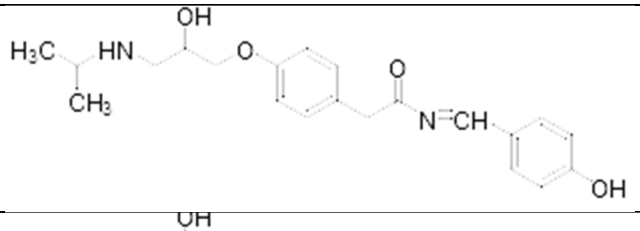
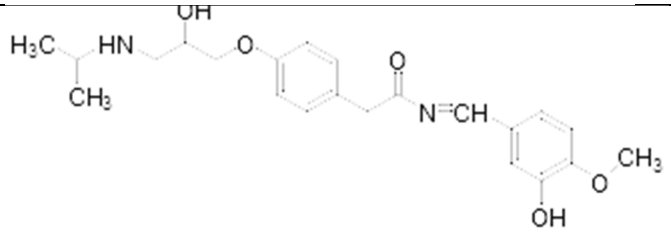
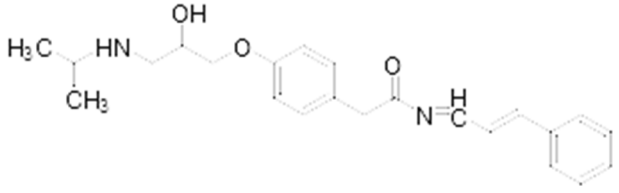
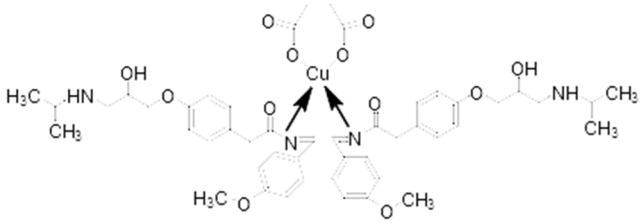
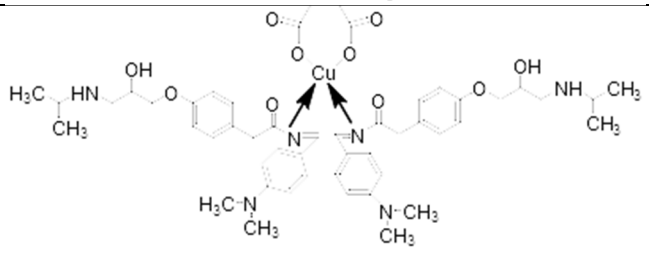
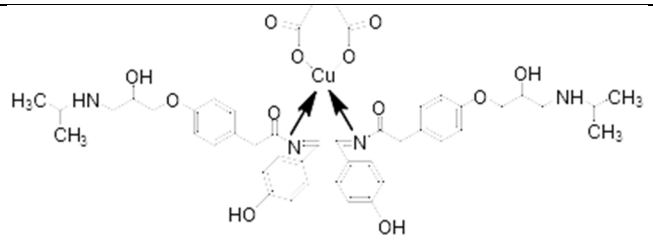
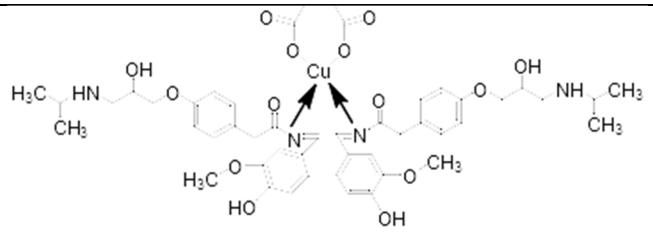
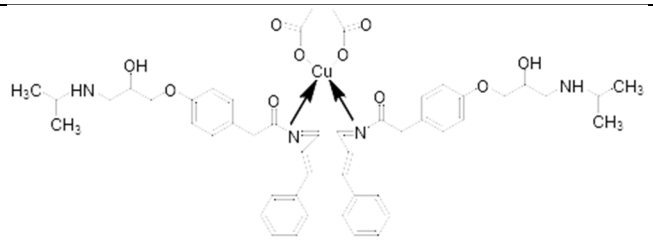
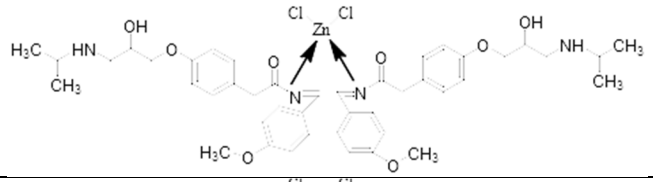
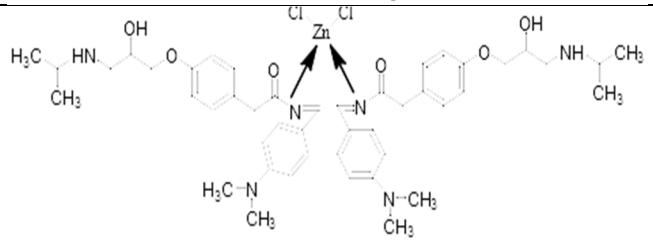
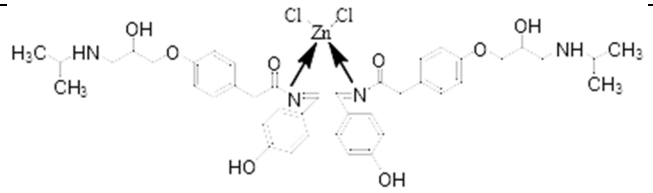
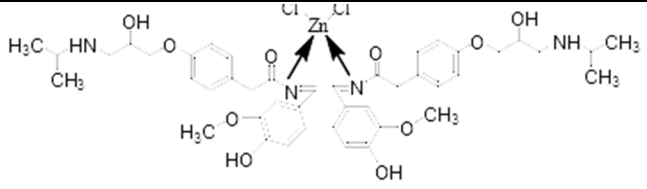
## *Supplementary data*

**Table S1**: Molecular structures and their respective molecular data

| Code | Structure | Molecular Formula | Molecular Weight |
|---|---|---|---|
| **3a** | | $C_{16}H_{24}N_2O_3$ | 292.3 |
| **3b** | | $C_{22}H_{23}N_2O_3$ | 368.4 |
| **3c** |  | $C_{21}H_{28}N_2O_3$ | 370.19 |
| **3d** |  | $C_{22}H_{28}N_2O_5$ | 400.20 |
| **3e** |  | $C_{23}H_{28}N_2O_3$ | 380.21 |
| **4a/1A** |  | $C_{48}H_{62}CuN_4O_{12}$ | 950.59 |
| **4b/1B4** |  | $C_{50}H_{68}CuN_5O_{10}$ | 976.67 |

***S1 Table is countinue……***

| Code | Structure | Molecular Formula | Molecular Weight |
|---|---|---|---|
| **4c/1S** |  | $C_{46}H_{58}CuN_4O_{12}$ | 922.53 |
| **4d/1V** |  | $C_{48}H_{62}CuN_4O_{14}$ | 982.58 |
| **4e/1C** |  | $C_{48}H_{56}CuN_4O_{10}$ | 912.54 |
| **5a/1A** |  | $C_{44}H_{56}Cl_2N_4O_8Zn$ | 905.23 |
| **5b/1B4** |  | $C_{46}H_{62}Cl_2N_6O_6Zn$ | 931.32 |
| **5c/1S** |  | $C_{42}H_{52}Cl_2N_4O_8Zn$ | 877.18 |
| **5d/1V** |  | $C_{44}H_{56}Cl_2N_4O_{10}Zn$ | 937.23 |

