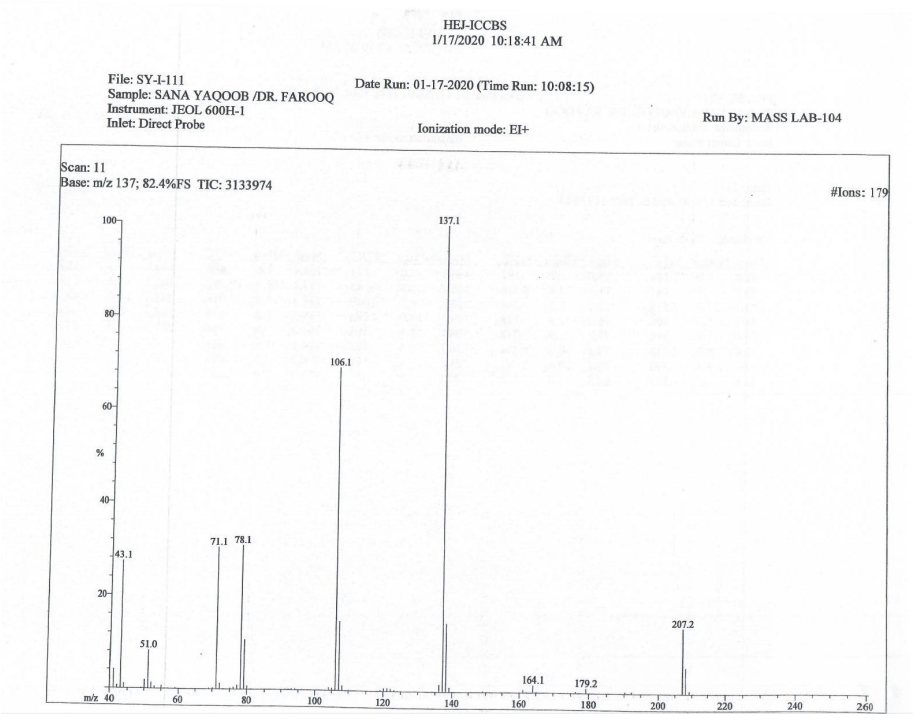
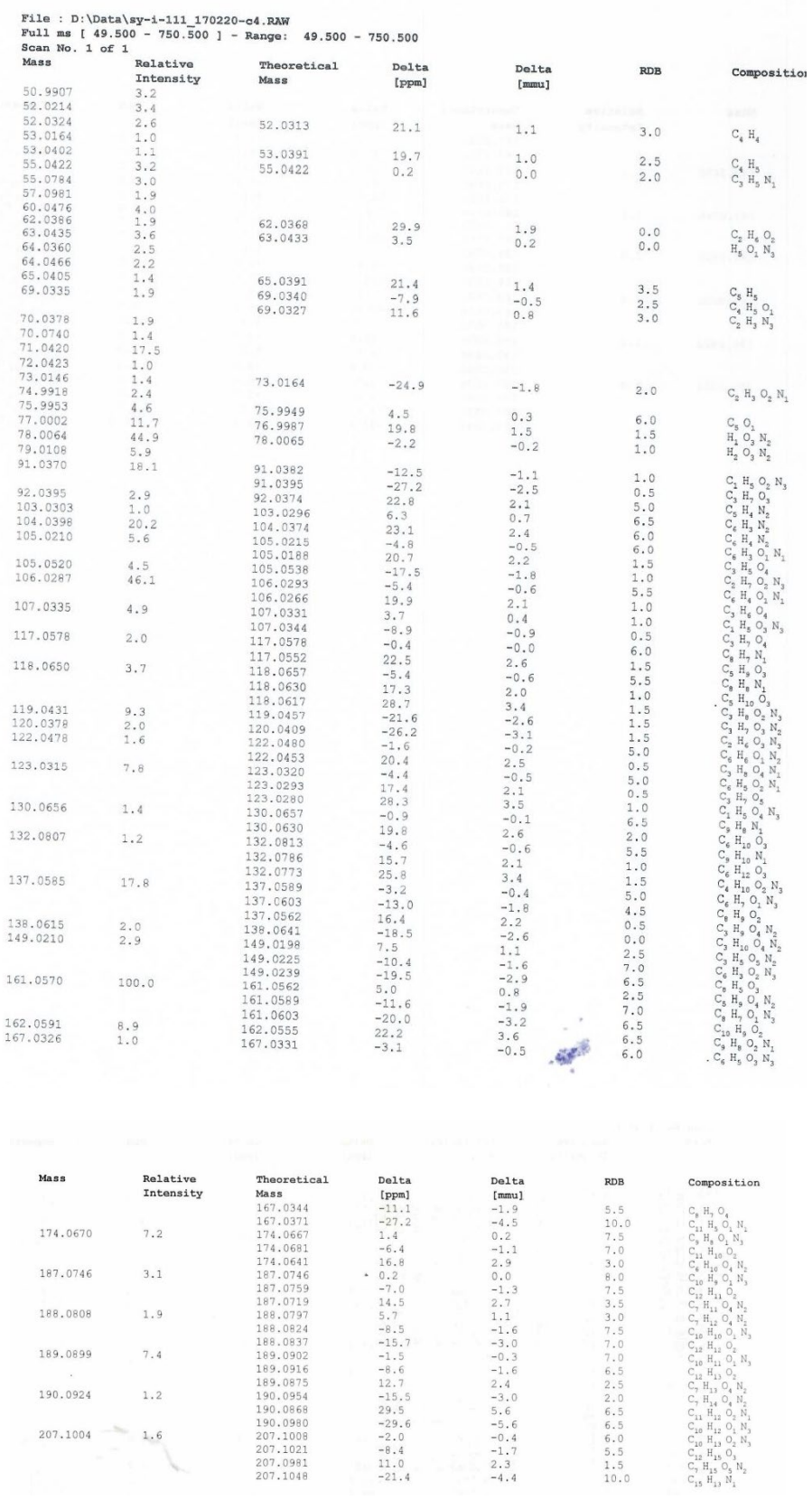


Figure S8. LR-MS (EI) spectrum of *N*'-Butyrylpridine-3-carbohydrazide (**4**)



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Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
50.9907	3.2					
52.0214	3.4					
52.0324	2.6	52.0313	21.1	1.1	3.0	C_4H_4
53.0164	1.0					
53.0402	1.1	53.0391	19.7	1.0	2.5	C_4H_5
55.0422	3.2	55.0422	0.2	0.0	2.0	$C_3H_5N_1$
55.0784	3.0					
57.0981	1.9					
60.0476	4.0					
62.0386	1.9	62.0368	29.9	1.9	0.0	$C_2H_6O_2$
63.0435	3.6	63.0433	3.5	0.2	0.0	$H_5O_1N_3$
64.0360	2.5					
64.0466	2.2					
65.0405	1.4	65.0391	21.4	1.4	3.5	C_5H_5
69.0335	1.9	69.0340	-7.9	-0.5	2.5	$C_4H_5O_1$
		69.0327	11.6	0.8	3.0	$C_2H_3N_3$
70.0378	1.9					
70.0740	1.4					
71.0420	17.5					
72.0423	1.0					
73.0146	1.4	73.0164	-24.9	-1.8	2.0	$C_2H_3O_2N_1$
74.9918	2.4					
75.9953	4.6	75.9949	4.5	0.3	6.0	C_5O_1
77.0002	11.7	76.9987	19.8	1.5	1.5	$H_1O_3N_2$
78.0064	44.9	78.0065	-2.2	-0.2	1.0	$H_2O_3N_2$
79.0108	5.9					
91.0370	18.1	91.0382	-12.5	-1.1	1.0	$C_1H_5O_2N_3$
		91.0395	-27.2	-2.5	0.5	$C_2H_7O_3$
92.0395	2.9	92.0374	22.8	2.1	5.0	$C_5H_4N_2$
103.0303	1.0	103.0296	6.3	0.7	6.5	$C_6H_3N_2$
104.0398	20.2	104.0374	23.1	2.4	6.0	$C_6H_4N_2$
105.0210	5.6	105.0215	-4.8	-0.5	6.0	$C_6H_3O_1N_1$
		105.0188	20.7	2.2	1.5	$C_3H_5O_4$
105.0520	4.5	105.0538	-17.5	-1.8	1.0	$C_5H_7O_2N_1$
106.0287	46.1	106.0293	-5.4	-0.6	5.5	$C_6H_4O_1N_2$
		106.0266	19.9	2.1	1.0	$C_3H_6O_4$
107.0335	4.9	107.0331	3.7	0.4	1.0	$C_1H_5O_3N_3$
		107.0344	-8.9	-0.9	0.5	$C_3H_7O_4$
117.0578	2.0	117.0578	-0.4	-0.0	6.0	$C_9H_7N_1$
		117.0552	22.5	2.6	1.5	$C_5H_9O_3$
118.0650	3.7	118.0657	-5.4	-0.6	5.5	$C_9H_8N_1$
		118.0630	17.3	2.0	1.0	$C_5H_{10}O_3$
		118.0617	28.7	3.4	1.5	$C_3H_8O_2N_3$
119.0431	9.3	119.0457	-21.6	-2.6	1.5	$C_3H_7O_3N_2$
120.0378	2.0	120.0409	-26.2	-3.1	1.5	$C_2H_6O_3N_3$
122.0478	1.6	122.0480	-1.6	-0.2	5.0	$C_6H_6O_1N_2$
		122.0453	20.4	2.5	0.5	$C_3H_8O_4N_1$
123.0315	7.8	123.0320	-4.4	-0.5	5.0	$C_6H_5O_2N_1$
		123.0293	17.4	2.1	0.5	$C_3H_7O_5$
		123.0280	28.3	3.5	1.0	$C_1H_5O_4N_3$
130.0656	1.4	130.0657	-0.9	-0.1	6.5	$C_9H_8N_1$
		130.0630	19.8	2.6	2.0	$C_6H_{10}O_3$
132.0807	1.2	132.0813	-4.6	-0.6	5.5	$C_9H_{10}N_1$
		132.0786	15.7	2.1	1.0	$C_6H_{12}O_3$
		132.0773	25.8	3.4	1.5	$C_4H_{10}O_2N_3$
137.0585	17.8	137.0589	-3.2	-0.4	5.0	$C_6H_7O_1N_3$
		137.0603	-13.0	-1.8	4.5	$C_8H_9O_2$
		137.0562	16.4	2.2	0.5	$C_3H_9O_4N_2$
138.0615	2.0	138.0641	-18.5	-2.6	0.0	$C_3H_{10}O_4N_2$
149.0210	2.9	149.0198	7.5	1.1	2.5	$C_3H_5O_5N_2$
		149.0225	-10.4	-1.6	7.0	$C_6H_3O_2N_3$
		149.0239	-19.5	-2.9	6.5	$C_9H_5O_3$
161.0570	100.0	161.0562	5.0	0.8	2.5	$C_5H_9O_4N_2$
		161.0589	-11.6	-1.9	7.0	$C_8H_7O_1N_3$
		161.0603	-20.0	-3.2	6.5	$C_{10}H_9O_2$
162.0591	8.9	162.0555	22.2	3.6	6.5	$C_9H_8O_2N_1$
167.0326	1.0	167.0331	-3.1	-0.5	6.0	$C_6H_5O_3N_3$

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
		167.0344	-11.1	-1.9	5.5	$C_9H_7O_4$
		167.0371	-27.2	-4.5	10.0	$C_{11}H_5O_1N_1$
174.0670	7.2	174.0667	1.4	0.2	7.5	$C_9H_8O_1N_3$
		174.0681	-6.4	-1.1	7.0	$C_{11}H_{10}O_2$
		174.0641	16.8	2.9	3.0	$C_7H_{10}O_4N_2$
187.0746	3.1	187.0746	0.2	0.0	8.0	$C_{10}H_9O_3N_3$
		187.0759	-7.0	-1.3	7.5	$C_{12}H_{11}O_2$
		187.0719	14.5	2.7	3.5	$C_7H_{11}O_4N_2$
188.0808	1.9	188.0797	5.7	1.1	3.0	$C_7H_{12}O_4N_2$
		188.0824	-8.5	-1.6	7.5	$C_{10}H_{10}O_1N_3$
		188.0837	-15.7	-3.0	7.0	$C_{12}H_{12}O_2$
189.0899	7.4	189.0902	-1.5	-0.3	7.0	$C_{10}H_{11}O_1N_3$
		189.0916	-8.6	-1.6	6.5	$C_{12}H_{13}O_2$
		189.0875	12.7	2.4	2.5	$C_7H_{13}O_4N_2$
190.0924	1.2	190.0954	-15.5	-3.0	2.0	$C_7H_{14}O_4N_2$
		190.0868	29.5	5.6	6.5	$C_{11}H_{12}O_2N_1$
		190.0980	-29.6	-5.6	6.5	$C_{10}H_{12}O_1N_3$
207.1004	1.6	207.1008	-2.0	-0.4	6.0	$C_{10}H_{13}O_2N_3$
		207.1021	-8.4	-1.7	5.5	$C_{12}H_{15}O_3$
		207.0981	11.0	2.3	1.5	$C_7H_{15}O_3N_2$
		207.1048	-21.4	-4.4	10.0	$C_{15}H_{13}N_1$

Figure S9. HR-MS (EI) spectral data of *N*'-Butyrylpridine-3-carbohydrazide (**4**)

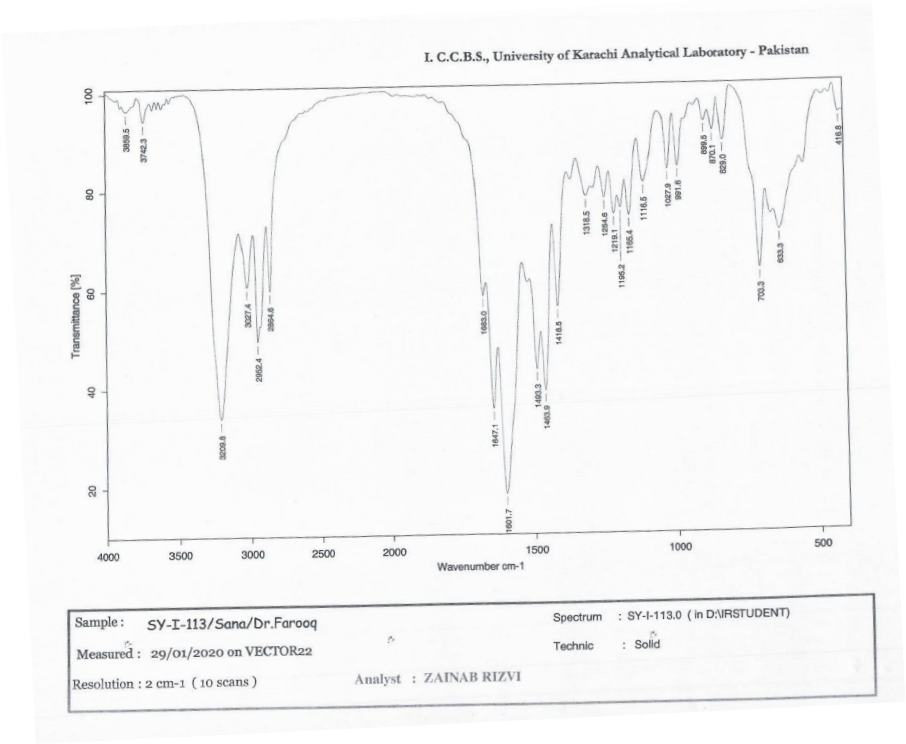


Figure S10. IR spectrum of *N*'-Hexanoylpyridine-3-carbohydrazide (**5**)

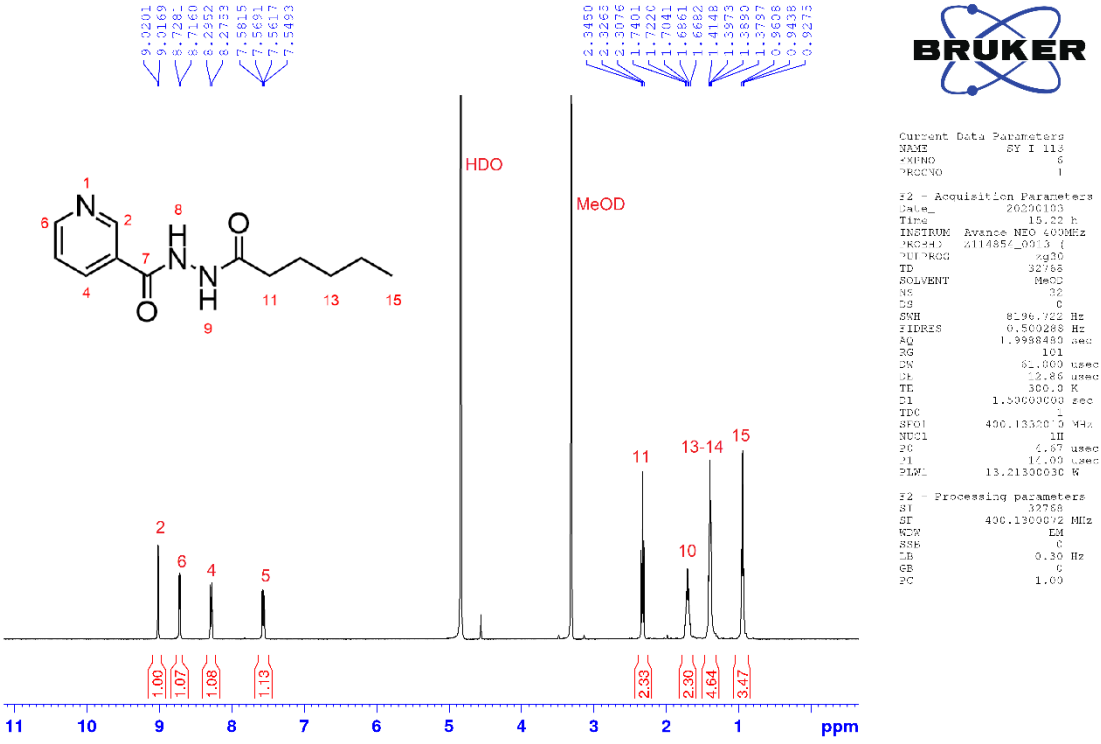


Figure S11. ^{1}H NMR spectrum of *N*'-Hexanoylpyridine-3-carbohydrazide (**5**)