## FTIR of Atenolol and their derivatives

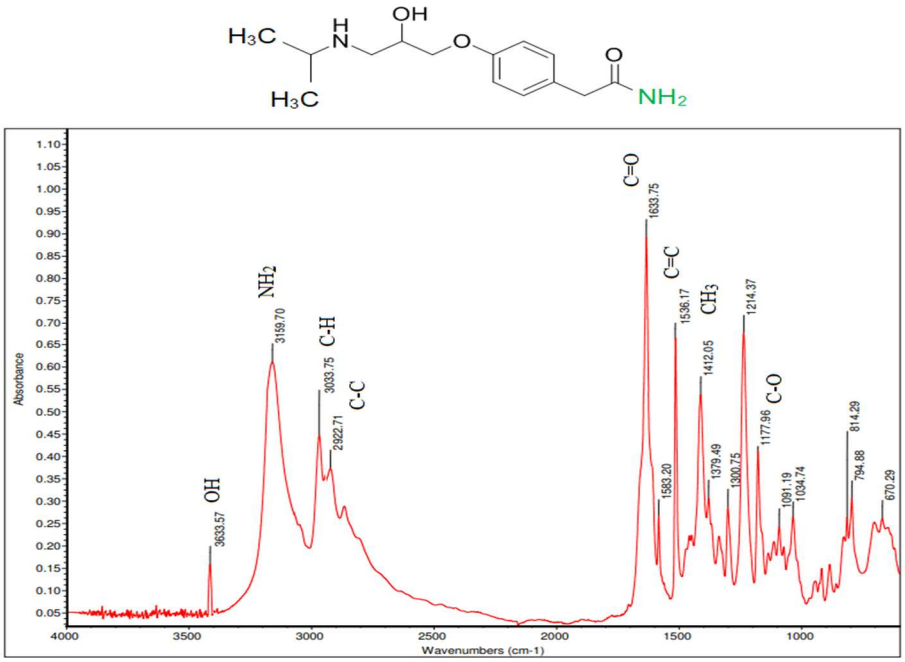



**Fig. S1**: FTIR Spectrum of Atenolol (01)

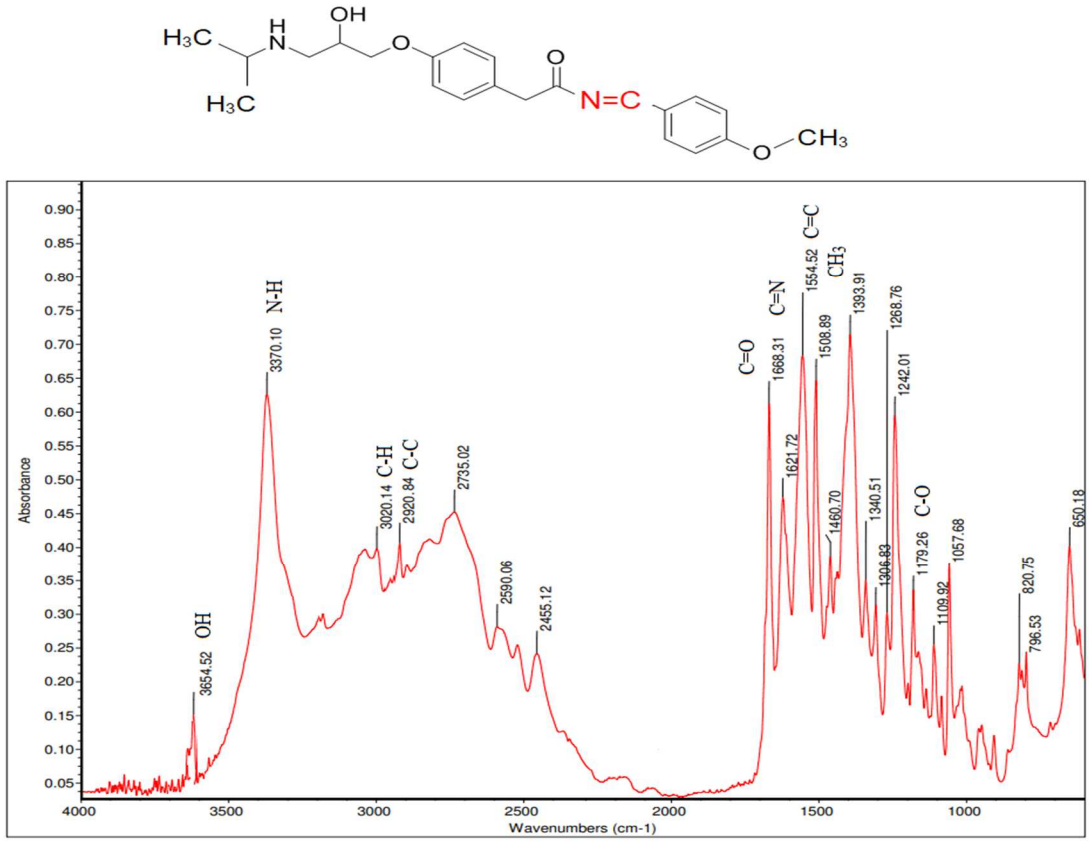



**Fig. S2.** FTIR Spectrum of Atenolol Derivative (3a)

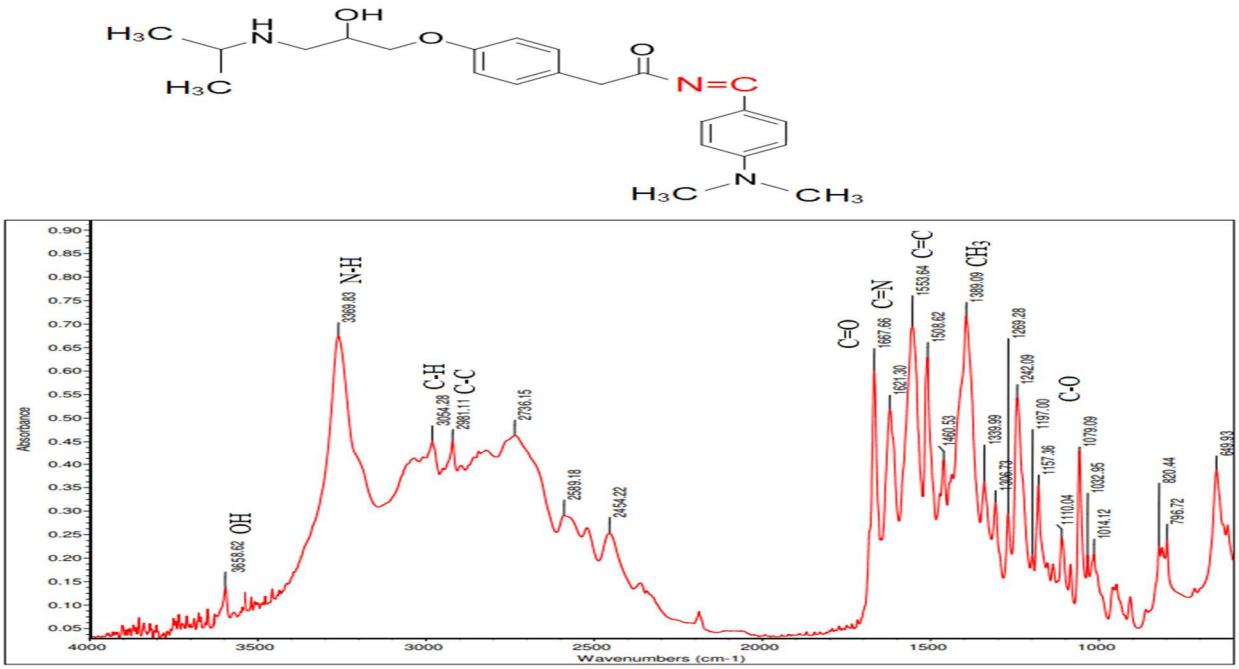



**Fig. S3**: FTIR Spectrum of Atenolol Derivative (3b)

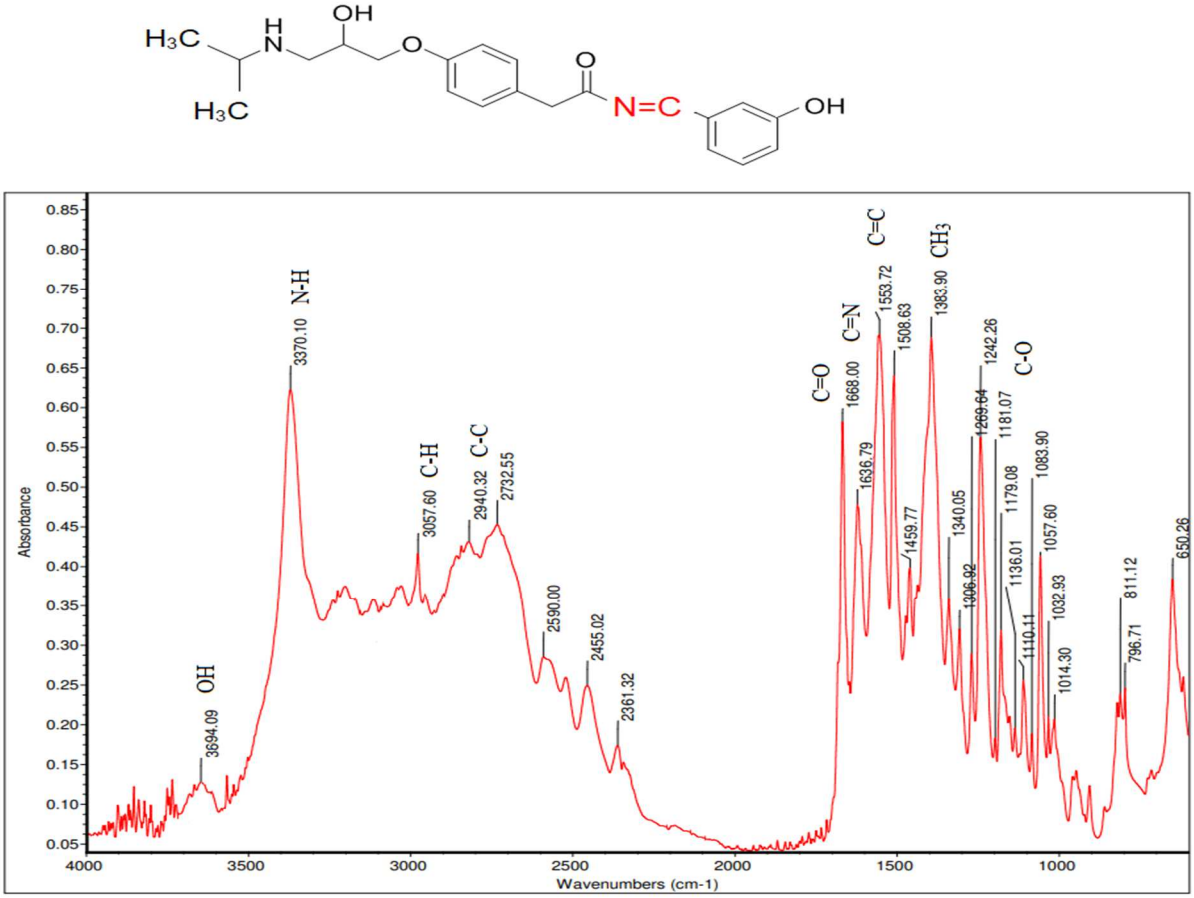



**Fig. S4**: FTIR Spectrum of Atenolol Derivative (3c)

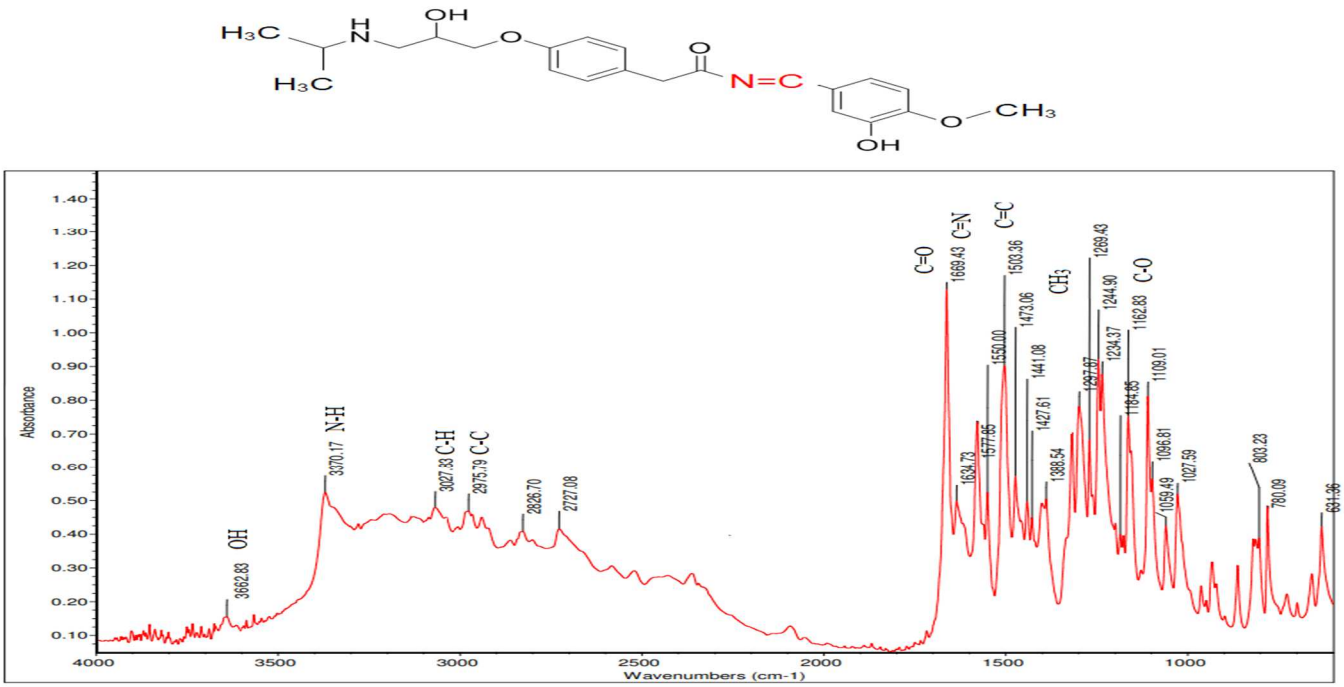



**Fig. S5**: FTIR Spectrum of Atenolol Derivative (3d)

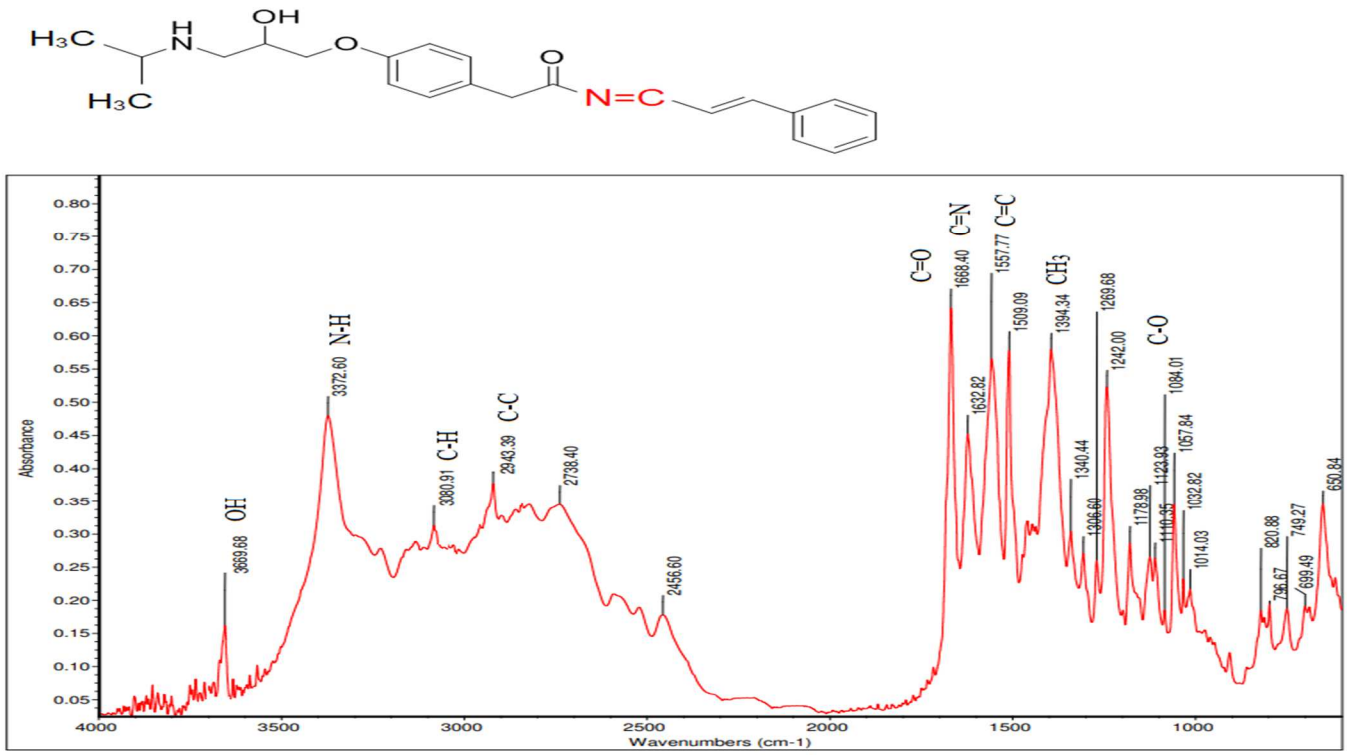