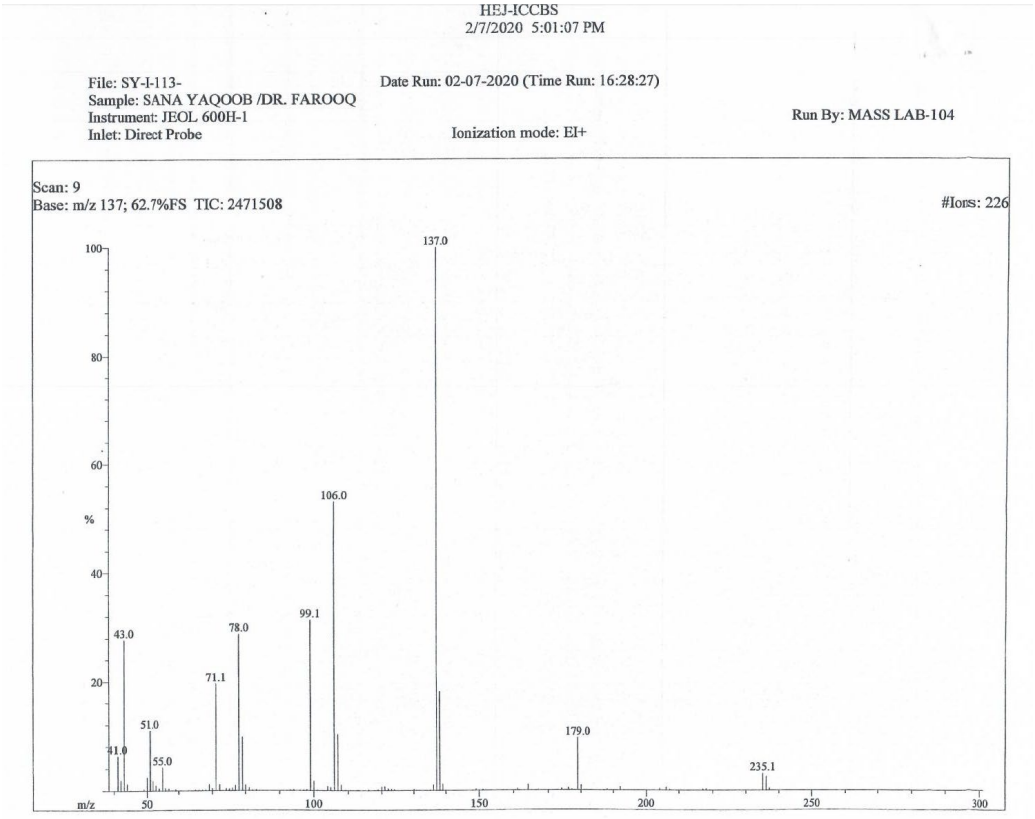
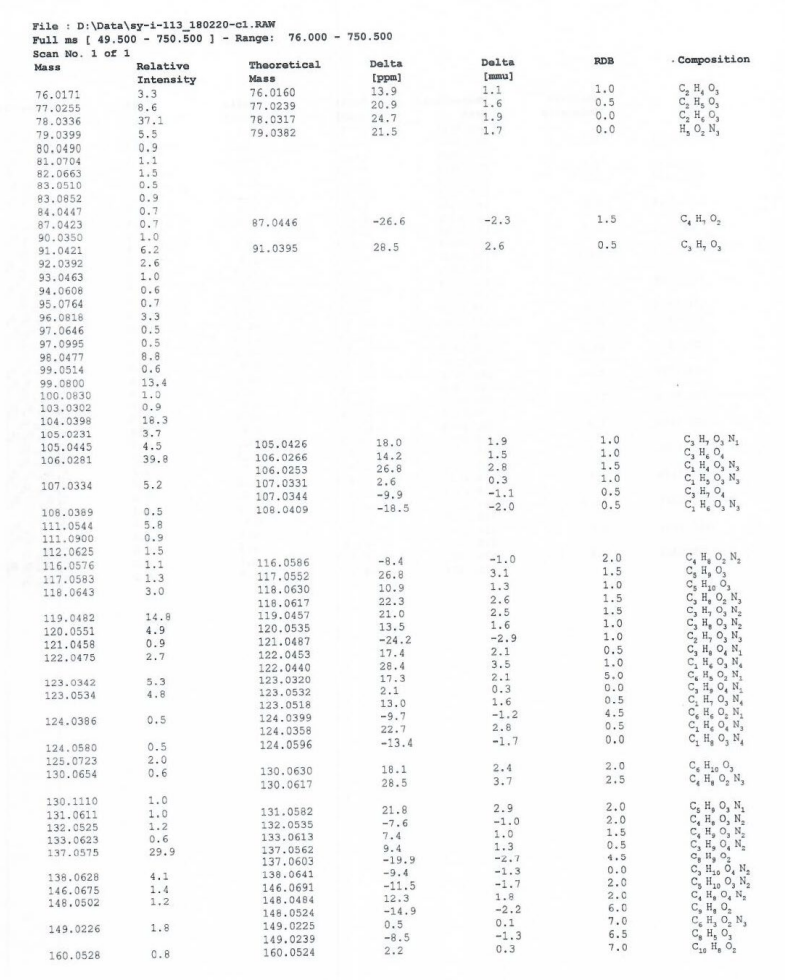


Figure S12. LR-MS (EI) spectrum of *N*'-Hexanoylpyridine-3-carbohydrazide (**5**)



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Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
76.0171	3.3	76.0160	13.9	1.1	1.0	$C_2H_4O_3$
77.0255	8.6	77.0239	20.9	1.6	0.5	$C_2H_5O_3$
78.0336	37.1	78.0317	24.7	1.9	0.0	$C_2H_6O_3$
79.0399	5.5	79.0382	21.5	1.7	0.0	$H_5O_2N_3$
80.0490	0.9					
81.0704	1.1					
82.0663	1.5					
83.0510	0.5					
83.0852	0.9					
84.0447	0.7					
87.0423	0.7	87.0446	-26.6	-2.3	1.5	$C_4H_7O_2$
90.0350	1.0					
91.0421	6.2	91.0395	28.5	2.6	0.5	$C_3H_7O_3$
92.0392	2.6					
93.0463	1.0					
94.0608	0.6					
95.0764	0.7					
96.0818	3.3					
97.0646	0.5					
97.0995	0.5					
98.0477	8.8					
99.0514	0.6					
99.0800	13.4					
100.0830	1.0					
103.0302	0.9					
104.0398	18.3					
105.0231	3.7					
105.0445	4.5	105.0426	18.0	1.9	1.0	$C_3H_7O_2N_1$
106.0281	39.8	106.0266	14.2	1.5	1.0	$C_3H_6O_4$
		106.0253	26.8	2.8	1.5	$C_2H_4O_3N_2$
107.0334	5.2	107.0331	2.6	0.3	1.0	$C_4H_5O_2N_1$
		107.0344	-9.9	-1.1	0.5	$C_7H_9O_2$
108.0389	0.5	108.0409	-18.5	-2.0	0.5	$C_2H_6O_3N_2$
111.0544	5.8					
111.0900	0.9					
112.0625	1.5					
116.0576	1.1	116.0586	-8.4	-1.0	2.0	$C_4H_8O_2N_2$
117.0583	1.3	117.0552	26.8	3.1	1.5	$C_5H_9O_3$
118.0643	3.0	118.0630	10.9	1.3	1.0	$C_5H_{10}O_3$
		118.0617	22.3	2.6	1.5	$C_3H_9O_2N_3$
119.0482	14.8	119.0457	21.0	2.5	1.5	$C_3H_7O_3N_2$
120.0551	4.9	120.0535	13.5	1.6	1.0	$C_3H_8O_3N_2$
121.0458	0.9	121.0487	-24.2	-2.9	1.0	$C_2H_7O_3N_3$
122.0475	2.7	122.0453	17.4	2.1	0.5	$C_3H_8O_4N_1$
		122.0440	28.4	3.5	1.0	$C_1H_8O_3N_4$
123.0342	5.3	123.0320	17.3	2.1	5.0	$C_6H_5O_2N_1$
123.0534	4.8	123.0532	2.1	0.3	0.0	$C_6H_7O_2N_1$
		123.0518	13.0	1.6	0.5	$C_2H_7O_3N_4$
124.0386	0.5	124.0399	-9.7	-1.2	4.5	$C_6H_6O_2N_1$
		124.0358	22.7	2.8	0.5	$C_1H_6O_4N_3$
124.0580	0.5	124.0596	-13.4	-1.7	0.0	$C_1H_8O_3N_4$
125.0723	2.0					
130.0654	0.6	130.0630	18.1	2.4	2.0	$C_6H_{10}O_3$
		130.0617	28.5	3.7	2.5	$C_6H_8O_2N_3$
130.1110	1.0					
131.0611	1.0	131.0582	21.8	2.9	2.0	$C_5H_9O_3N_1$
132.0525	1.2	132.0535	-7.6	-1.0	2.0	$C_5H_8O_2N_2$
133.0623	0.6	133.0613	7.4	1.0	1.5	$C_5H_9O_3N_2$
137.0575	29.9	137.0562	9.4	1.3	0.5	$C_3H_9O_4N_2$
		137.0603	-19.9	-2.7	4.5	$C_8H_9O_2$
138.0628	4.1	138.0641	-9.4	-1.3	0.0	$C_7H_{10}O_2N_2$
146.0675	1.4	146.0691	-11.5	-1.7	2.0	$C_7H_{13}O_3N_2$
148.0502	1.2	148.0484	12.3	1.8	2.0	$C_6H_8O_4N_2$
		148.0524	-14.9	-2.2	6.0	$C_9H_8O_2$
149.0226	1.8	149.0225	0.5	0.1	7.0	$C_6H_5O_2N_3$
		149.0239	-8.5	-1.3	6.5	$C_9H_5O_3$
160.0528	0.8	160.0524	2.2	0.3	7.0	$C_{10}H_8O_2$

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
		160.0484	27.3	4.4	3.0	$C_5H_8O_4N_2$
161.0592	100.0	161.0603	-6.5	-1.0	6.5	$C_{10}H_9O_2$
		161.0562	18.5	3.0	2.5	$C_5H_9O_4N_2$
162.0612	8.5	162.0641	-17.3	-2.8	2.0	$C_5H_{10}O_4N_2$
163.0637	0.8	163.0633	2.3	0.4	6.0	$C_9H_9O_2N_1$
		163.0593	27.0	4.4	2.0	$C_4H_9O_4N_2$
167.0346	0.6	167.0344	1.2	0.2	5.5	$C_9H_7O_2$
		167.0331	9.2	1.5	6.0	$C_6H_5O_3N_1$
173.0573	0.7	173.0562	6.4	1.1	3.5	$C_6H_9O_4N_2$
		173.0603	-16.9	-2.9	7.5	$C_{11}H_9O_2$
174.0656	83.4	174.0641	8.8	1.5	3.0	$C_6H_{10}O_4N_2$
		174.0681	-14.3	-2.5	7.0	$C_{11}H_{10}O_2$
175.0724	17.6	175.0719	2.9	0.5	2.5	$C_6H_{11}O_4N_2$
		175.0759	-20.1	-3.5	6.5	$C_{11}H_{11}O_2$
176.0773	1.8	176.0797	-13.7	-2.4	2.0	$C_6H_{12}O_4N_2$
179.0685	2.3	179.0695	-5.4	-1.0	6.0	$C_9H_9O_2N_3$
		179.0708	-12.9	-2.3	5.5	$C_{10}H_{11}O_3$
188.0835	22.2	188.0837	-1.3	-0.2	7.0	$C_{12}H_{12}O_2$
		188.0797	20.1	3.8	3.0	$C_7H_{12}O_4N_2$
189.0873	3.8	189.0875	-1.1	-0.2	2.5	$C_7H_{13}O_4N_2$
		189.0916	-22.4	-4.2	6.5	$C_{12}H_{13}O_2$
200.0816	1.1	200.0797	9.2	1.8	4.0	$C_8H_{12}O_4N_2$
		200.0837	-10.9	-2.2	8.0	$C_{13}H_{12}O_2$
202.0963	1.4	202.0954	4.6	0.9	3.0	$C_8H_{14}O_4N_2$
		202.0994	-15.3	-3.1	7.0	$C_{13}H_{14}O_2$
215.1059	0.9	215.1072	-6.1	-1.3	7.5	$C_{14}H_{15}O_2$
		215.1032	12.6	2.7	3.5	$C_9H_{15}O_4N_2$
216.1138	2.4	216.1150	-5.6	-1.2	7.0	$C_{14}H_{16}O_2$
		216.1110	13.0	2.8	3.0	$C_9H_{16}O_4N_2$
217.1215	10.4	217.1229	-6.1	-1.3	6.5	$C_{14}H_{17}O_2$
		217.1188	12.4	2.7	2.5	$C_9H_{17}O_4N_2$
218.1261	2.0	218.1267	-2.8	-0.6	2.0	$C_9H_{18}O_4N_2$
		218.1307	-21.2	-4.6	6.0	$C_{14}H_{18}O_2$
235.1320	0.6	235.1321	-0.5	-0.1	6.0	$C_{12}H_{17}O_2N_3$
		235.1334	-6.2	-1.5	5.5	$C_{14}H_{19}O_3$

Figure S13. HR-MS (EI) spectral data of *N*'-Hexanoylpyridine-3-carbohydrazide (**5**)

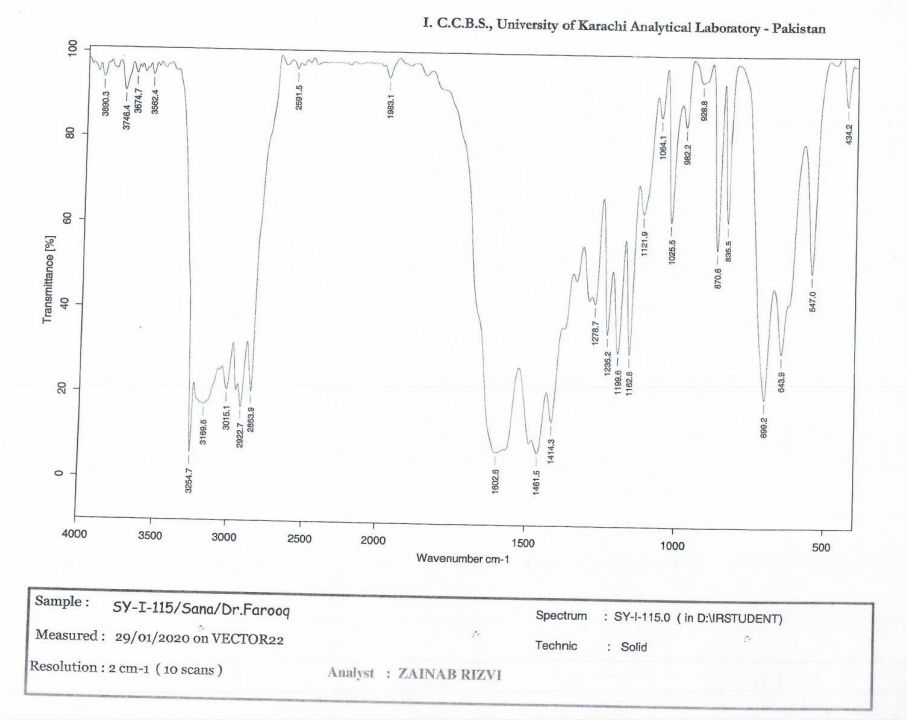


Figure S14. IR spectrum of *N*'-Octanoylpyridine-3-carbohydrazide (**6**)

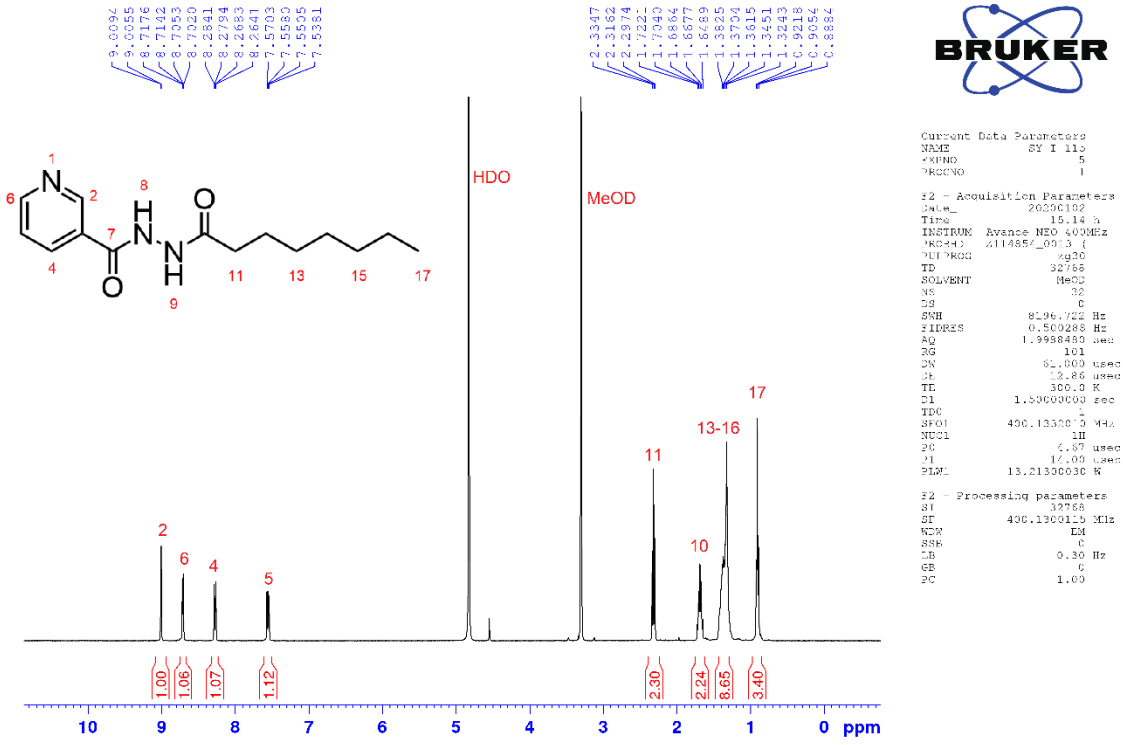


Figure S15. ^{1}H NMR spectrum of *N*'-Octanoylpyridine-3-carbohydrazide (**6**)

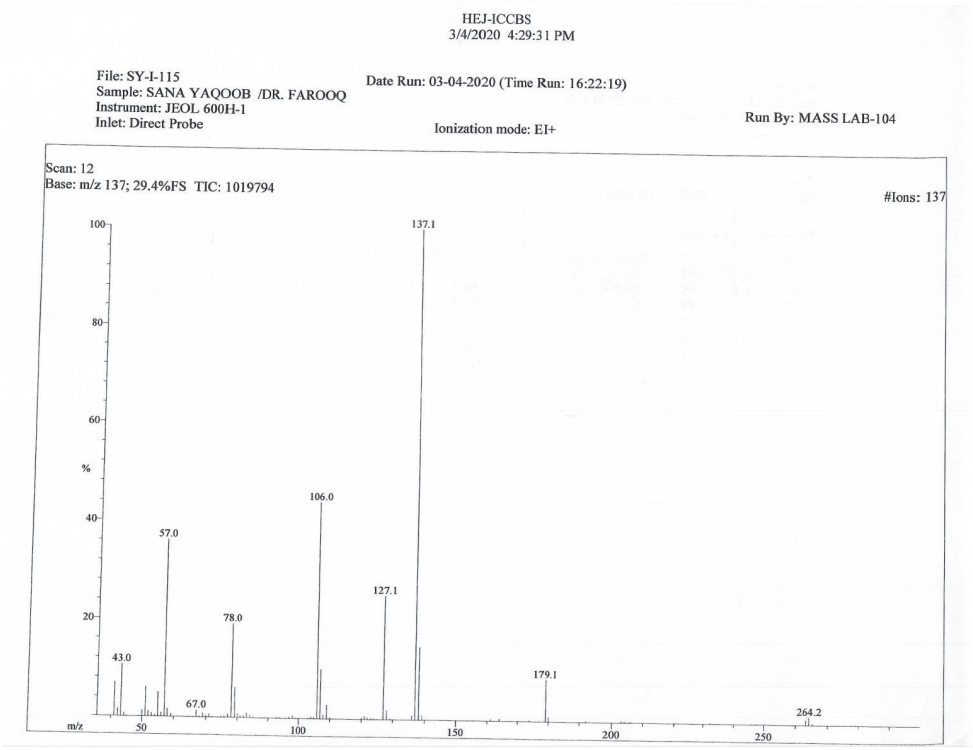
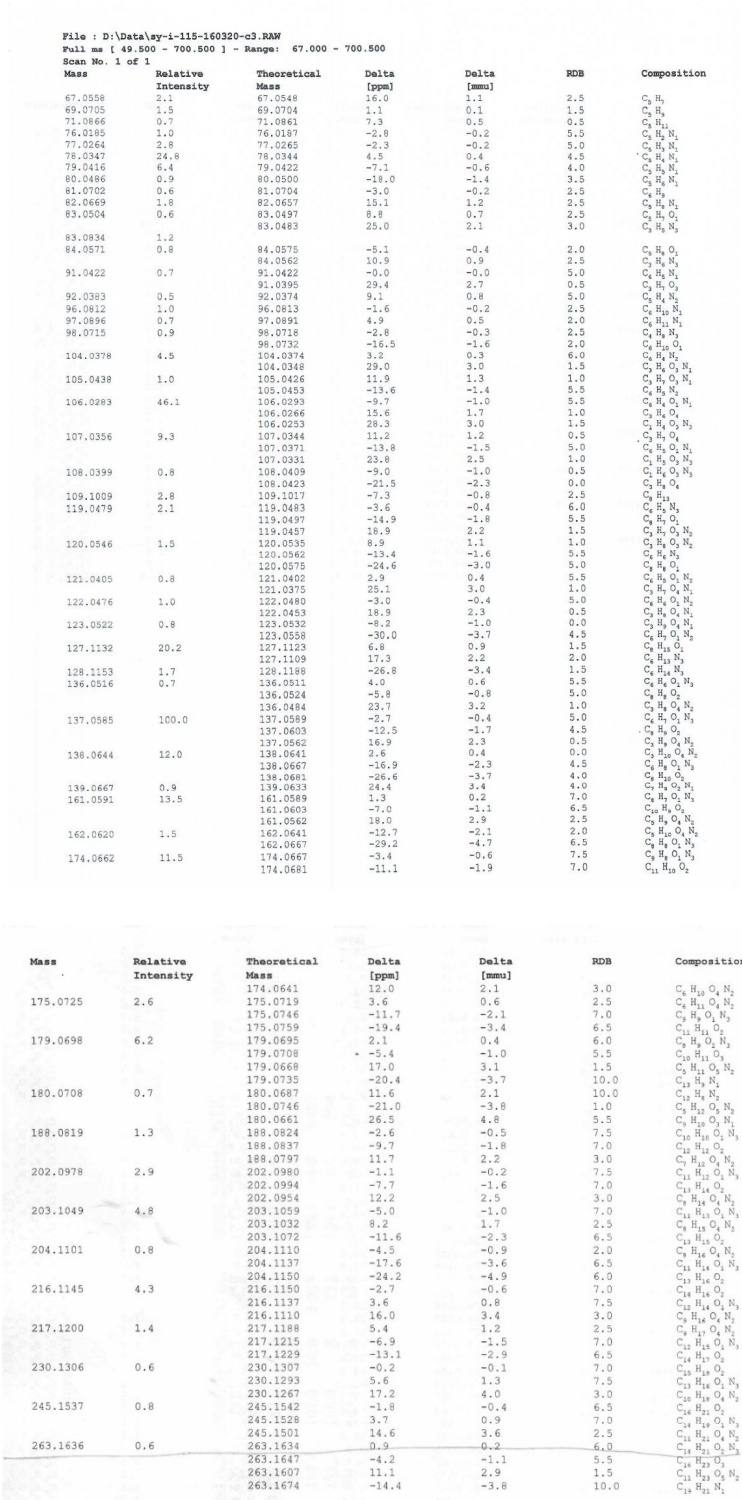


Figure S16. LR-MS (EI) spectrum of *N*'-Octanoylpyridine-3-carbohydrazide (**6**)



File : D:\Data\sy-i-115-160320-c3.RAW
Full ms [49.500 - 700.500] - Range: 67.000 - 700.500
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
67.0558	2.1	67.0548	16.0	1.1	2.5	C_5H_7
69.0705	1.5	69.0704	1.1	0.1	1.5	C_5H_9
71.0866	0.7	71.0861	7.3	0.5	0.5	C_5H_{11}
76.0185	1.0	76.0187	-2.8	-0.2	5.5	$C_3H_2N_3$
77.0264	2.8	77.0265	-2.3	-0.2	5.0	$C_4H_3N_2$
78.0347	24.8	78.0344	4.5	0.4	4.5	$C_4H_4N_2$
79.0416	6.4	79.0422	-7.1	-0.6	4.0	$C_4H_5N_2$
80.0486	0.9	80.0500	-18.0	-1.4	3.5	$C_5H_6N_2$
81.0702	0.6	81.0704	-3.0	-0.2	2.5	C_6H_9
82.0669	1.8	82.0657	15.1	1.2	2.5	$C_5H_8N_2$
83.0504	0.6	83.0497	8.8	0.7	2.5	C_5H_7O
		83.0483	25.0	2.1	3.0	$C_4H_5N_3$
83.0834	1.2					
84.0571	0.8	84.0575	-5.1	-0.4	2.0	C_5H_8O
		84.0562	10.9	0.9	2.5	$C_4H_6N_3$
91.0422	0.7	91.0422	-0.0	-0.0	5.0	C_7H_5N
		91.0395	29.4	2.7	0.5	C_6H_3O
92.0383	0.5	92.0374	9.1	0.8	5.0	C_7H_6N
96.0812	1.0	96.0813	-1.6	-0.2	2.5	$C_6H_{10}N$
97.0896	0.7	97.0891	4.9	0.5	2.0	$C_6H_{11}N$
98.0715	0.9	98.0718	-2.8	-0.3	2.5	$C_5H_9N_2$
		98.0732	-16.5	-1.6	2.0	$C_6H_{10}O$
104.0378	4.5	104.0374	3.2	0.3	6.0	C_7H_5N
		104.0348	29.0	3.0	1.5	C_6H_4ON
105.0438	1.0	105.0426	11.9	1.3	1.0	$C_5H_7ON_2$
		105.0453	-13.6	-1.4	5.5	$C_7H_5N_2$
106.0283	46.1	106.0293	-9.7	-1.0	5.5	$C_6H_4ON_2$
		106.0266	15.6	1.7	1.0	C_5H_4O
		106.0253	28.3	3.0	1.5	$C_5H_4ON_2$
107.0356	9.3	107.0344	11.2	1.2	0.5	$C_5H_5O_2$
		107.0371	-13.8	-1.5	5.0	$C_6H_5ON_2$
		107.0331	23.8	2.5	1.0	$C_5H_5ON_3$
108.0399	0.8	108.0409	-9.0	-1.0	0.5	$C_5H_6ON_3$
		108.0423	-21.5	-2.3	0.0	$C_6H_6O_2$
109.1009	2.8	109.1017	-7.3	-0.8	2.5	C_8H_{13}
119.0479	2.1	119.0483	-3.6	-0.4	6.0	C_8H_6N
		119.0497	-14.9	-1.8	5.5	C_8H_7O
		119.0457	18.9	2.2	1.5	$C_7H_5O_2N$
120.0546	1.5	120.0535	8.9	1.1	1.0	$C_7H_8O_2N$
		120.0562	-13.4	-1.6	5.5	C_8H_8N
		120.0575	-24.6	-3.0	5.0	C_8H_8O
121.0405	0.8	121.0402	2.9	0.4	5.5	$C_7H_5ON_2$
		121.0375	25.1	3.0	1.0	$C_6H_5ON_3$
122.0476	1.0	122.0480	-3.0	-0.4	5.0	$C_7H_6ON_2$
		122.0453	18.9	2.3	0.5	$C_6H_6ON_3$
123.0522	0.8	123.0532	-8.2	-1.0	0.0	$C_7H_7ON_2$
		123.0558	-30.0	-3.7	4.5	C_8H_7ON
127.1132	20.2	127.1123	6.8	0.9	1.5	$C_9H_{15}O$
		127.1109	17.3	2.2	2.0	$C_8H_{13}N_2$
128.1153	1.7	128.1188	-26.8	-3.4	1.5	$C_8H_{14}N_2$
136.0516	0.7	136.0511	4.0	0.6	5.5	$C_8H_6ON_2$
		136.0524	-5.8	-0.8	5.0	$C_9H_8O_2$
		136.0484	23.7	3.2	1.0	$C_7H_6O_2N_2$
137.0585	100.0	137.0589	-2.7	-0.4	5.0	$C_8H_7ON_2$
		137.0603	-12.5	-1.7	4.5	$C_9H_9O_2$
		137.0562	16.9	2.3	0.5	$C_7H_9O_4N_2$
138.0644	12.0	138.0641	2.6	0.4	0.0	$C_7H_{10}O_4N_2$
		138.0667	-16.9	-2.3	4.5	$C_8H_8ON_3$
		138.0681	-26.6	-3.7	4.0	$C_9H_{10}O_2$
139.0667	0.9	139.0633	24.4	3.4	4.0	$C_7H_9O_2N_2$
161.0591	13.5	161.0589	1.3	0.2	7.0	$C_9H_9O_2N_2$
		161.0603	-7.0	-1.1	6.5	$C_{10}H_9O_2$
		161.0562	18.0	2.9	2.5	$C_8H_9O_4N_2$
162.0620	1.5	162.0641	-12.7	-2.1	2.0	$C_8H_{10}O_4N_2$
		162.0667	-29.2	-4.7	6.5	$C_9H_8O_2N_3$
174.0662	11.5	174.0667	-3.4	-0.6	7.5	$C_9H_8O_2N_3$
		174.0681	-11.1	-1.9	7.0	$C_{11}H_{10}O_2$

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
		174.0641	12.0	2.1	3.0	$C_6H_{10}O_4N_2$
175.0725	2.6	175.0719	3.6	0.6	2.5	$C_6H_{11}O_4N_2$
		175.0746	-11.7	-2.1	7.0	$C_9H_9O_1N_3$
		175.0759	-19.4	-3.4	6.5	$C_{11}H_{11}O_2$
179.0698	6.2	179.0695	2.1	0.4	6.0	$C_9H_9O_2N_3$
		179.0708	-5.4	-1.0	5.5	$C_{10}H_{11}O_3$
		179.0668	17.0	3.1	1.5	$C_9H_{11}O_4N_2$
		179.0735	-20.4	-3.7	10.0	$C_{13}H_9N$
180.0708	0.7	180.0687	11.6	2.1	10.0	$C_{13}H_9N$
		180.0746	-21.0	-3.8	1.0	$C_5H_{12}O_5N_2$
		180.0661	26.5	4.8	5.5	$C_9H_{10}O_3N_1$
188.0819	1.3	188.0824	-2.6	-0.5	7.5	$C_{10}H_{10}O_1N_3$
		188.0837	-9.7	-1.8	7.0	$C_{12}H_{12}O_2$
		188.0797	11.7	2.2	3.0	$C_7H_{12}O_4N_2$
202.0978	2.9	202.0980	-1.1	-0.2	7.5	$C_{11}H_{12}O_1N_3$
		202.0994	-7.7	-1.6	7.0	$C_{13}H_{14}O_2$
		202.0954	12.2	2.5	3.0	$C_8H_{14}O_4N_2$
203.1049	4.8	203.1059	-5.0	-1.0	7.0	$C_{11}H_{13}O_1N_3$
		203.1032	8.2	1.7	2.5	$C_9H_{13}O_4N_2$
		203.1072	-11.6	-2.3	6.5	$C_{13}H_{15}O_2$
204.1101	0.8	204.1110	-4.5	-0.9	2.0	$C_9H_{16}O_4N_2$
		204.1137	-17.6	-3.6	6.5	$C_{11}H_{14}O_1N_3$
		204.1150	-24.2	-4.9	6.0	$C_{13}H_{16}O_2$
216.1145	4.3	216.1150	-2.7	-0.6	7.0	$C_{14}H_{16}O_2$
		216.1137	3.6	0.8	7.5	$C_{12}H_{14}O_1N_3$
		216.1110	16.0	3.4	3.0	$C_9H_{16}O_4N_2$
217.1200	1.4	217.1188	5.4	1.2	2.5	$C_9H_{17}O_4N_2$
		217.1215	-6.9	-1.5	7.0	$C_{12}H_{15}O_1N_3$
		217.1229	-13.1	-2.9	6.5	$C_{14}H_{17}O_2$
230.1306	0.6	230.1307	-0.2	-0.1	7.0	$C_{15}H_{18}O_2$
		230.1293	5.6	1.3	7.5	$C_{13}H_{16}O_1N_3$
		230.1267	17.2	4.0	3.0	$C_{10}H_{18}O_4N_2$
245.1537	0.8	245.1542	-1.8	-0.4	6.5	$C_{16}H_{21}O_2$
		245.1528	3.7	0.9	7.0	$C_{14}H_{19}O_1N_3$
		245.1501	14.6	3.6	2.5	$C_{11}H_{21}O_4N_2$
263.1636	0.6	263.1634	0.9	0.2	6.0	$C_{14}H_{21}O_2N_3$
		263.1647	-4.2	-1.1	5.5	$C_{16}H_{23}O_3$
		263.1607	11.1	2.9	1.5	$C_{11}H_{23}O_3N_2$
		263.1674	-14.4	-3.8	10.0	$C_{19}H_{21}N_1$

Figure S17. HR-MS (EI) spectral data of *N*'-Octanoylpyridine-3-carbohydrazide (**6**)

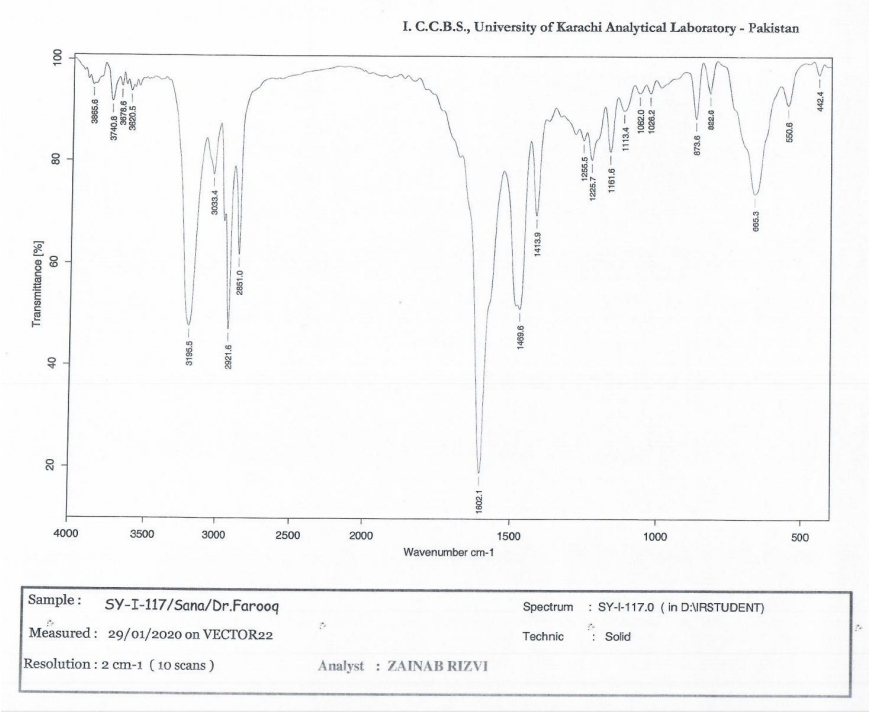


Figure S18. IR spectrum of *N*'-Decanoylpyridine-3-carbohydrazide (**7**)