**Fig. S6**: FTIR Spectrum of Atenolol Derivative (3e)

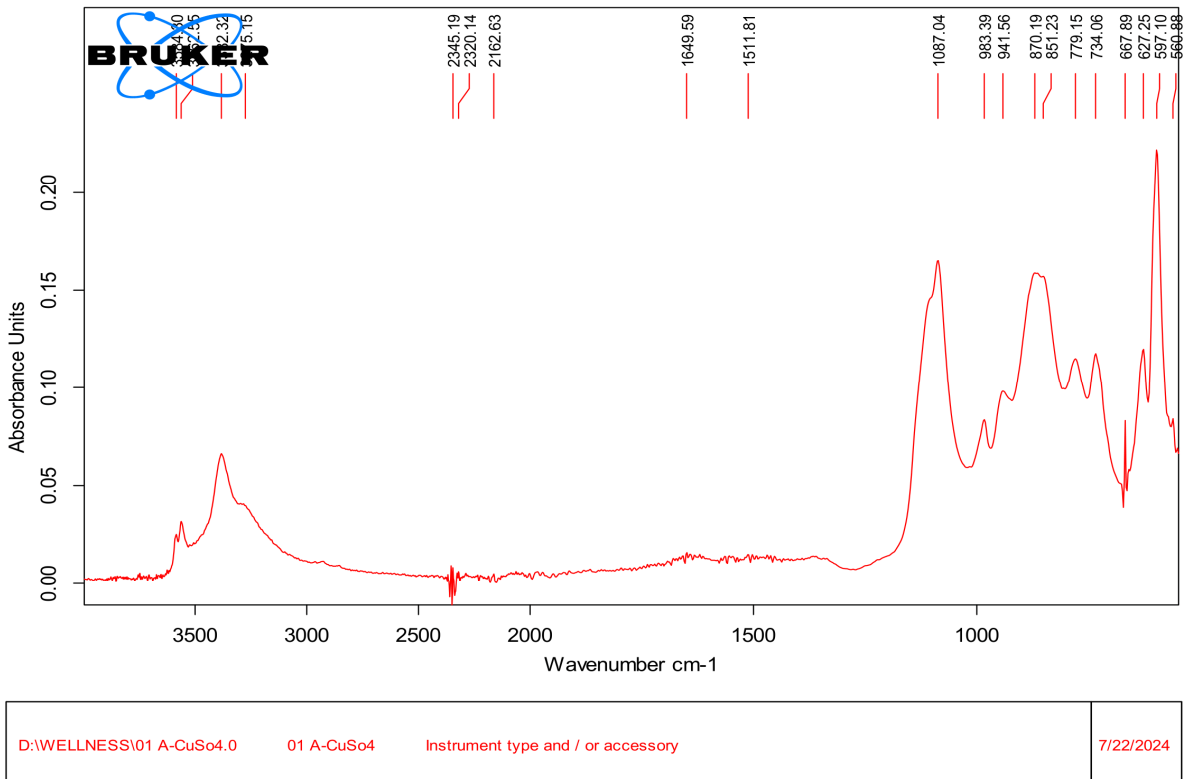



**Fig. S7**: FTIR spectra of 4a.

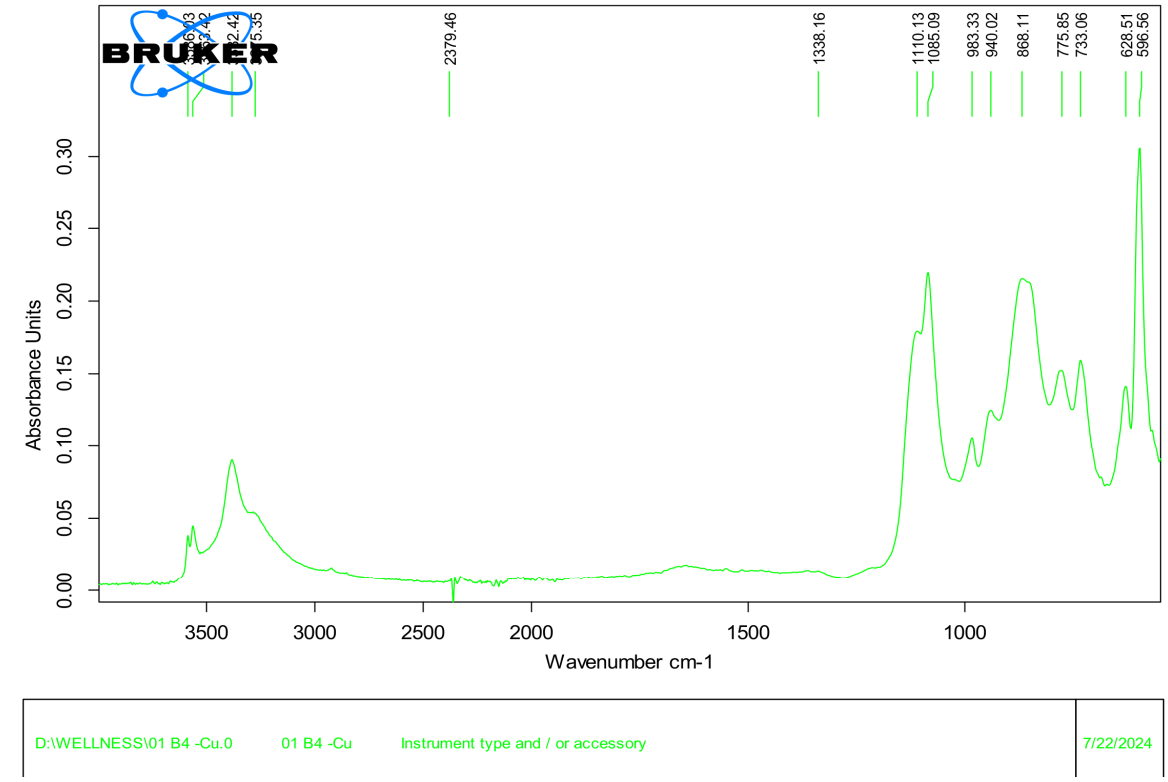



**Fig. S8**: FTIR spectra of 4b.

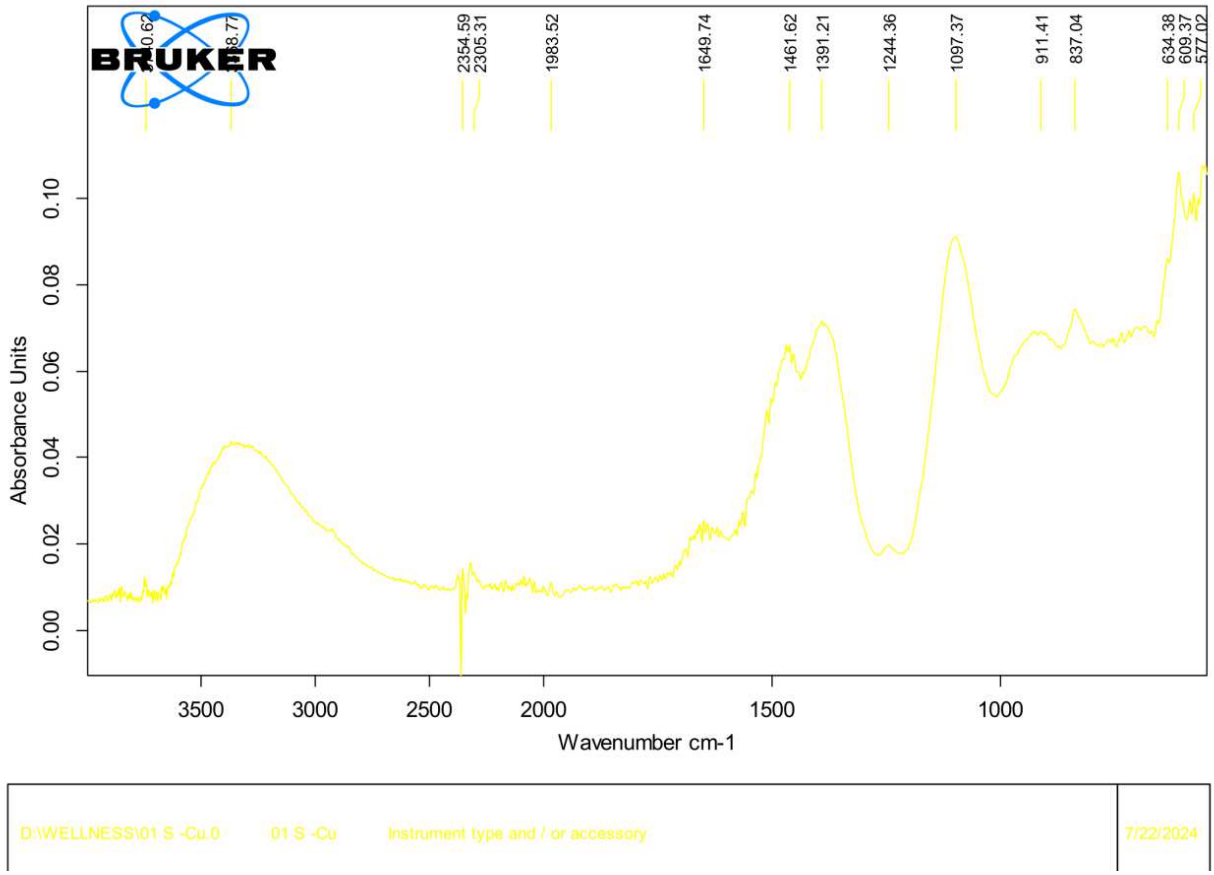