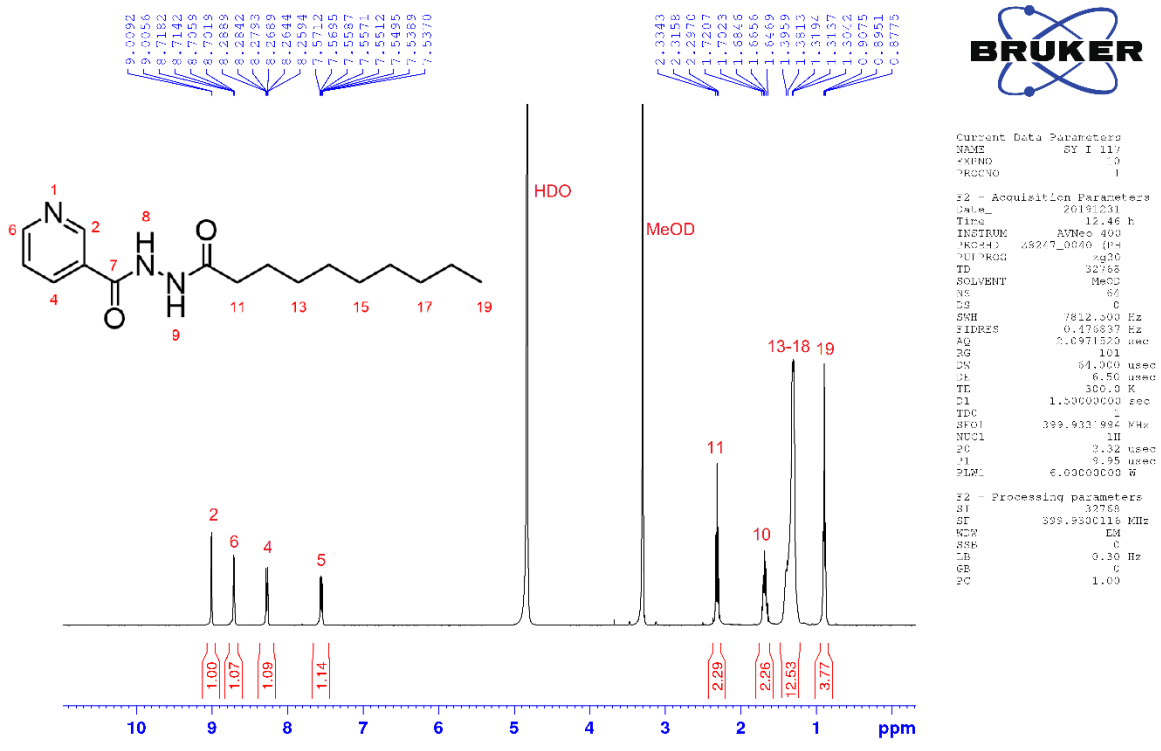


Figure S19. ^{1}H NMR spectrum of *N*'-Decanoylpyridine-3-carbohydrazide (**7**)

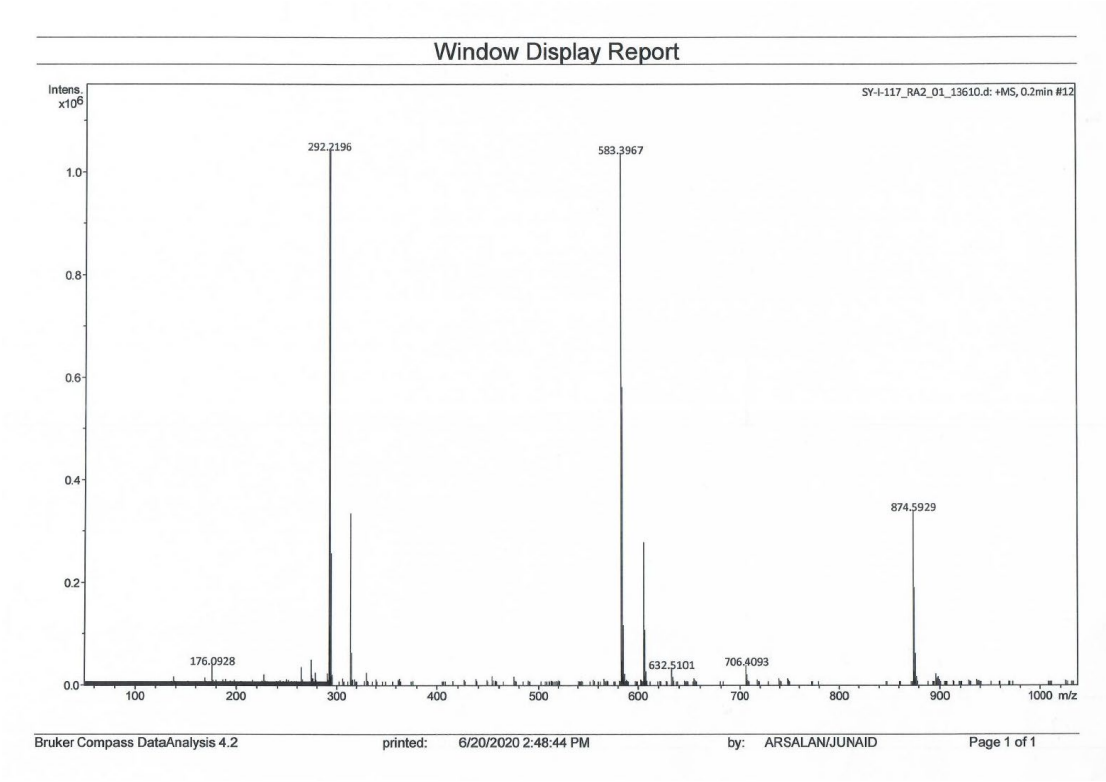


Figure S20. LR-MS (EI) spectrum of *N*'-Decanoylpyridine-3-carbohydrazide (**7**)

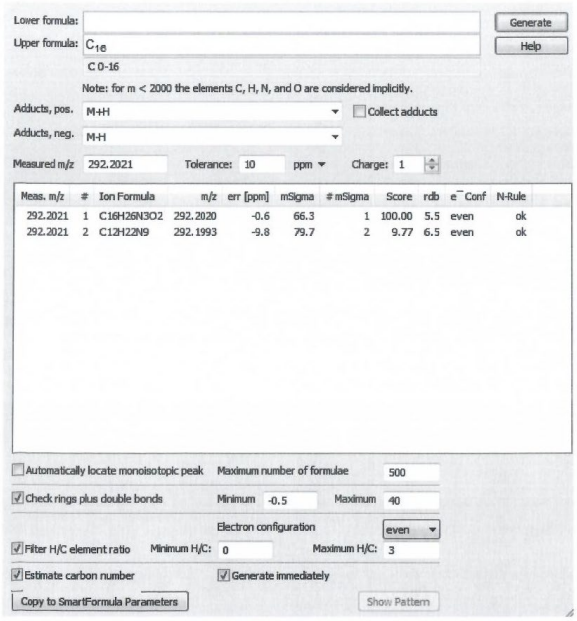


Figure S21. HR-MS (EI) spectral data of *N*'-Decanoylpyridine-3-carbohydrazide (**7**)

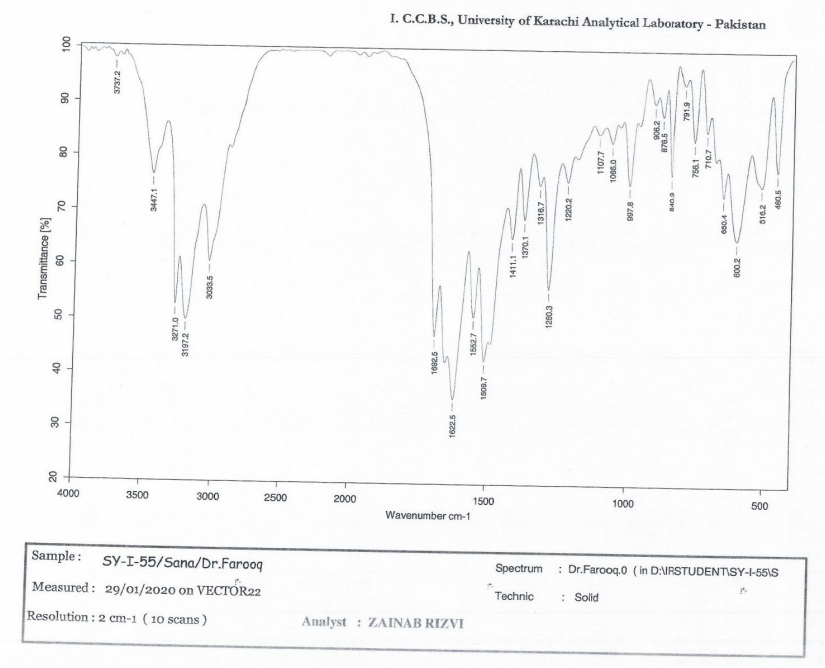


Figure S22. IR spectrum of *N*'-Acetylpyridine-4-carbohydrazide (**8**)

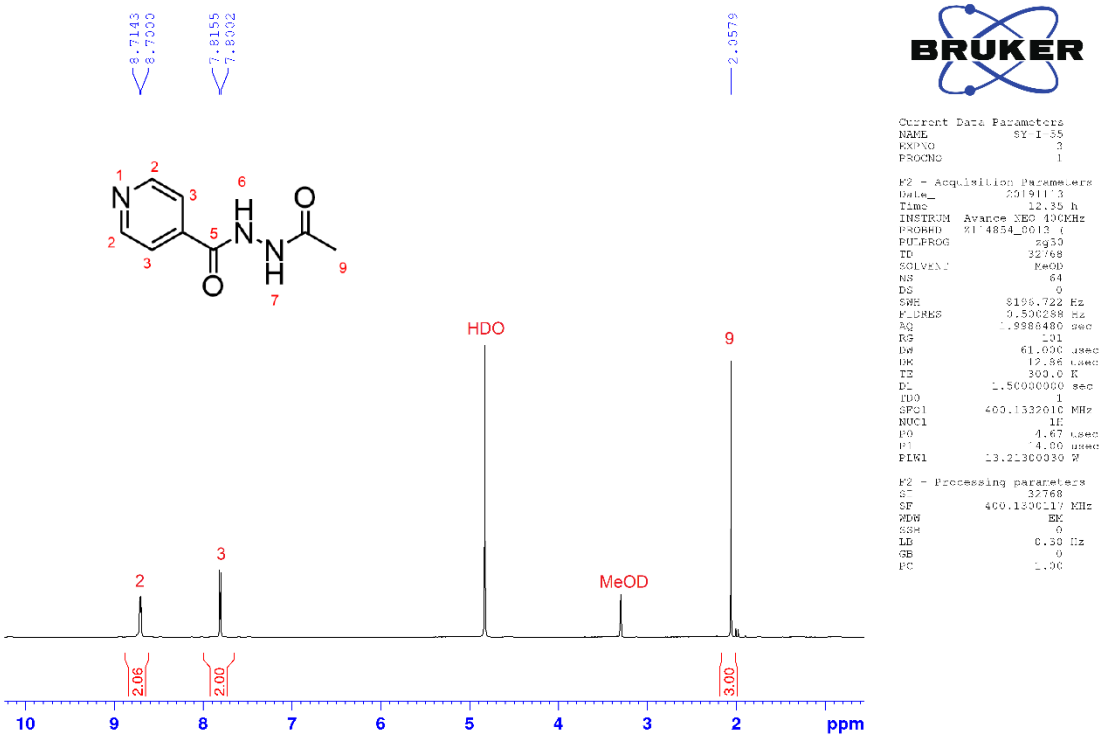


Figure S23. [1]H NMR spectrum of *N*'-Acetylpyridine-4-carbohydrazide (**8**)

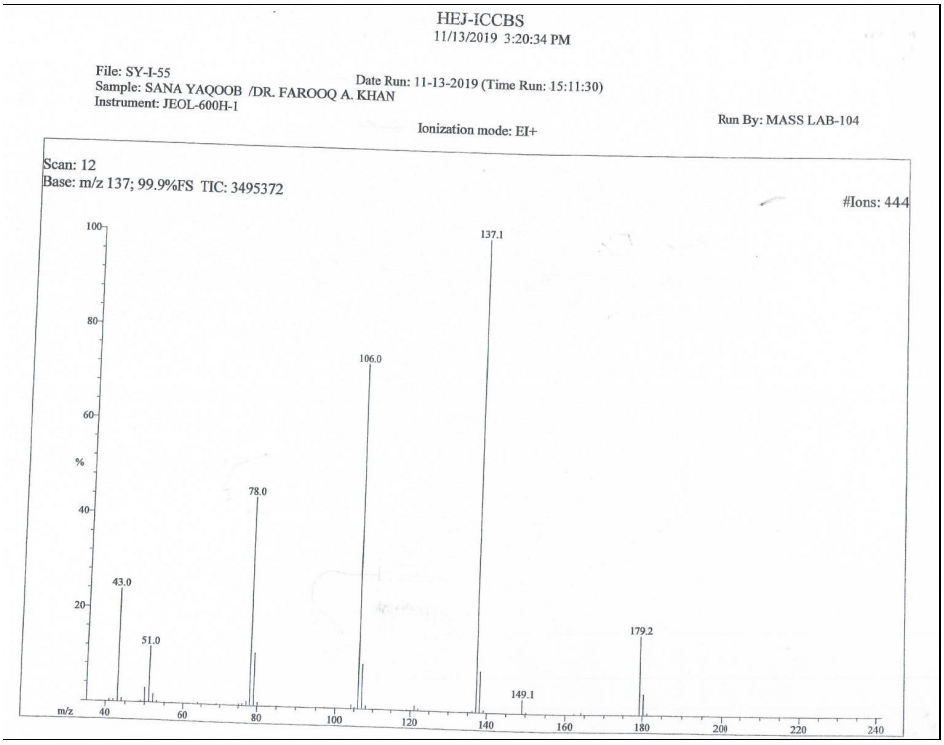


Figure S24. LR-MS (EI) spectrum of *N*'-Acetylpyridine-4-carbohydrazide (**8**)

File : D:\Data\sy-i-55-140220-c8.RAW
Full ms [49.500 - 750.500] - Range: 62.000 - 750.500
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
62.0255	2.5	62.0242	21.4	1.3	0.5	$C_1 H_4 O_2 N_1$
63.0314	4.2	63.0320	-9.2	-0.6	0.0	$C_1 H_5 O_2 N_1$
64.0364	5.8					
65.0337	2.0					
76.0163	4.6	76.0160	3.2	0.2	1.0	$C_2 H_4 O_3$
		76.0147	20.9	1.6	1.5	$H_2 O_2 N_3$
77.0241	10.6	77.0239	2.6	0.2	0.5	$C_2 H_5 O_3$
		77.0225	20.0	1.5	1.0	$H_3 O_2 N_3$
78.0322	73.5	78.0317	5.9	0.5	0.0	$C_2 H_6 O_3$
		78.0304	23.1	1.8	0.5	$H_4 O_2 N_3$
79.0391	11.6	79.0382	11.6	0.9	0.0	$H_5 O_2 N_3$
91.0410	21.3	91.0395	16.4	1.5	0.5	$C_3 H_7 O_3$
92.0424	2.4					
104.0418	22.4					
105.0292	3.3	105.0300	-7.9	-0.8	1.5	$C_2 H_5 O_3 N_2$
105.0573	7.9	105.0552	20.2	2.1	0.5	$C_4 H_7 O_3$
106.0283	73.6	106.0266	16.2	1.7	1.0	$C_4 H_6 O_4$
		106.0253	28.9	3.1	1.5	$C_3 H_4 O_3 N_2$
107.0328	6.7	107.0331	-2.9	-0.3	1.0	$C_3 H_5 O_3 N_3$
		107.0344	-15.5	-1.7	0.5	$C_3 H_7 O_4$
119.0472	7.5	119.0457	13.3	1.6	1.5	$C_3 H_7 O_3 N_2$
120.0359	1.6					
122.0480	2.5	122.0453	22.2	2.7	0.5	$C_3 H_8 O_4 N_1$
123.0313	14.8	123.0320	-5.8	-0.7	5.0	$C_6 H_3 O_2 N_1$
		123.0280	26.9	3.3	1.0	$C_5 H_3 O_4 N_3$
124.0350	1.1	124.0358	-6.6	-0.8	0.5	$C_5 H_4 O_4 N_3$
132.0460	2.4	132.0423	28.3	3.7	2.0	$C_5 H_9 O_4$
137.0588	49.2	137.0603	-10.3	-1.4	4.5	$C_6 H_9 O_2$
		137.0562	19.0	2.6	0.5	$C_7 H_9 O_3 N_2$
138.0610	3.7	138.0641	-22.1	-3.0	0.0	$C_7 H_{10} O_4 N_2$
149.0474	1.6	149.0477	-1.8	-0.3	6.0	$C_8 H_7 O_2 N_1$
		149.0437	25.2	3.8	2.0	$C_5 H_7 O_4 N_3$
161.0578	100.0	161.0562	10.0	1.6	2.5	$C_8 H_9 O_3 N_2$
		161.0603	-15.0	-2.4	6.5	$C_{10} H_9 O_2$
162.0611	8.7	162.0641	-18.1	-2.9	2.0	$C_9 H_{10} O_4 N_2$
163.0426	1.5	163.0395	19.2	3.1	6.5	$C_9 H_7 O_3$
		163.0382	27.4	4.5	7.0	$C_7 H_7 O_2 N_3$
179.0696	5.2	179.0695	0.9	0.2	6.0	$C_8 H_9 O_2 N_3$
		179.0708	-6.6	-1.2	5.5	$C_{10} H_{11} O_3$

Figure S25. HR-MS (EI) spectral data of *N*'-Acetylpyridine-4-carbohydrazide (**8**)

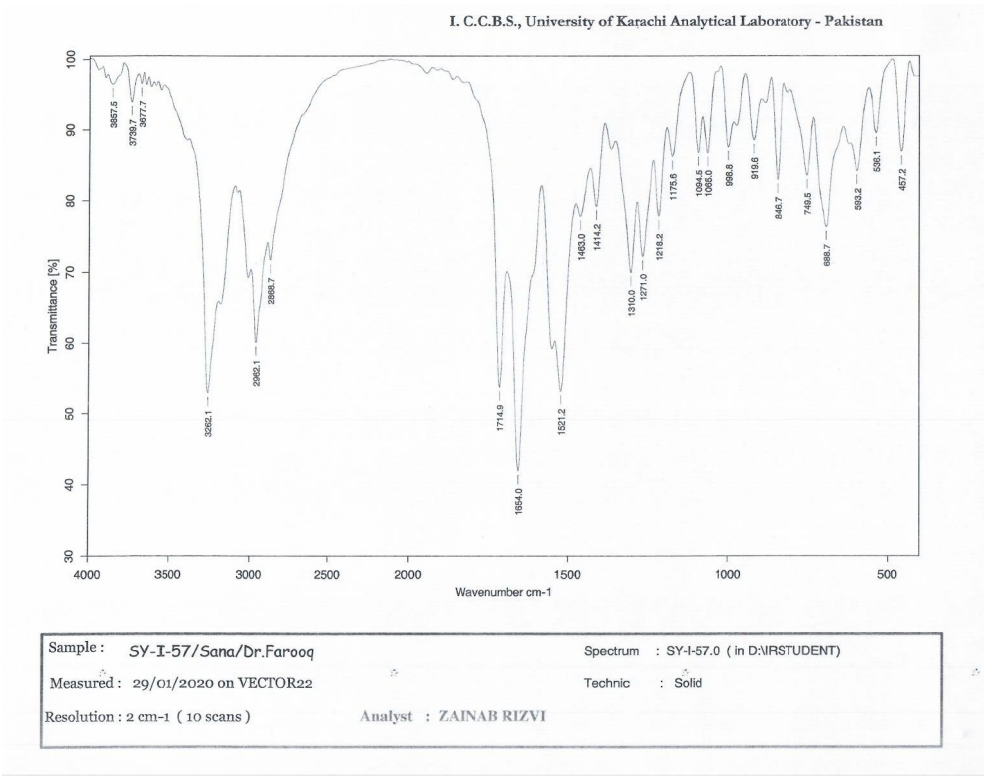


Figure S26. IR spectrum of *N*'-Butyrylpyridine-4-carbohydrazide (**9**)

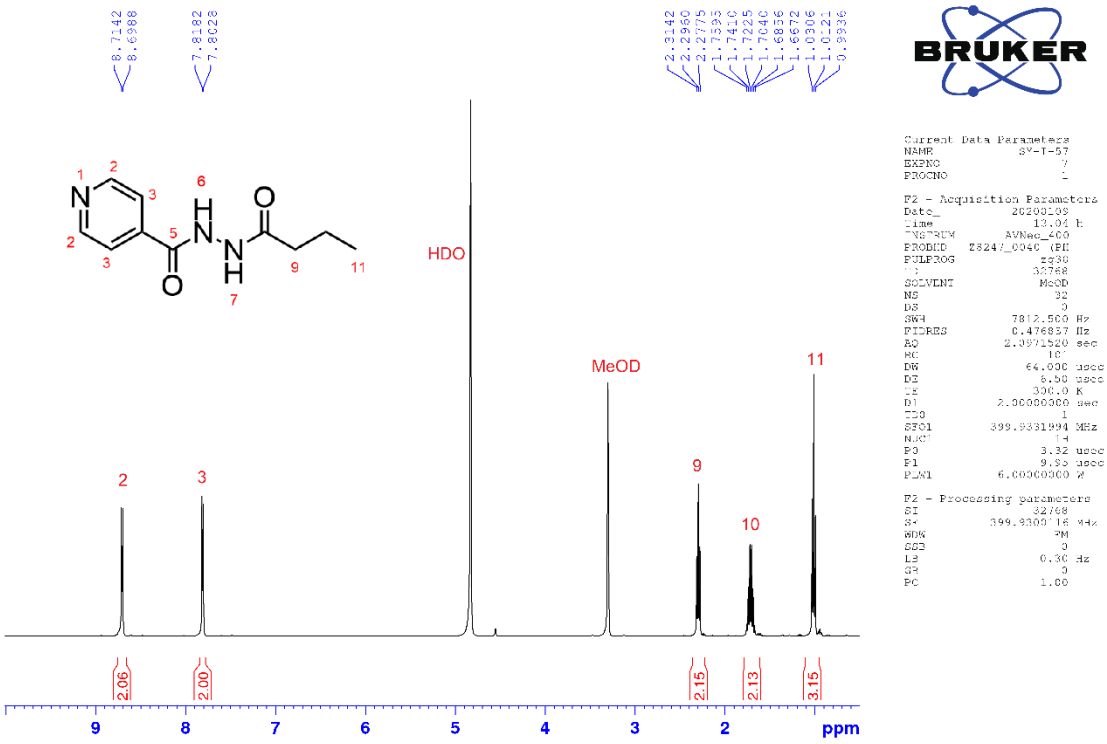


Figure S27. ^{1}H NMR spectrum of *N*'-Butyrylpyridine-4-carbohydrazide (**9**)

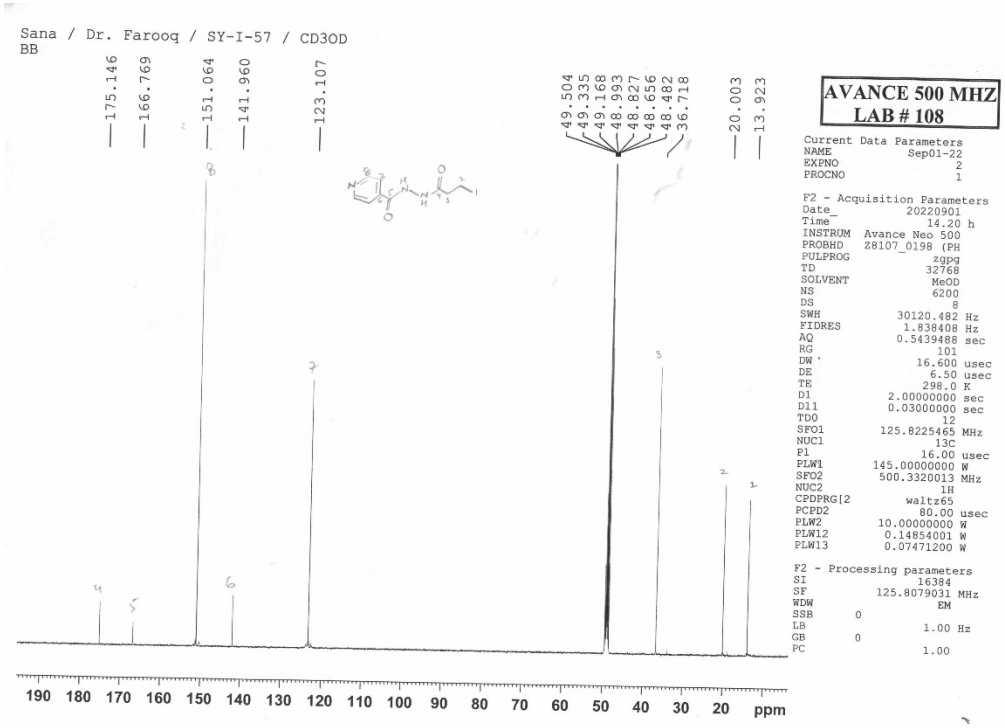


Figure S28. ^{13}C NMR spectrum of *N*'-Butyrylpyridine-4-carbohydrazide (**9**)

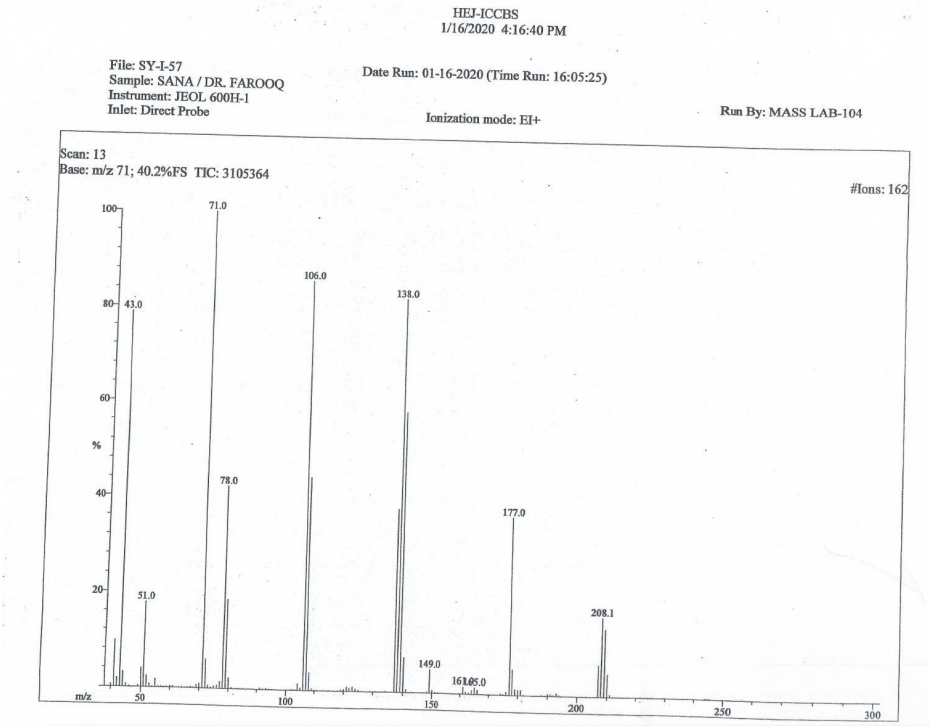


Figure S29. LR-MS (EI) spectrum of *N*'-Butyrylpyridine-4-carbohydrazide (**9**)

File : D:\Data\sy-i-57-140220-c3.RAW
Full ms [49.500 - 750.500] - Range: 72.000 - 750.500
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
72.9906	3.2	72.9926	-26.8	-2.0	2.5	$C_2 H_1 O_1$
74.9736	1.0					
75.9803	2.4	75.9797	9.0	0.7	2.0	$C_1 O_4$
76.9892	6.3	76.9875	22.4	1.7	1.5	$C_1 H_1 O_4$
77.9978	26.0					
83.0167	1.6					
91.0136	7.2	91.0144	-8.8	-0.8	1.5	$C_4 H_3 O_1 N_2$
92.0141	1.2					
105.0125	2.2					
106.9949	4.7	106.9967	-17.3	-1.8	2.0	$H_1 O_4 N_3$
118.0591	1.1	118.0617	-21.4	-2.5	1.5	$C_3 H_8 O_2 N_1$
119.0471	6.7	119.0457	11.8	1.4	1.5	$C_3 H_7 O_3 N_1$
120.0542	1.4	120.0535	6.2	0.7	1.0	$C_3 H_8 O_3 N_1$
122.0532	1.5	122.0566	-27.3	-3.3	0.5	$C_5 H_8 O_1 N_1$
123.0392	3.9	123.0406	-11.3	-1.4	0.5	$C_5 H_7 O_1 N_2$
137.0590	8.2	137.0603	-9.1	-1.3	4.5	$C_8 H_9 O_1$
		137.0562	20.2	2.8	0.5	$C_7 H_9 O_1 N_2$
138.0622	1.2	138.0641	-13.5	-1.9	0.0	$C_7 H_{10} O_1 N_2$
161.0589	100.0	161.0603	-8.6	-1.4	6.5	$C_{10} H_9 O_1$
		161.0562	16.4	2.6	2.5	$C_5 H_9 O_4 N_1$
162.0603	9.2	162.0641	-22.9	-3.7	2.0	$C_5 H_{10} O_4 N_2$
		162.0555	29.9	4.8	6.5	$C_9 H_8 O_2 N_1$
174.0672	8.6	174.0681	-5.1	-0.9	7.0	$C_{11} H_{10} O_1$
		174.0641	18.0	3.1	3.0	$C_6 H_{10} O_4 N_2$
175.0696	1.1	175.0719	-13.2	-2.3	2.5	$C_6 H_{11} O_4 N_2$
177.0784	1.9	177.0790	-3.5	-0.6	6.0	$C_{10} H_{11} O_2 N_1$
		177.0750	19.2	3.4	2.0	$C_5 H_{11} O_4 N_3$
187.0748	2.0	187.0759	-6.1	-1.1	7.5	$C_{12} H_{11} O_2$
		187.0719	15.4	2.9	3.5	$C_7 H_{11} O_4 N_2$
188.0820	2.0	188.0837	-9.4	-1.8	7.0	$C_{12} H_{12} O_2$
		188.0797	12.0	2.3	3.0	$C_7 H_{12} O_4 N_2$
189.0896	2.4	189.0916	-10.2	-1.9	6.5	$C_{12} H_{13} O_2$
		189.0875	11.1	2.1	2.5	$C_7 H_{13} O_4 N_2$
207.1014	2.0	207.1008	2.8	0.6	6.0	$C_{10} H_{13} O_2 N_3$
		207.1021	-3.7	-0.8	5.5	$C_{12} H_{15} O_2$

Figure S30. HR-MS (EI) spectral data of *N*'-Butyrylpyridine-4-carbohydrazide (**9**)

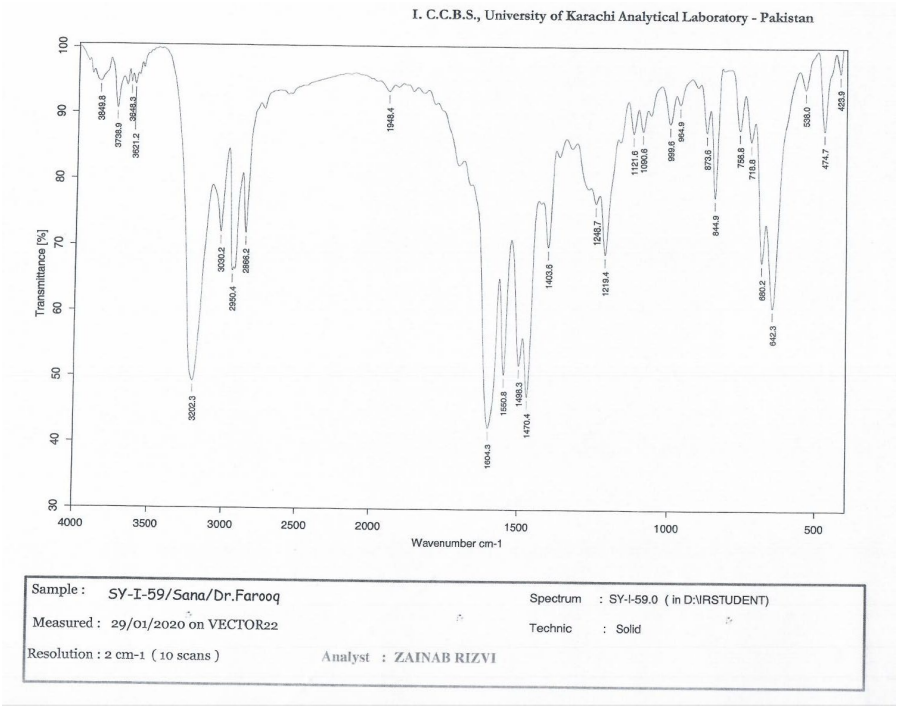


Figure S31. IR spectrum of *N*'-Hexanoylpyridine-4-carbohydrazide (**10**)

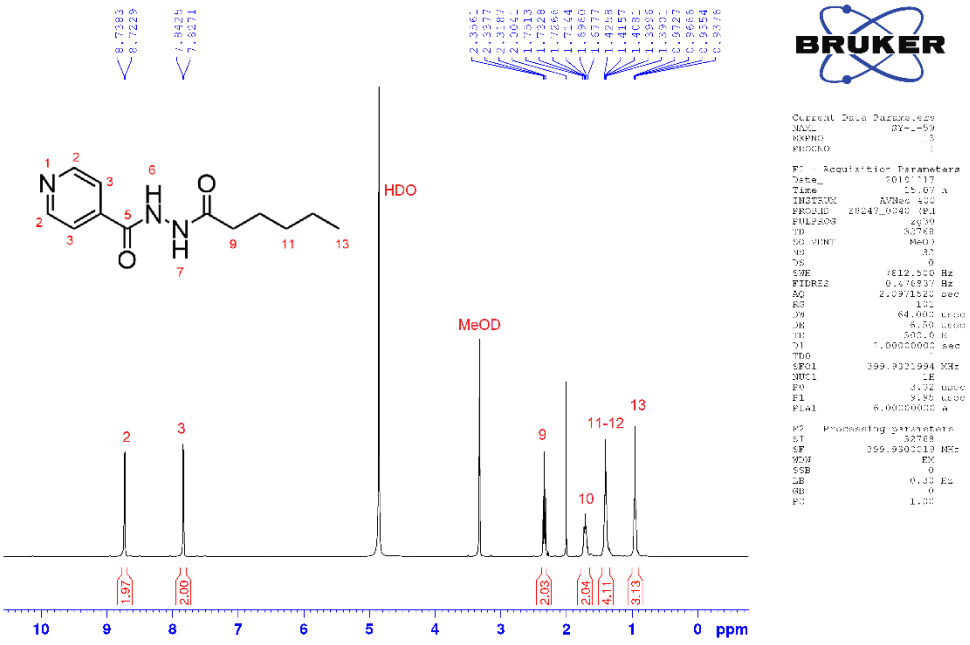


Figure S32. ^{1}H NMR spectrum of *N*'-Hexanoylpyridine-4-carbohydrazide (**10**)