**Fig. S9**: FTIR spectra of 4c.

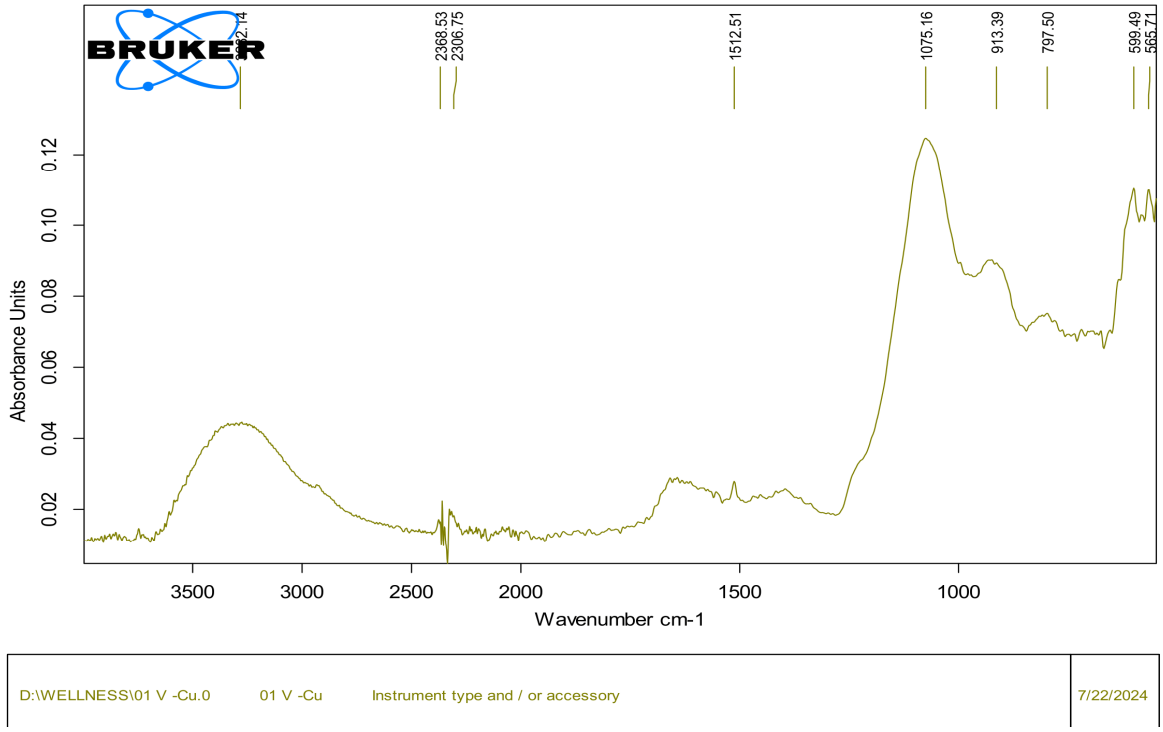



**Fig. S10**: FTIR spectra of 4d.

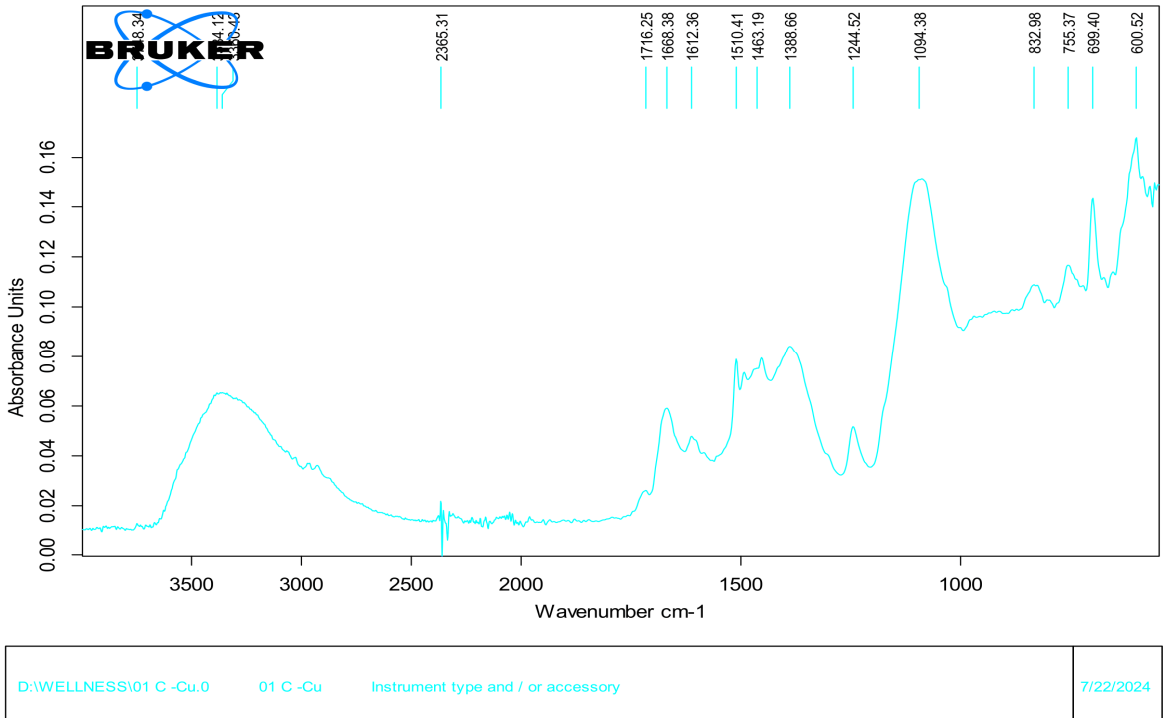



**Fig. S11**: FTIR spectra of 4e.

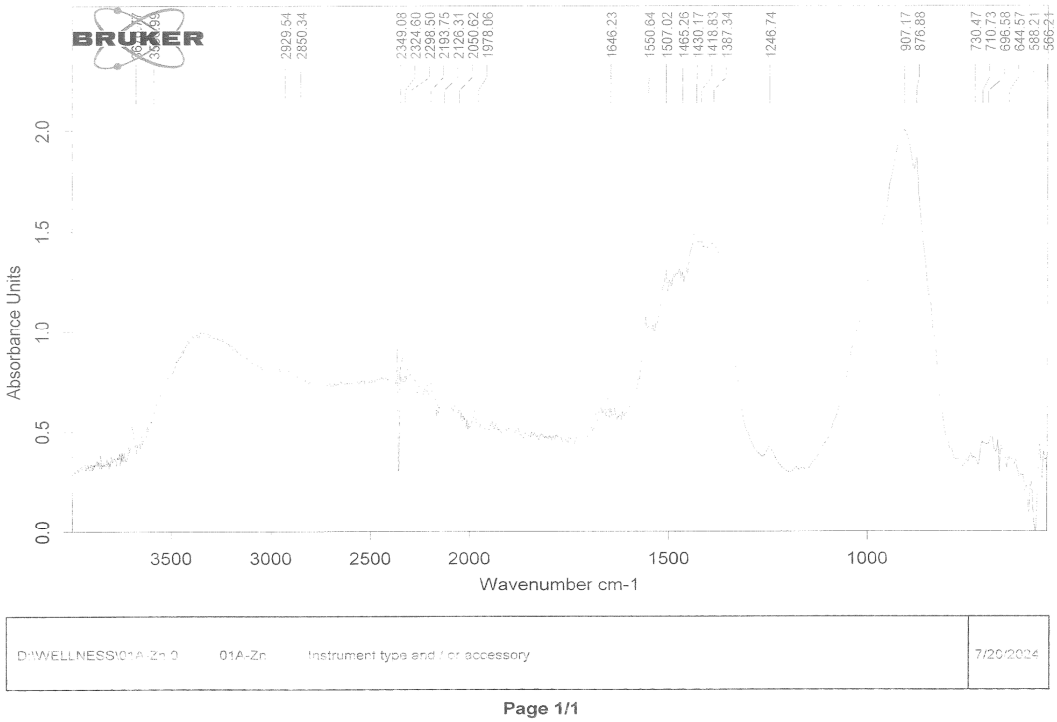



**Fig. S12**: FTIR spectra of 5a.

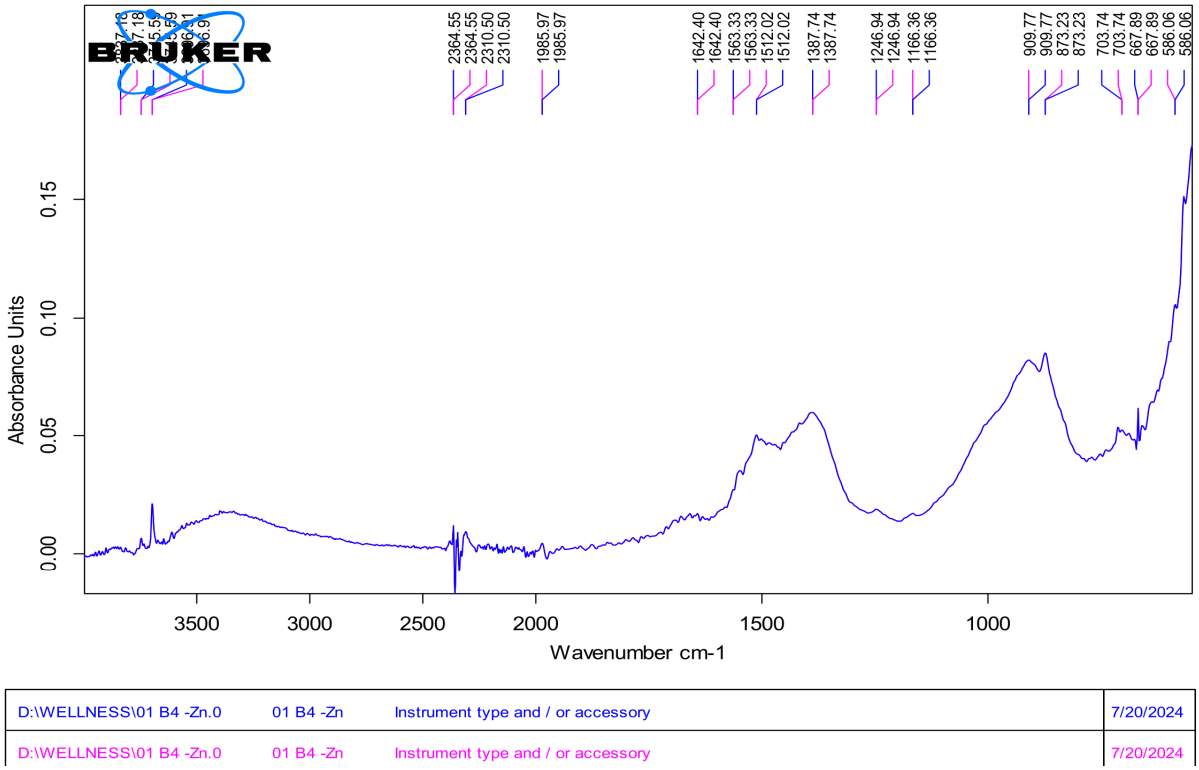