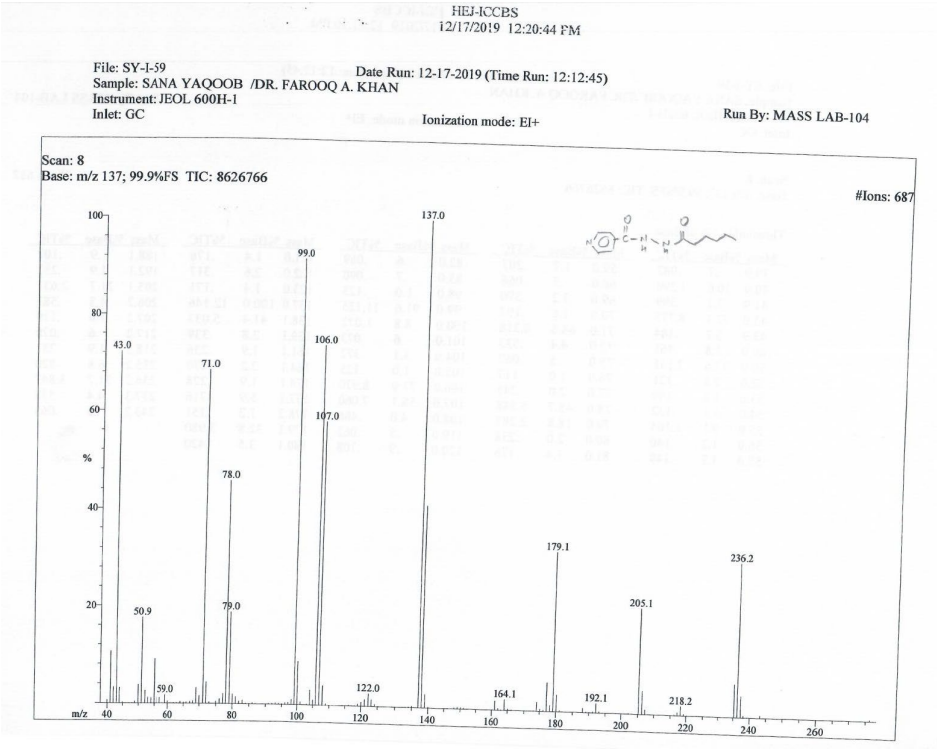
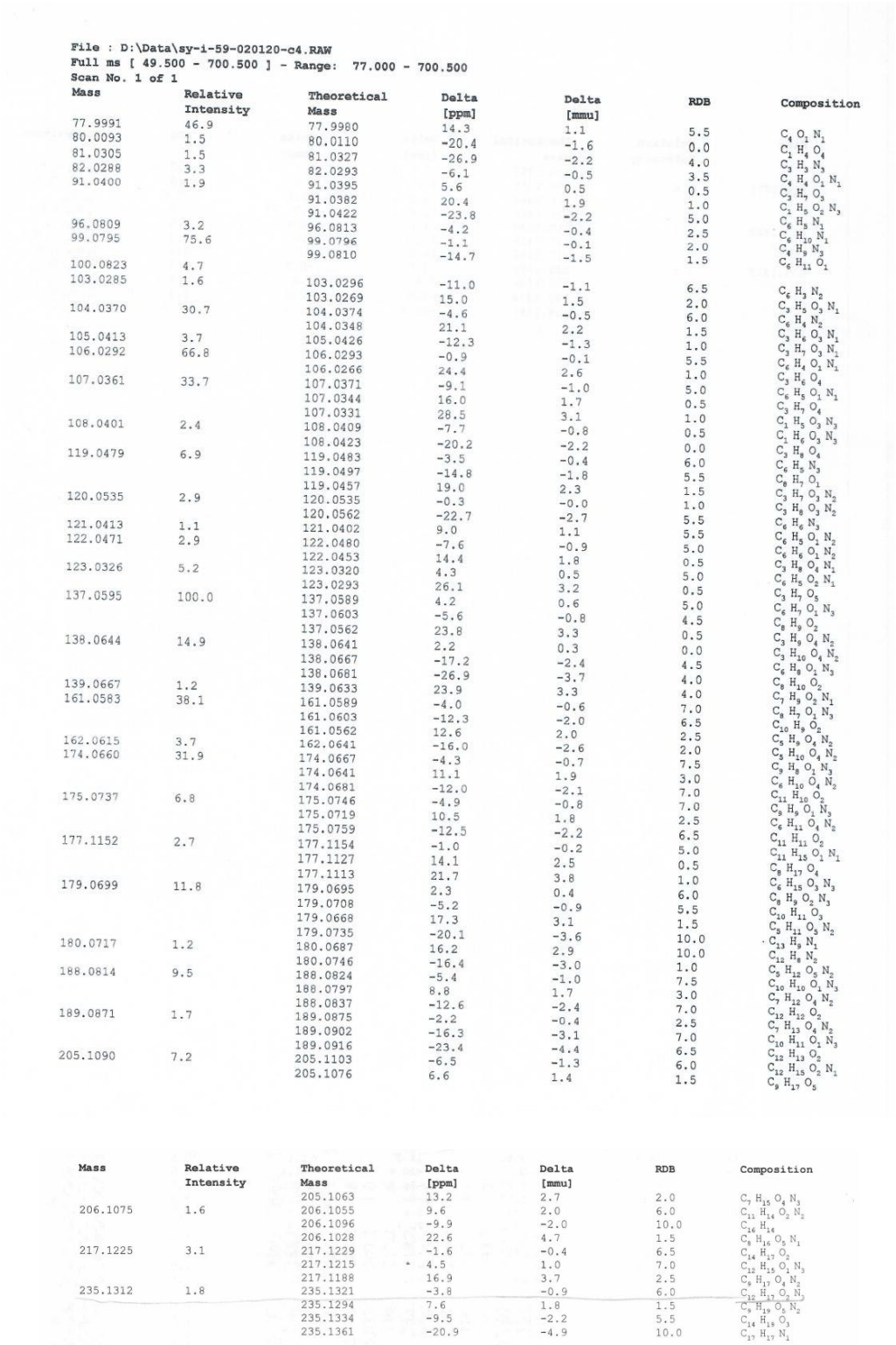


Figure S33. LR-MS (EI) spectrum of *N*'-Hexanoylpyridine-4-carbohydrazide (**10**)



File : D:\Data\sy-i-59-020120-c4.RAW
Full ms [49.500 - 700.500] - Range: 77.000 - 700.500
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
77.9991	46.9	77.9980	14.3	1.1	5.5	$C_4 O_1 N_1$
80.0093	1.5	80.0110	-20.4	-1.6	0.0	$C_1 H_4 O_4$
81.0305	1.5	81.0327	-26.9	-2.2	4.0	$C_3 H_3 N_3$
82.0288	3.3	82.0293	-6.1	-0.5	3.5	$C_4 H_4 O_1 N_1$
91.0400	1.9	91.0395	5.6	0.5	0.5	$C_3 H_7 O_3$
		91.0382	20.4	1.9	1.0	$C_1 H_5 O_2 N_3$
		91.0422	-23.8	-2.2	5.0	$C_6 H_5 N_1$
96.0809	3.2	96.0813	-4.2	-0.4	2.5	$C_6 H_{10} N_1$
99.0795	75.6	99.0796	-1.1	-0.1	2.0	$C_4 H_9 N_3$
		99.0810	-14.7	-1.5	1.5	$C_6 H_{11} O_1$
100.0823	4.7					
103.0285	1.6	103.0296	-11.0	-1.1	6.5	$C_6 H_3 N_2$
		103.0269	15.0	1.5	2.0	$C_3 H_5 O_3 N_1$
104.0370	30.7	104.0374	-4.6	-0.5	6.0	$C_7 H_4 N_2$
		104.0348	21.1	2.2	1.5	$C_3 H_6 O_3 N_1$
105.0413	3.7	105.0426	-12.3	-1.3	1.0	$C_3 H_7 O_3 N_1$
106.0292	66.8	106.0293	-0.9	-0.1	5.5	$C_7 H_4 O_1 N_1$
		106.0266	24.4	2.6	1.0	$C_3 H_6 O_4$
107.0361	33.7	107.0371	-9.1	-1.0	5.0	$C_6 H_5 O_1 N_1$
		107.0344	16.0	1.7	0.5	$C_3 H_7 O_4$
		107.0331	28.5	3.1	1.0	$C_1 H_5 O_3 N_3$
108.0401	2.4	108.0409	-7.7	-0.8	0.5	$C_1 H_6 O_3 N_3$
		108.0423	-20.2	-2.2	0.0	$C_3 H_8 O_4$
119.0479	6.9	119.0483	-3.5	-0.4	6.0	$C_6 H_5 N_2$
		119.0497	-14.8	-1.8	5.5	$C_8 H_7 O_1$
		119.0457	19.0	2.3	1.5	$C_3 H_7 O_3 N_2$
120.0535	2.9	120.0535	-0.3	-0.0	1.0	$C_3 H_8 O_3 N_2$
		120.0562	-22.7	-2.7	5.5	$C_6 H_6 N_2$
121.0413	1.1	121.0402	9.0	1.1	5.5	$C_6 H_5 O_1 N_2$
122.0471	2.9	122.0480	-7.6	-0.9	5.0	$C_6 H_6 O_1 N_2$
		122.0453	14.4	1.8	0.5	$C_7 H_6 O_4 N_1$
123.0326	5.2	123.0320	4.3	0.5	5.0	$C_6 H_5 O_2 N_1$
		123.0293	26.1	3.2	0.5	$C_3 H_7 O_5$
137.0595	100.0	137.0589	4.2	0.6	5.0	$C_6 H_7 O_1 N_3$
		137.0603	-5.6	-0.8	4.5	$C_8 H_9 O_2$
		137.0562	23.8	3.3	0.5	$C_3 H_8 O_4 N_2$
138.0644	14.9	138.0641	2.2	0.3	0.0	$C_3 H_{10} O_4 N_2$
		138.0667	-17.2	-2.4	4.5	$C_6 H_8 O_1 N_3$
		138.0681	-26.9	-3.7	4.0	$C_8 H_{10} O_2$
139.0667	1.2	139.0633	23.9	3.3	4.0	$C_7 H_9 O_2 N_1$
161.0583	38.1	161.0589	-4.0	-0.6	7.0	$C_8 H_7 O_1 N_3$
		161.0603	-12.3	-2.0	6.5	$C_{10} H_9 O_2$
		161.0562	12.6	2.0	2.5	$C_5 H_8 O_4 N_2$
162.0615	3.7	162.0641	-16.0	-2.6	2.0	$C_5 H_{10} O_4 N_2$
174.0660	31.9	174.0667	-4.3	-0.7	7.5	$C_9 H_8 O_1 N_3$
		174.0641	11.1	1.9	3.0	$C_6 H_{10} O_4 N_2$
		174.0681	-12.0	-2.1	7.0	$C_{11} H_{10} O_2$
175.0737	6.8	175.0746	-4.9	-0.8	7.0	$C_9 H_9 O_1 N_3$
		175.0719	10.5	1.8	2.5	$C_6 H_{11} O_4 N_2$
		175.0759	-12.5	-2.2	6.5	$C_{11} H_{11} O_2$
177.1152	2.7	177.1154	-1.0	-0.2	5.0	$C_{11} H_{15} O_1 N_1$
		177.1127	14.1	2.5	0.5	$C_8 H_{17} O_4$
		177.1113	21.7	3.8	1.0	$C_6 H_{15} O_3 N_3$
179.0699	11.8	179.0695	2.3	0.4	6.0	$C_8 H_9 O_2 N_3$
		179.0708	-5.2	-0.9	5.5	$C_{10} H_{11} O_3$
		179.0668	17.3	3.1	1.5	$C_5 H_{11} O_5 N_2$
		179.0735	-20.1	-3.6	10.0	$C_{13} H_9 N_1$
180.0717	1.2	180.0687	16.2	2.9	10.0	$C_{12} H_8 N_2$
		180.0746	-16.4	-3.0	1.0	$C_5 H_{12} O_5 N_2$
188.0814	9.5	188.0824	-5.4	-1.0	7.5	$C_{10} H_{10} O_1 N_3$
		188.0797	8.8	1.7	3.0	$C_7 H_{12} O_4 N_2$
		188.0837	-12.6	-2.4	7.0	$C_{12} H_{12} O_2$
189.0871	1.7	189.0875	-2.2	-0.4	2.5	$C_7 H_{13} O_4 N_2$
		189.0902	-16.3	-3.1	7.0	$C_{10} H_{11} O_1 N_3$
		189.0916	-23.4	-4.4	6.5	$C_{12} H_{13} O_2$
205.1090	7.2	205.1103	-6.5	-1.3	6.0	$C_{12} H_{15} O_2 N_1$
		205.1076	6.6	1.4	1.5	$C_9 H_{17} O_5$

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
		205.1063	13.2	2.7	2.0	$C_7 H_{15} O_4 N_3$
206.1075	1.6	206.1055	9.6	2.0	6.0	$C_{11} H_{14} O_2 N_2$
		206.1096	-9.9	-2.0	10.0	$C_{16} H_{14}$
		206.1028	22.6	4.7	1.5	$C_8 H_{16} O_5 N_1$
217.1225	3.1	217.1229	-1.6	-0.4	6.5	$C_{14} H_{17} O_2$
		217.1215	4.5	1.0	7.0	$C_{12} H_{15} O_1 N_3$
		217.1188	16.9	3.7	2.5	$C_9 H_{17} O_4 N_2$
235.1312	1.8	235.1321	-3.8	-0.9	6.0	$C_{12} H_{17} O_2 N_3$
		235.1294	7.6	1.8	1.5	$C_6 H_{19} O_5 N_2$
		235.1334	-9.5	-2.2	5.5	$C_{14} H_{19} O_3$
		235.1361	-20.9	-4.9	10.0	$C_{17} H_{17} N_1$

Figure S34. HR-MS (EI) spectral data of *N*'-Hexanoylpyridine-4-carbohydrazide (**10**)

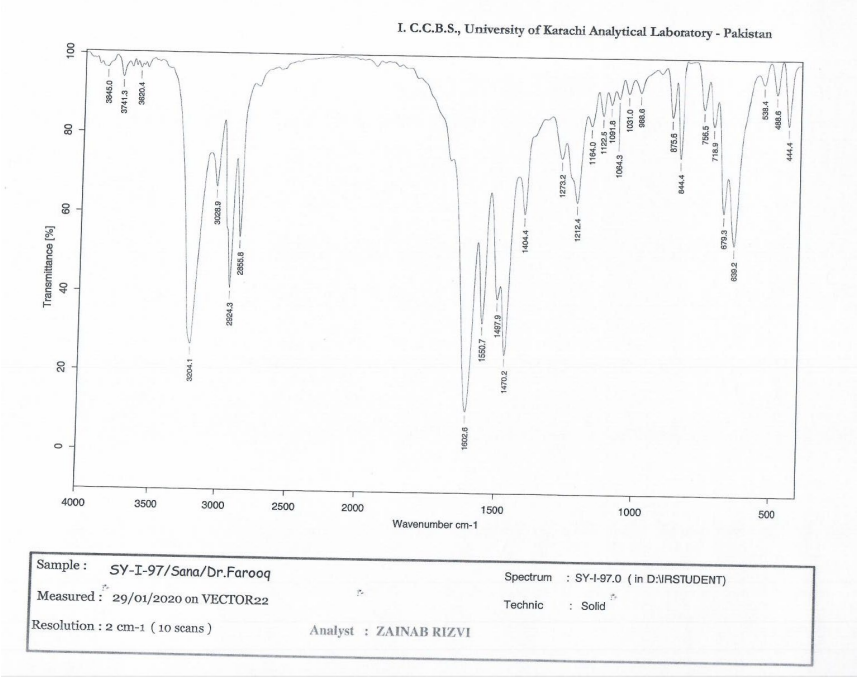


Figure S35. IR spectrum of *N*'-Octanoylpyridine-4-carbohydrazide (**11**)

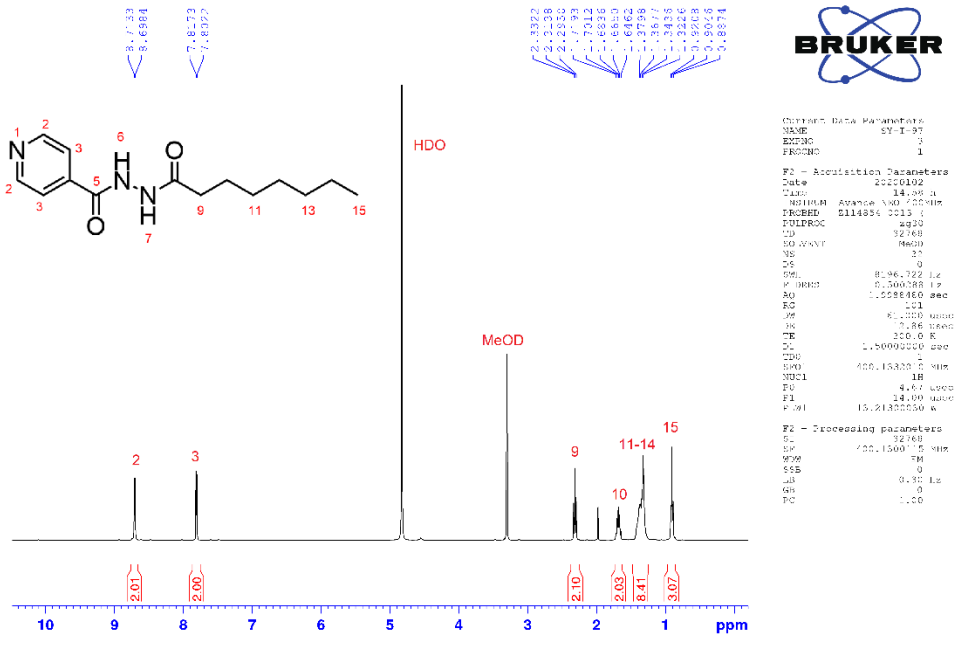


Figure S36. ^{1}H NMR spectrum of *N*'-Octanoylpyridine-4-carbohydrazide (**11**)

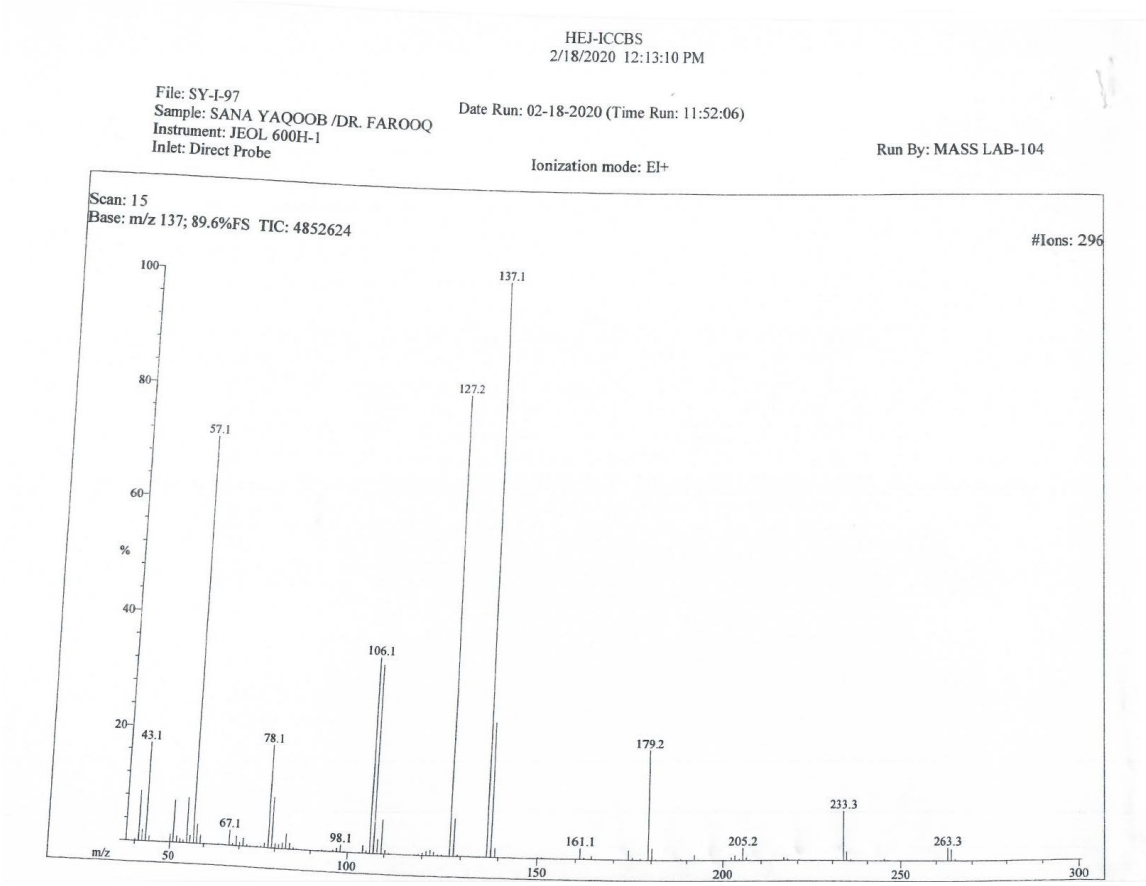
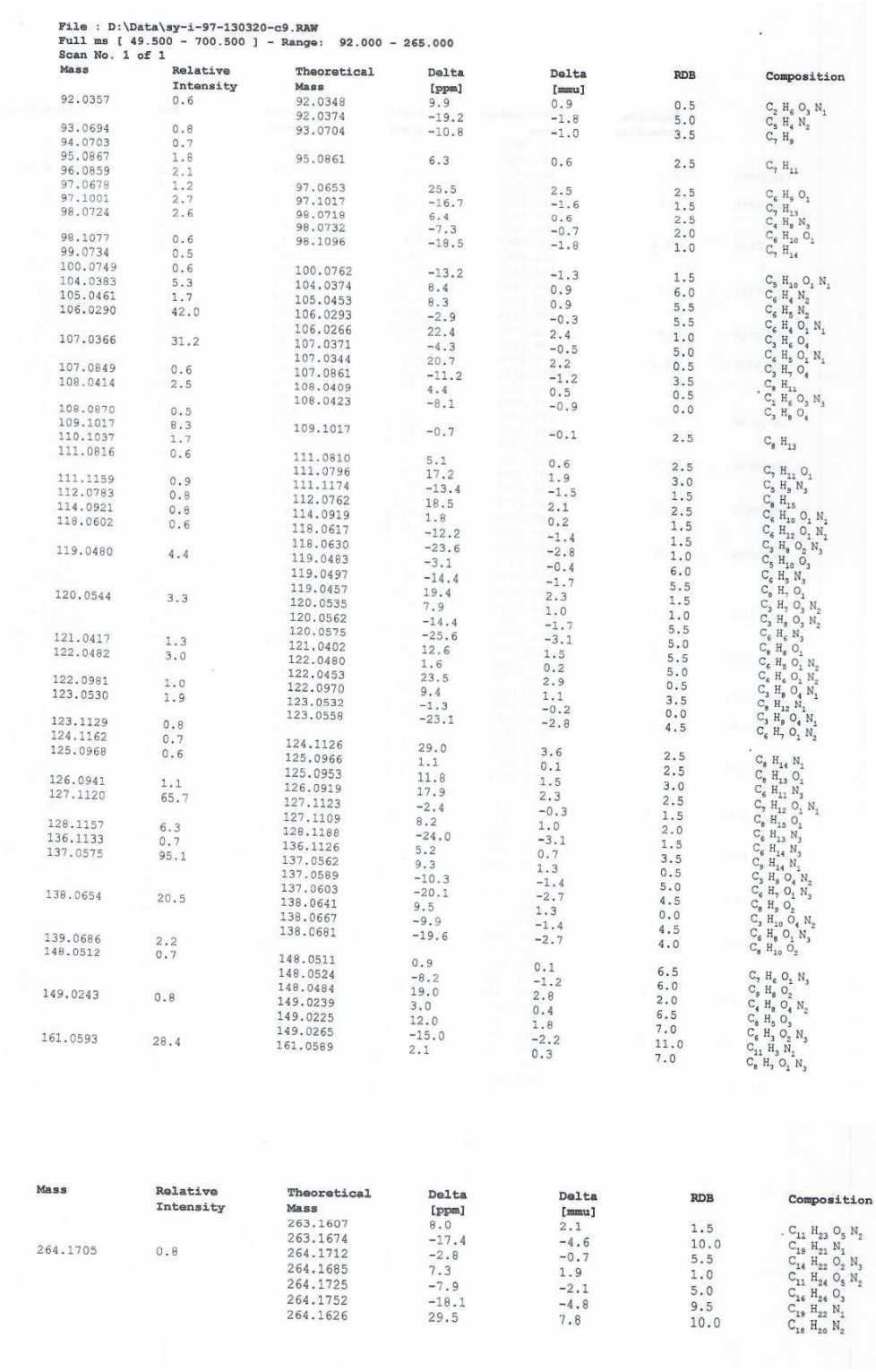


Figure S37. LR-MS (EI) spectrum of *N*'-Octanoylpyridine-4-carbohydrazide (**11**)



File : D:\Data\sy-i-97-130320-c9.RAW
Full ms [49.500 - 700.500] - Range: 92.000 - 265.000
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
92.0357	0.6	92.0348	9.9	0.9	0.5	$C_2 H_6 O_3 N_1$
		92.0374	-19.2	-1.8	5.0	$C_5 H_4 N_2$
93.0694	0.8	93.0704	-10.8	-1.0	3.5	$C_7 H_9$
94.0703	0.7					
95.0867	1.8	95.0861	6.3	0.6	2.5	$C_7 H_{11}$
96.0859	2.1					
97.0678	1.2	97.0653	25.5	2.5	2.5	$C_6 H_9 O_1$
97.1001	2.7	97.1017	-16.7	-1.6	1.5	$C_7 H_{13}$
98.0724	2.6	98.0718	6.4	0.6	2.5	$C_4 H_8 N_3$
		98.0732	-7.3	-0.7	2.0	$C_6 H_{10} O_1$
98.1077	0.6	98.1096	-18.5	-1.8	1.0	$C_7 H_{14}$
99.0734	0.5					
100.0749	0.6	100.0762	-13.2	-1.3	1.5	$C_5 H_{10} O_1 N_1$
104.0383	5.3	104.0374	8.4	0.9	6.0	$C_6 H_4 N_2$
105.0461	1.7	105.0453	8.3	0.9	5.5	$C_6 H_5 N_2$
106.0290	42.0	106.0293	-2.9	-0.3	5.5	$C_6 H_4 O_1 N_1$
		106.0266	22.4	2.4	1.0	$C_3 H_6 O_4$
107.0366	31.2	107.0371	-4.3	-0.5	5.0	$C_6 H_5 O_1 N_1$
		107.0344	20.7	2.2	0.5	$C_3 H_7 O_4$
107.0849	0.6	107.0861	-11.2	-1.2	3.5	$C_8 H_{11}$
108.0414	2.5	108.0409	4.4	0.5	0.5	$C_2 H_6 O_3 N_3$
		108.0423	-8.1	-0.9	0.0	$C_3 H_8 O_4$
108.0870	0.5					
109.1017	8.3	109.1017	-0.7	-0.1	2.5	$C_8 H_{13}$
110.1037	1.7					
111.0816	0.6	111.0810	5.1	0.6	2.5	$C_7 H_{11} O_1$
		111.0796	17.2	1.9	3.0	$C_5 H_9 N_3$
111.1159	0.9	111.1174	-13.4	-1.5	1.5	$C_8 H_{15}$
112.0783	0.8	112.0762	18.5	2.1	2.5	$C_6 H_{10} O_1 N_1$
114.0921	0.8	114.0919	1.8	0.2	1.5	$C_6 H_{12} O_1 N_1$
118.0602	0.6	118.0617	-12.2	-1.4	1.5	$C_3 H_8 O_2 N_3$
		118.0630	-23.6	-2.8	1.0	$C_5 H_{10} O_3$
119.0480	4.4	119.0483	-3.1	-0.4	6.0	$C_6 H_5 N_3$
		119.0497	-14.4	-1.7	5.5	$C_8 H_7 O_1$
120.0544	3.3	119.0457	19.4	2.3	1.5	$C_3 H_7 O_3 N_2$
		120.0535	7.9	1.0	1.0	$C_3 H_8 O_3 N_2$
		120.0562	-14.4	-1.7	5.5	$C_6 H_6 N_3$
121.0417	1.3	120.0575	-25.6	-3.1	5.0	$C_8 H_8 O_1$
122.0482	3.0	121.0402	12.6	1.5	5.5	$C_6 H_5 O_1 N_2$
		122.0480	1.6	0.2	5.0	$C_6 H_6 O_1 N_2$
122.0981	1.0	122.0453	23.5	2.9	0.5	$C_3 H_8 O_4 N_1$
123.0530	1.9	122.0970	9.4	1.1	3.5	$C_8 H_{12} N_1$
		123.0532	-1.3	-0.2	0.0	$C_3 H_9 O_4 N_1$
123.1129	0.8	123.0558	-23.1	-2.8	4.5	$C_6 H_7 O_1 N_2$
124.1162	0.7					
125.0968	0.6	124.1126	29.0	3.6	2.5	$C_8 H_{14} N_1$
		125.0966	1.1	0.1	2.5	$C_8 H_{13} O_1$
126.0941	1.1	125.0953	11.8	1.5	3.0	$C_6 H_{11} N_3$
127.1120	65.7	126.0919	17.9	2.3	2.5	$C_7 H_{12} O_1 N_1$
		127.1123	-2.4	-0.3	1.5	$C_8 H_{15} O_1$
128.1157	6.3	127.1109	8.2	1.0	2.0	$C_6 H_{13} N_3$
136.1133	0.7	128.1188	-24.0	-3.1	1.5	$C_6 H_{14} N_3$
137.0575	95.1	136.1126	5.2	0.7	3.5	$C_9 H_{14} N_1$
		137.0562	9.3	1.3	0.5	$C_3 H_9 O_4 N_2$
		137.0589	-10.3	-1.4	5.0	$C_6 H_7 O_1 N_3$
138.0654	20.5	137.0603	-20.1	-2.7	4.5	$C_8 H_9 O_2$
		138.0641	9.5	1.3	0.0	$C_3 H_{10} O_4 N_2$
		138.0667	-9.9	-1.4	4.5	$C_6 H_8 O_1 N_3$
139.0686	2.2	138.0681	-19.6	-2.7	4.0	$C_8 H_{10} O_2$
148.0512	0.7					
		148.0511	0.9	0.1	6.5	$C_7 H_6 O_1 N_3$
149.0243	0.8	148.0524	-8.2	-1.2	6.0	$C_9 H_8 O_2$
		148.0484	19.0	2.8	2.0	$C_4 H_8 O_4 N_2$
		149.0239	3.0	0.4	6.5	$C_5 H_5 O_3$
		149.0225	12.0	1.8	7.0	$C_6 H_3 O_2 N_3$
161.0593	28.4	149.0265	-15.0	-2.2	11.0	$C_{11} H_3 N_1$
		161.0589	2.1	0.3	7.0	$C_6 H_7 O_1 N_3$

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
		263.1607	8.0	2.1	1.5	$C_{11} H_{23} O_5 N_2$
264.1705	0.8	263.1674	-17.4	-4.6	10.0	$C_{19} H_{21} N_1$
		264.1712	-2.8	-0.7	5.5	$C_{14} H_{22} O_2 N_3$
		264.1685	7.3	1.9	1.0	$C_{11} H_{24} O_5 N_2$
		264.1725	-7.9	-2.1	5.0	$C_{16} H_{24} O_3$
		264.1752	-18.1	-4.8	9.5	$C_{19} H_{22} N_1$
		264.1626	29.5	7.8	10.0	$C_{16} H_{20} N_2$

Figure S38. HR-MS (EI) spectral data of *N*'-Octanoylpyridine-4-carbohydrazide (**11**)

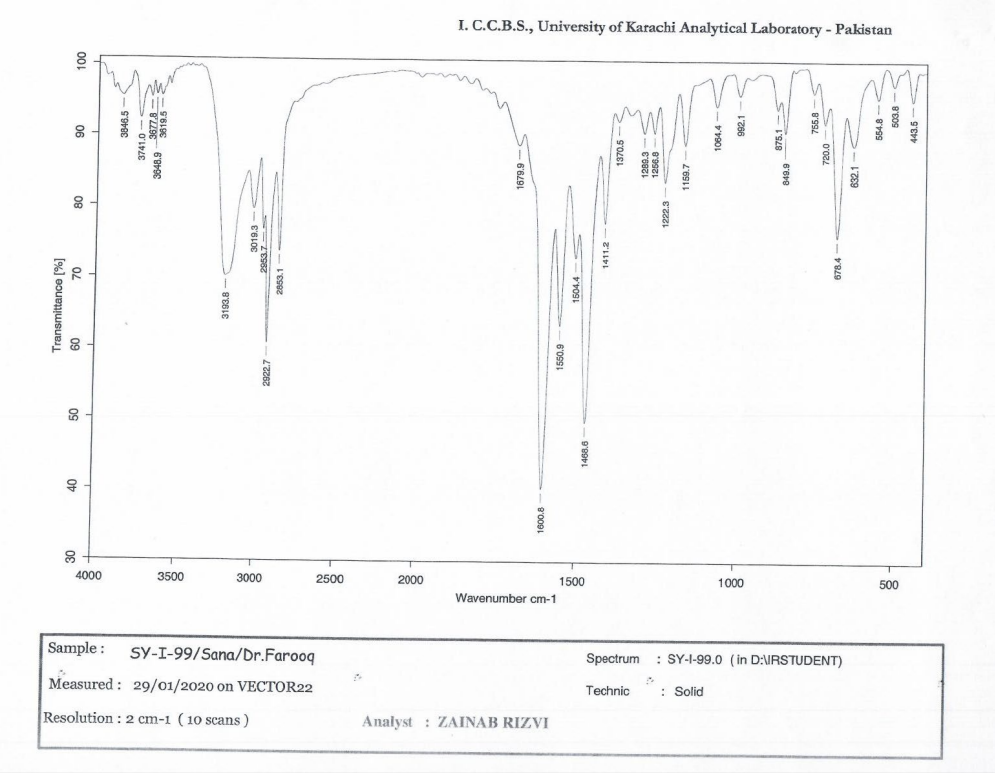


Figure S39. IR spectrum of *N*'-Decanoylpyridine-4-carbohydrazide (**12**)

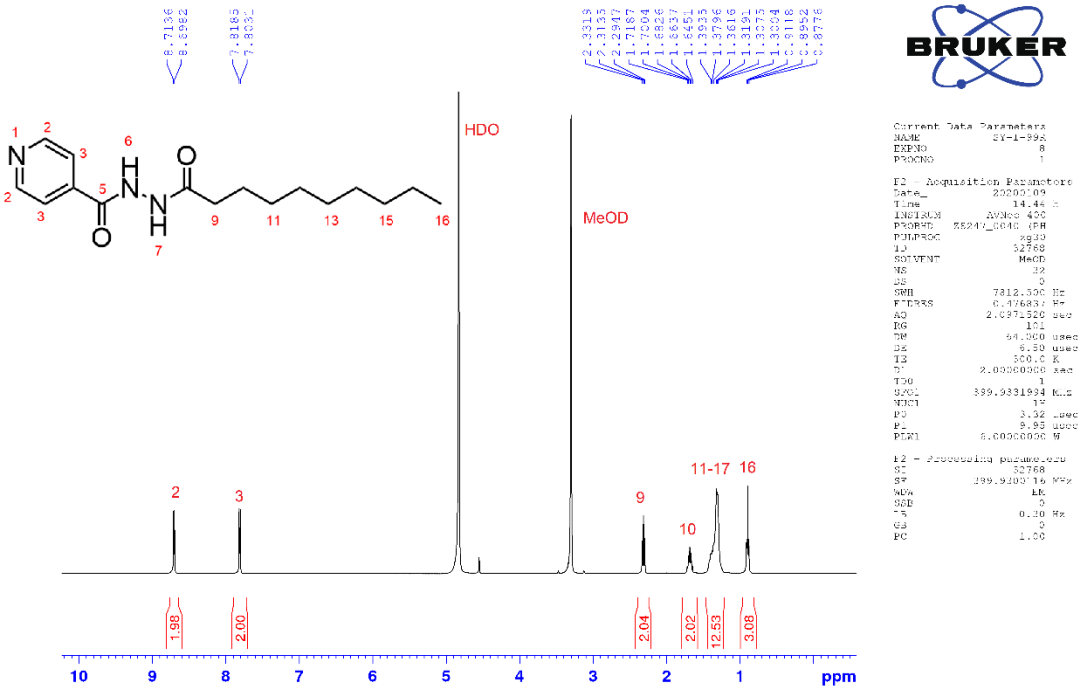


Figure S40. ^{1}H NMR spectrum of *N*'-Decanoylpyridine-4-carbohydrazide (**12**)