**Fig. S13**: FTIR spectra of 5b

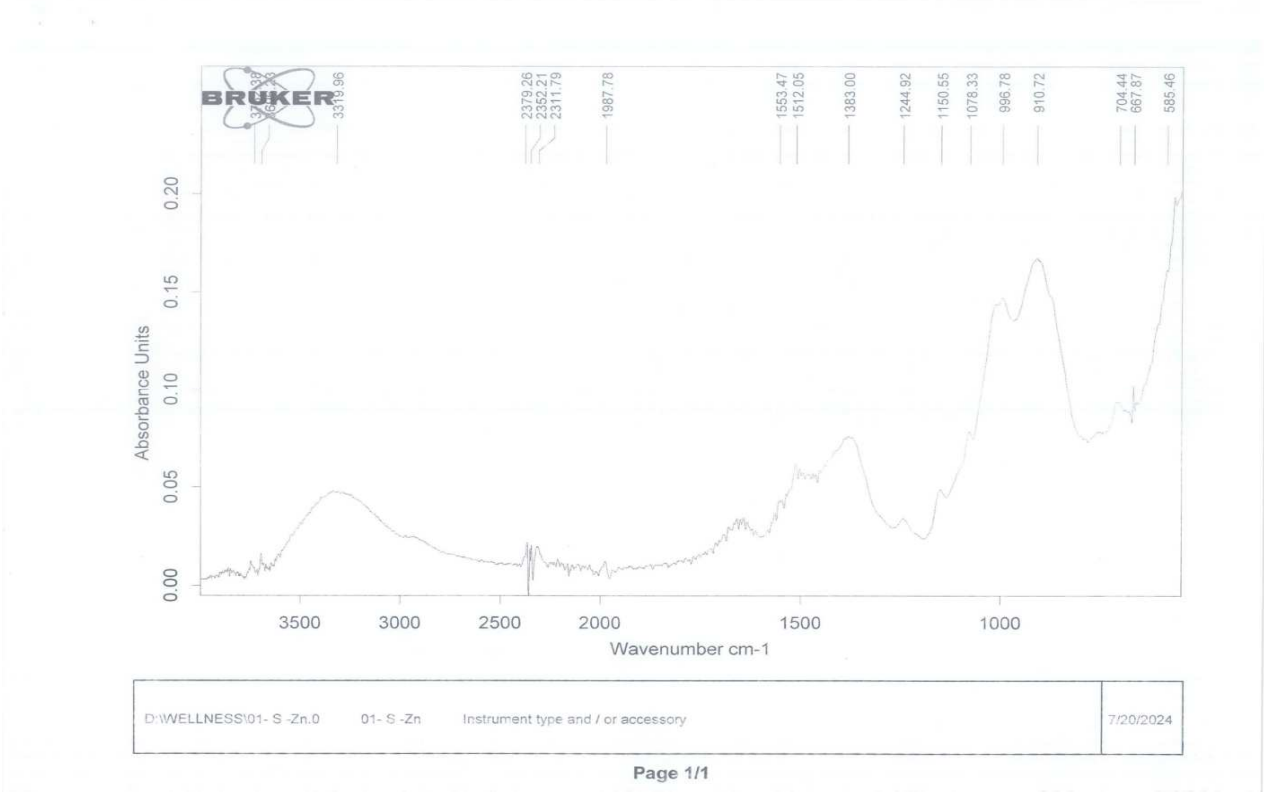



**Fig. S14**: FTIR spectra of 5c.

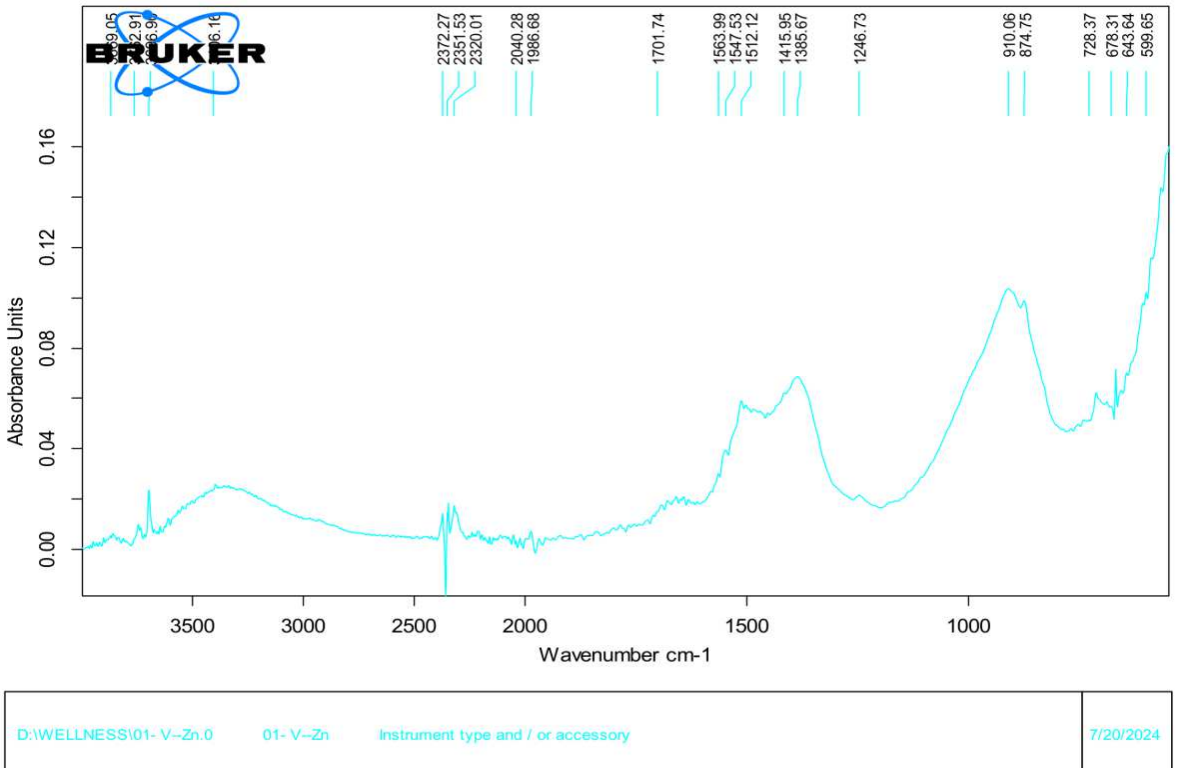



**Fig. S15**: FTIR spectra of 5d.

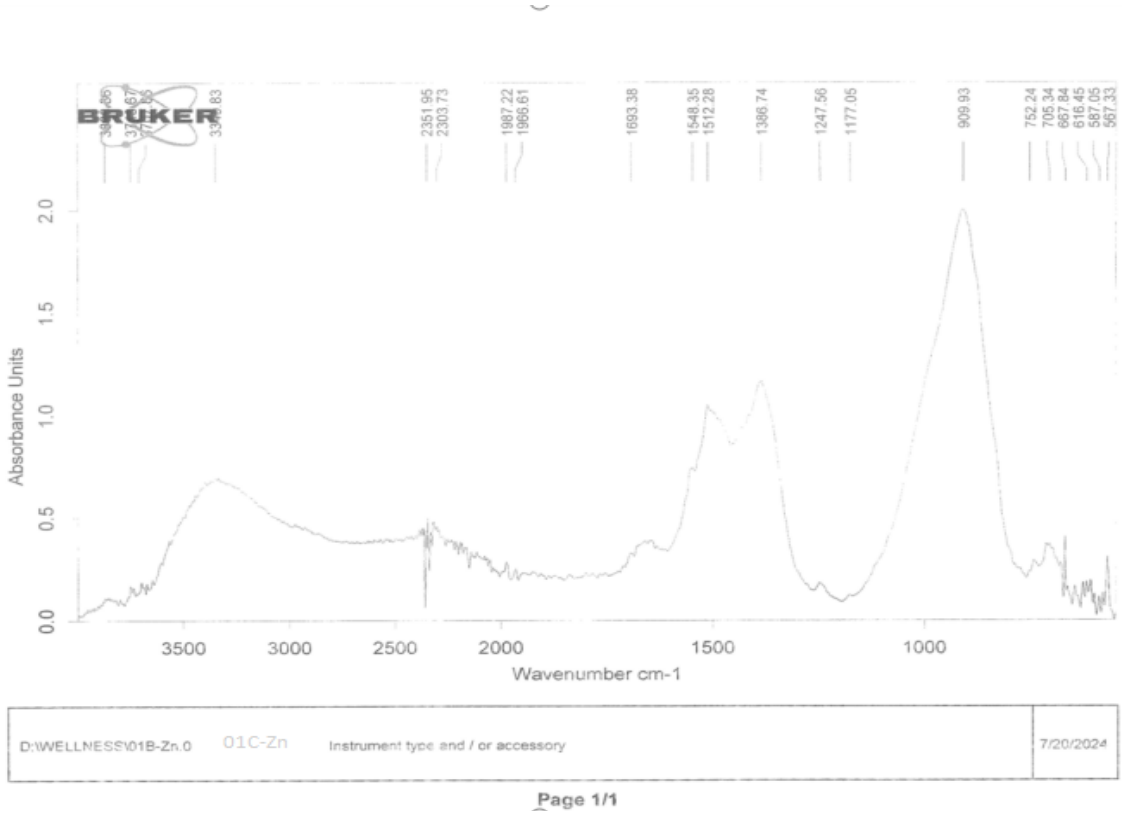