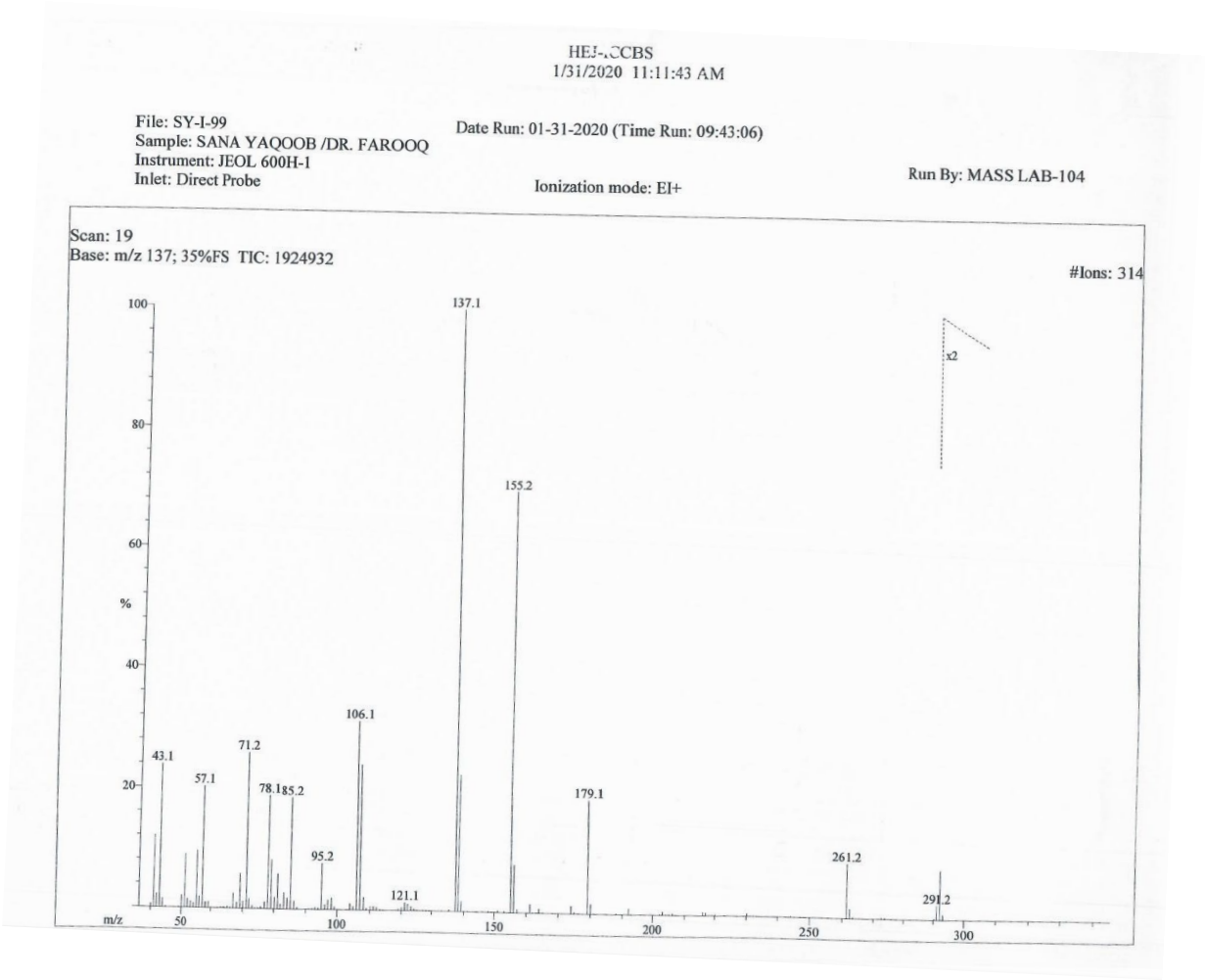


Figure S41. LR-MS (EI) spectrum of *N*'-Decanoylpyridine-4-carbohydrazide (**12**)

File : D:\Data\sy-i-99_180220-c13.RAW
Full ms [49.500 - 750.500] - Range: 101.000 - 293.000
Scan No. 1 of 1

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Composition
101.0157	0.1					
101.0573	0.2	101.0603	-28.9	-2.9	1.5	$C_5 H_9 O_2$
102.0296	0.2	102.0304	-7.4	-0.8	2.5	$C_2 H_4 O_2 N_3$
		102.0317	-20.6	-2.1	2.0	$C_4 H_6 O_3$
102.0447	0.2	102.0429	17.5	1.8	2.0	$C_3 H_6 O_2 N_2$
102.0678	0.0	102.0681	-3.0	-0.3	1.0	$C_5 H_{10} O_2$
103.0296	1.8	103.0269	25.6	2.6	2.0	$C_3 H_5 O_3 N_1$
104.0368	28.1	104.0348	19.5	2.0	1.5	$C_3 H_6 O_3 N_1$
104.0990	0.0					
105.0435	5.2	105.0426	8.7	0.9	1.0	$C_3 H_7 O_3 N_1$
		105.0413	21.5	2.3	1.5	$C_1 H_5 O_2 N_4$
106.0288	23.7	106.0266	20.9	2.2	1.0	$C_3 H_6 O_4$
106.5438	0.0					
107.0351	6.7	107.0344	6.4	0.7	0.5	$C_3 H_7 O_4$
		107.0331	18.9	2.0	1.0	$C_1 H_5 O_3 N_3$
107.0835	0.8					
107.5522	0.1					
108.0407	0.8	108.0409	-2.1	-0.2	0.5	$C_1 H_6 O_3 N_3$
		108.0423	-14.5	-1.6	0.0	$C_3 H_8 O_4$
108.0811	1.2					
109.0541	0.4					
109.0926	0.7					
110.0077	0.0					
110.0116	0.0	110.0116	-0.3	-0.0	5.0	$C_4 H_2 O_2 N_2$
110.0565	0.3					
110.0969	7.0					
111.1025	1.9					
112.0330	0.0					
112.0820	0.6					
112.1229	0.4					
113.0380	0.1	113.0351	25.7	2.9	3.5	$C_4 H_5 O_2 N_2$
113.0866	0.2					
113.1302	0.1					
114.0437	0.1	114.0429	6.5	0.7	3.0	$C_4 H_6 O_2 N_2$
114.0930	0.2					
114.1329	0.0					
114.5609	0.0					
115.0583	0.5					
115.0747	0.5	115.0759	-10.4	-1.2	1.5	$C_6 H_{11} O_2$
116.0544	0.5					
117.0607	1.0					
118.0620	1.7	118.0617	2.6	0.3	1.5	$C_3 H_8 O_2 N_3$
		118.0630	-8.7	-1.0	1.0	$C_5 H_{10} O_3$
119.0484	11.3	119.0457	22.7	2.7	1.5	$C_3 H_7 O_3 N_2$
120.0516	10.1	120.0535	-16.1	-1.9	1.0	$C_3 H_8 O_3 N_2$
121.0444	1.3					
121.0877	0.4	121.0851	21.2	2.6	0.0	$C_3 H_{11} O_2 N_3$
122.0341	6.4	122.0328	11.1	1.4	1.0	$C_2 H_6 O_4 N_2$
		122.0368	-21.8	-2.7	5.0	$C_7 H_6 O_2$
122.0825	1.8	122.0804	17.4	2.1	0.0	$C_2 H_{10} O_2 N_4$
123.0139	4.8	123.0154	-12.2	-1.5	1.5	$H_3 O_4 N_4$
123.0814	0.5					
123.9692	0.1					
124.0109	0.4					
124.0335	0.4	124.0358	-19.1	-2.4	0.5	$C_1 H_6 O_4 N_3$
124.0862	3.4					
124.9688	0.0					
125.0160	0.1					
125.0847	0.5					
126.0065	0.0	126.0065	-0.2	-0.0	5.0	$C_4 H_2 O_3 N_2$
126.0531	0.2	126.0555	-19.4	-2.4	3.5	$C_6 H_8 O_2 N_1$
126.0993	0.1					
126.8628	0.0					
127.0018	0.2	127.0018	0.4	0.1	5.0	$C_3 H_1 O_3 N_3$
		127.0031	-10.1	-1.3	4.5	$C_5 H_3 O_4$
127.0631	0.1	127.0633	-1.7	-0.2	3.0	$C_6 H_9 O_2 N_1$
127.1032	0.0					

Mass	Relative Intensity	Theoretical Mass	Delta [ppm]	Delta [mmu]	RDB	Compositior
272.1744	1.6	272.1736	2.9	0.8	3.0	$C_{13}H_{24}O_4N_2$
		272.1776	-11.8	-3.2	7.0	$C_{18}H_{24}O_2$
273.0768	0.0	273.0750	6.9	1.9	10.0	$C_{13}H_{11}O_4N_3$
		273.0790	-7.8	-2.1	14.0	$C_{18}H_{11}O_2N_1$
273.1810	4.6	273.1814	-1.7	-0.5	2.5	$C_{13}H_{25}O_4N_2$
		273.1855	-16.4	-4.5	6.5	$C_{18}H_{25}O_2$
		273.1729	29.6	8.1	7.0	$C_{17}H_{23}O_2N_1$
274.1871	1.0	274.1893	-7.9	-2.2	2.0	$C_{13}H_{26}O_4N_2$
		274.1933	-22.6	-6.2	6.0	$C_{18}H_{26}O_2$
		274.1807	23.3	6.4	6.5	$C_{17}H_{24}O_2N_1$
275.0749	0.0	275.0780	-11.3	-3.1	9.5	$C_{12}H_{11}O_4N_4$
		275.0708	14.9	4.1	13.5	$C_{18}H_{11}O_3$
		275.0695	19.8	5.4	14.0	$C_{16}H_9O_2N_3$
		275.0821	-25.9	-7.1	13.5	$C_{17}H_{11}O_2N_2$
275.0920	0.0	275.0906	4.9	1.4	9.0	$C_{13}H_{13}O_4N_3$
		275.0946	-9.7	-2.7	13.0	$C_{18}H_{13}O_2N_1$
275.1092	0.0	275.1072	7.1	2.0	12.5	$C_{19}H_{15}O_2$
		275.1144	-19.1	-5.3	8.5	$C_{13}H_{15}O_3N_4$
		275.1032	21.7	6.0	8.5	$C_{14}H_{15}O_4N_2$
		275.1158	-24.0	-6.6	8.0	$C_{15}H_{17}O_4N_1$
275.1813	0.1	275.1845	-11.8	-3.2	2.0	$C_{12}H_{25}O_4N_3$
		275.1760	19.3	5.3	6.5	$C_{16}H_{23}O_2N_2$
		275.1885	-26.4	-7.3	6.0	$C_{17}H_{25}O_2N_1$
276.1808	0.0	276.1798	3.9	1.1	2.0	$C_{11}H_{24}O_4N_4$
		276.1838	-10.7	-2.9	6.0	$C_{16}H_{24}O_2N_2$
		276.1725	30.0	8.3	6.0	$C_{17}H_{24}O_3$
277.0921	0.0	277.0937	-5.7	-1.6	8.5	$C_{12}H_{13}O_4N_4$
		277.0977	-20.2	-5.6	12.5	$C_{17}H_{13}O_2N_2$
		277.0865	20.4	5.6	12.5	$C_{18}H_{13}O_3$
		277.0851	25.2	7.0	13.0	$C_{16}H_{11}O_2N_3$
280.0901	0.0	280.0848	18.9	5.3	12.0	$C_{16}H_{12}O_3N_2$
		280.0960	-21.2	-6.0	12.0	$C_{15}H_{12}O_2N_4$
		280.0974	-26.0	-7.3	11.5	$C_{17}H_{14}O_3N_1$
280.1076	0.0	280.1086	-3.5	-1.0	11.5	$C_{16}H_{14}O_2N_3$
		280.1099	-8.3	-2.3	11.0	$C_{18}H_{16}O_3$
281.1102	0.0	281.1052	17.7	5.0	11.0	$C_{17}H_{15}O_3N_1$
		281.1164	-22.2	-6.3	11.0	$C_{16}H_{15}O_2N_3$
		281.1039	22.5	6.3	11.5	$C_{15}H_{13}O_2N_4$
		281.1178	-27.0	-7.6	10.5	$C_{18}H_{17}O_3$
282.0932	0.0	282.0892	14.1	4.0	11.0	$C_{17}H_{14}O_4$
		282.0879	18.9	5.3	11.5	$C_{13}H_{12}O_3N_3$
		282.1004	-25.7	-7.2	11.0	$C_{16}H_{14}O_3N_2$
282.1511	0.0	282.1494	5.9	1.7	9.5	$C_{18}H_{20}O_2N_1$
		282.1454	20.1	5.7	5.5	$C_{13}H_{20}O_4N_3$
		282.1580	-24.4	-6.9	5.0	$C_{14}H_{22}O_4N_2$
283.1167	0.0	283.1195	-9.9	-2.8	10.5	$C_{15}H_{15}O_2N_4$
		283.1208	-14.6	-4.1	10.0	$C_{17}H_{17}O_3N_1$
		283.1083	29.8	8.4	10.5	$C_{16}H_{15}O_3N_2$
285.1782	0.0	285.1814	-11.4	-3.3	3.5	$C_{14}H_{25}O_4N_2$
		285.1729	18.6	5.3	8.0	$C_{18}H_{23}O_2N_1$
		285.1855	-25.5	-7.3	7.5	$C_{19}H_{25}O_2$
285.2029	0.0	285.2052	-8.1	-2.3	3.0	$C_{14}H_{27}O_3N_3$
		285.2066	-12.8	-3.6	2.5	$C_{16}H_{29}O_4$
287.1943	0.0	287.1971	-9.6	-2.7	2.5	$C_{14}H_{27}O_4N_2$
		287.1885	20.2	5.8	7.0	$C_{18}H_{25}O_2N_1$
		287.2011	-23.6	-6.8	6.5	$C_{19}H_{27}O_2$
288.2010	0.0	288.2049	-13.5	-3.9	2.0	$C_{14}H_{28}O_4N_2$
		288.1964	16.2	4.7	6.5	$C_{18}H_{26}O_2N_1$
		288.2089	-27.5	-7.9	6.0	$C_{19}H_{28}O_2$
289.1835	0.0	289.1804	10.9	3.2	6.5	$C_{18}H_{25}O_3$
		289.1876	-14.0	-4.0	2.5	$C_{12}H_{25}O_4N_4$
		289.1790	15.6	4.5	7.0	$C_{16}H_{23}O_2N_3$
		289.1916	-27.9	-8.1	6.5	$C_{17}H_{25}O_2N_2$
290.0699	0.0	290.0691	2.8	0.8	14.0	$C_{17}H_{10}O_3N_2$
290.1898	0.0	290.1882	5.5	1.6	6.0	$C_{18}H_{26}O_3$
		290.1869	10.1	2.9	6.5	$C_{16}H_{24}O_2N_3$
		290.1954	-19.4	-5.6	2.0	$C_{12}H_{26}O_4N_4$
291.1937	0.1	291.1947	-3.2	-0.9	6.0	$C_{16}H_{25}O_2N_3$
		291.1960	-7.8	-2.3	5.5	$C_{18}H_{27}O_3$
292.2009	0.0	292.2025	-5.5	-1.6	5.5	$C_{16}H_{26}O_2N_3$

Figure S42. HR-MS (EI) spectral data of *N*'-Decanoylpyridine-4-carbohydrazide (**12**)

Table S1. Time-kill assay of compound **4** against the *Pseudomonas aeruginosa* PA-01 observed onto nutrient agar plates *via* counting log CFU/mL (± S.D), after 24 hours

Time (h)	MIC 0.5X (4 µg)	MIC 1X (8 µg)	MIC 2X (16 µg)	Ampicillin/Cloxacillin MIC 1X (32 µg)	*Pseudomonas aeruginosa* PA-01
0	6± 0.19	6± 0.16	6± 0.19	6± 0.26	6± 0.21
4	6± 0.13	5± 0.19	2± 0.22	5± 0.29	6± 0.19
8	5.2± 0.18	3.2± 0.18	1± 0.27	5± 0.31	6.8± 0.21
12	3± 0.179	2± 0.21	1± 0.27	3± 0.37	7.3± 0.16
24	2± 0.18	1.1± 0.19	1± 0.24	2± 0.32	7.2± 0.18
48	1.1± ± 0.17	0.8± 0.16	1± 0.19	1± 0.36	7.4± 0.18

Table S2. Time-kill assay of compound **4** against *the Staphylococcus aureus* ATCC 29213 observed onto nutrient agar plates *via* counting log CFU/mL (± S.D), after 24 hours

Time (h)	MIC 0.5X (4 µg)	MIC 1X (8 µg)	MIC 2X (16 µg)	ampicillin/cloxacillin MIC 1X (16 µg)	*Staphylococcus aureus ATCC* 29213
0	6± 0.61	6± 0.58	6± 0.47	6± 0.54	6± 0.69
4	5± 0.63	5.8± 0.60	4.91± 0.45	5.8± 0.51	5.9± 0.81
8	4.8± 0.58	4.3± 0.57	3.1± 0.41	5.3± 0.49	6.3± 0.84
12	4.67± 0.54	3.51± 0.51	2.24± 0.44	3.1± 0.53	6.8± 0.79
24	3.9± 0.56	2.9± 0.43	1.2± 0.4	2.9± 0.55	7.1± 0.89
48	4.12± 0.59	1.78± 0.51	1± 0.52	1.9± 0.56	6.9± 1.17

Table S3. Time-kill assay of compound **6** against the *Candida glabrata* ATCC 2001 observed onto SDA agar plates *via* counting log CFU/mL (± S.D), after 48 hours

Time (h)	MIC 0.5X (8 µg)	MIC 1X (16 µg)	MIC 2X (32 µg)	Fluconazole (32 µg)	*Candida glabrata* ATCC 2001
0	5.88± 0.19	5.93 ± 0.16	5.98± 0.21	5.71± 0.19	5.75 ± 0.18
4	5.59± 0.21	4.98± 0.24	5.02± 0.19	5.7± 0.32	5.75 ± 0.21
8	5.31± 0.17	4.57± 0.21	4.11± 0.22	5.62± 0.67	6.1± 0.16
12	4.92± 0.11	4.02 ± 0.13	3.02± 0.17	4.01± 0.81	6.89 ± 0.12
24	3.96± 0.13	3.21± 0.18	2.11± 0.19	3.15± 1.01	7.02± 0.13
48	3.01± 0.09	2.01± 0.19	1.12± 1.08	2.81± 1.32	7.04± 0.16

Table S4. Comparison of percent hemolysis % (± S.D) observed for the compounds **4** and **6**

Time (h)	Ampicillin/cloxacillin (32 µg)	Fluconazole (32 µg)	Compound **4** (32 µg)	Compound **6** (32 µg)	DMSO (5%)	Triton X-100 (1%)	SDS (1%)
0	0	0	0	0	0	3± 0.11	5± 0.19
5	0	0	0	0	0	20± 0.11	25± 0.44
10	0	0	0	0	10± 0.39	60± 0.58	60± 0.61
15	0	0	0	0	15± 0.46	80± 0.57	80± 0.62
20	0	1± 0.12	0	2.6± 0.42	22± 0.46	90± 0.61	100± 0.64
30	0	1± 0.19	0	2.8± 0.44	27± 0.56	100± 0.65	100± 0.79