**Fig. S16**: FTIR spectra of 5e.

## [1]HNMR Spectrum of ATN-SB derivatives.

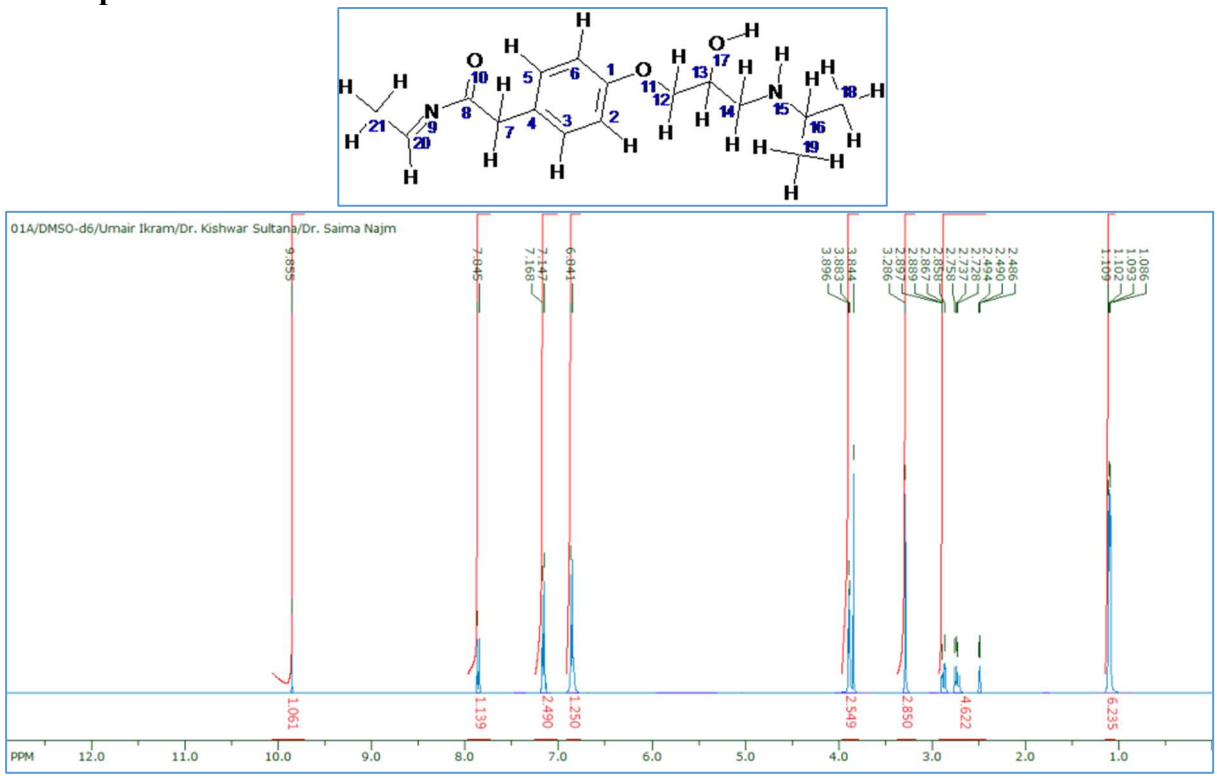



**Fig. S17**: [1]HNMR of 3a.

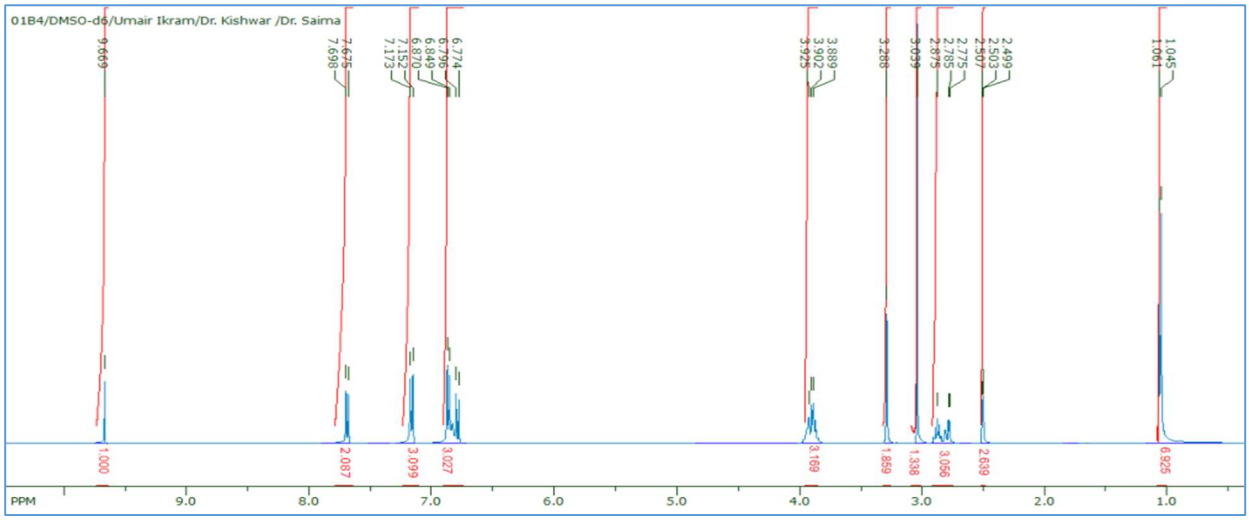



**Fig. 18**: [1]HNMR of 3b.

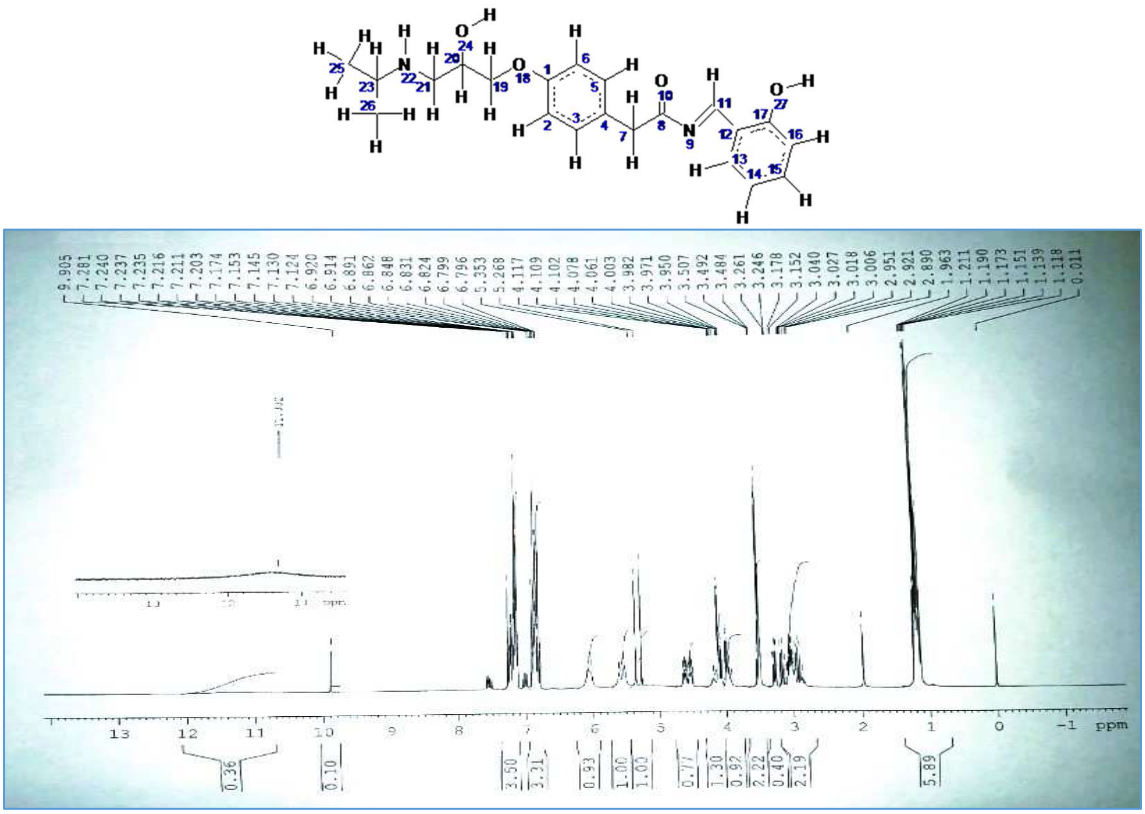


**Fig. S19**: [1]HNMR of 3c.

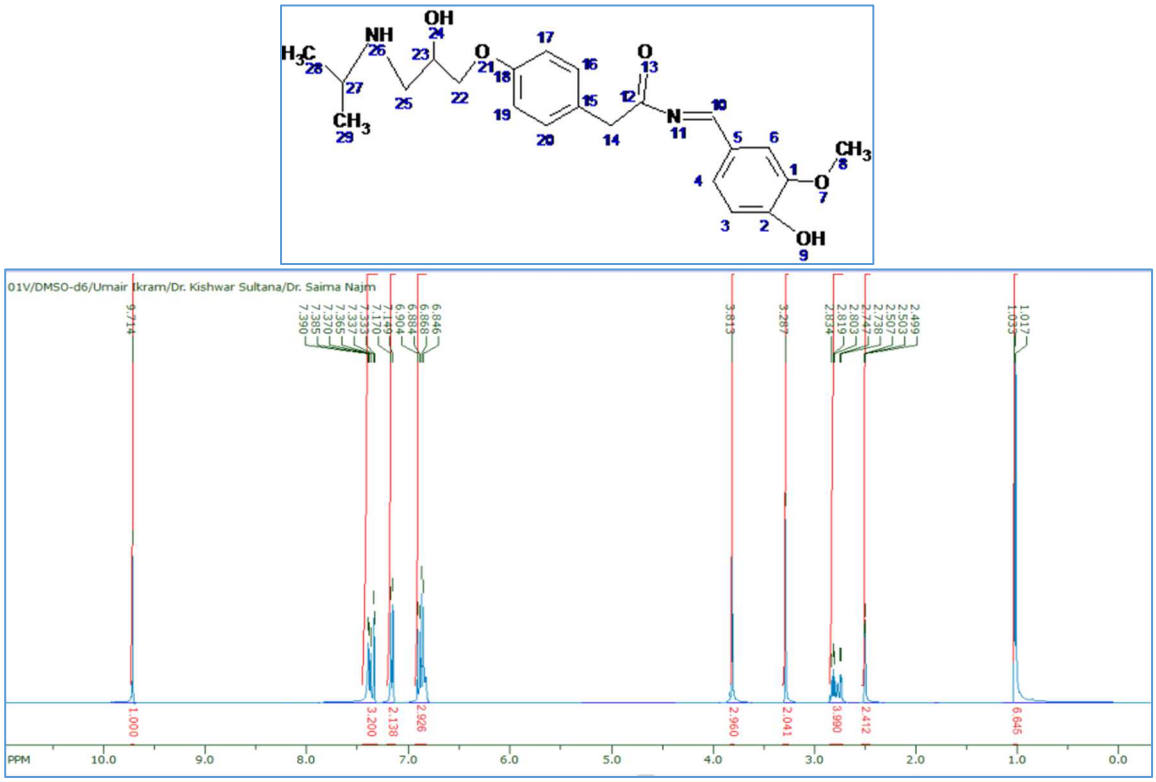


**Fig. S20**: [1]HNMR of 3d

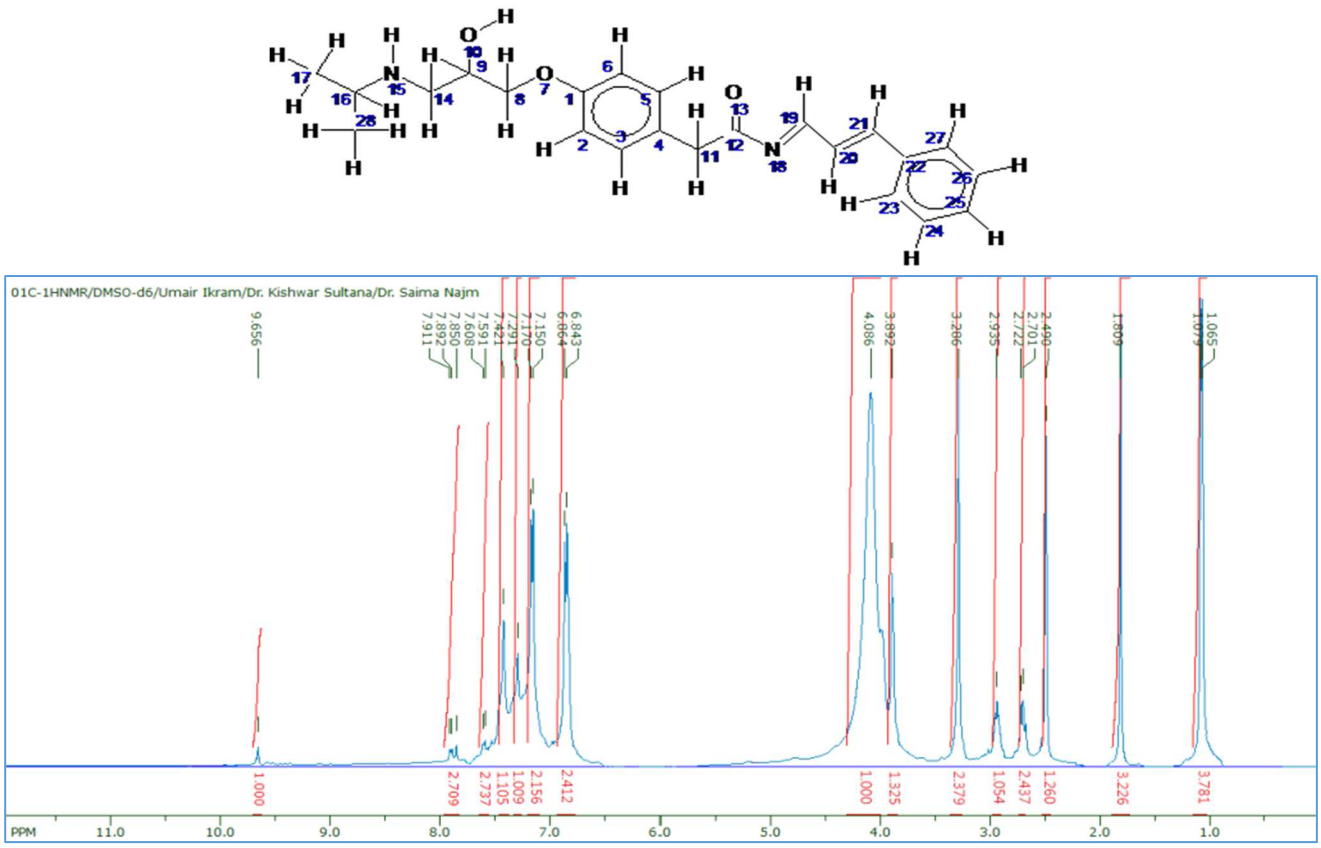



**Fig. S21**: [1]HNMR of 3e.

## [13]C-NMR Spectrum of ATN-SB derivatives.

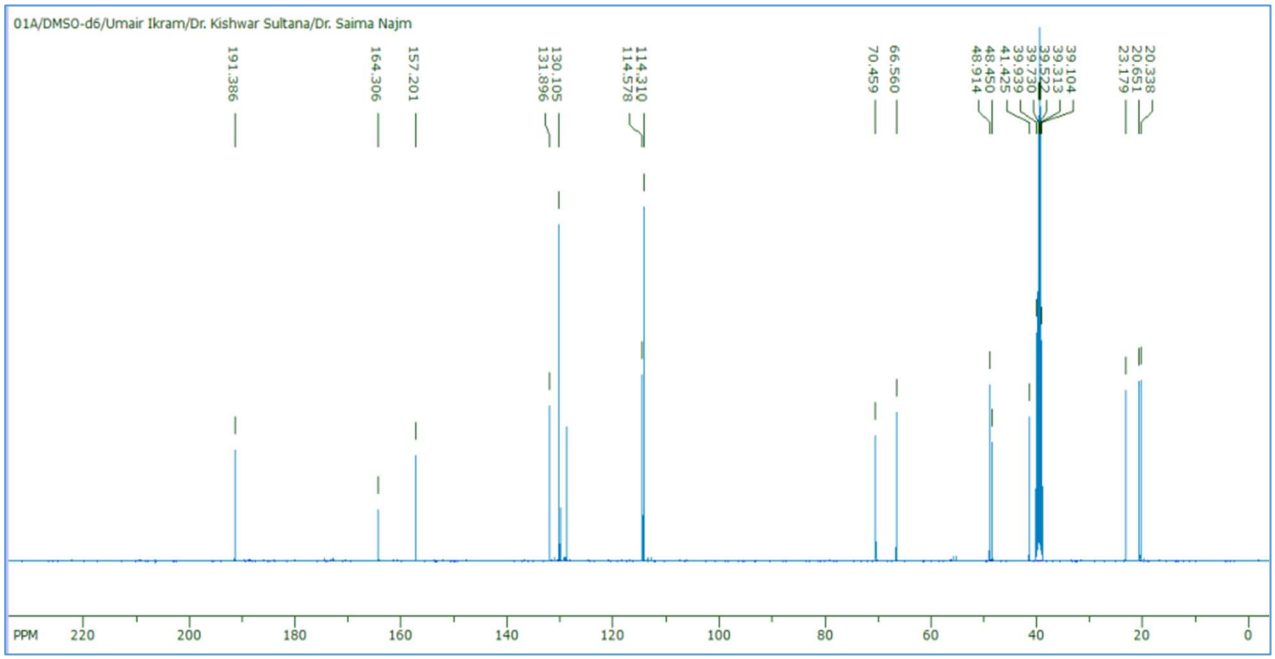



**Fig. S22**: [13]CNMR of 3a.

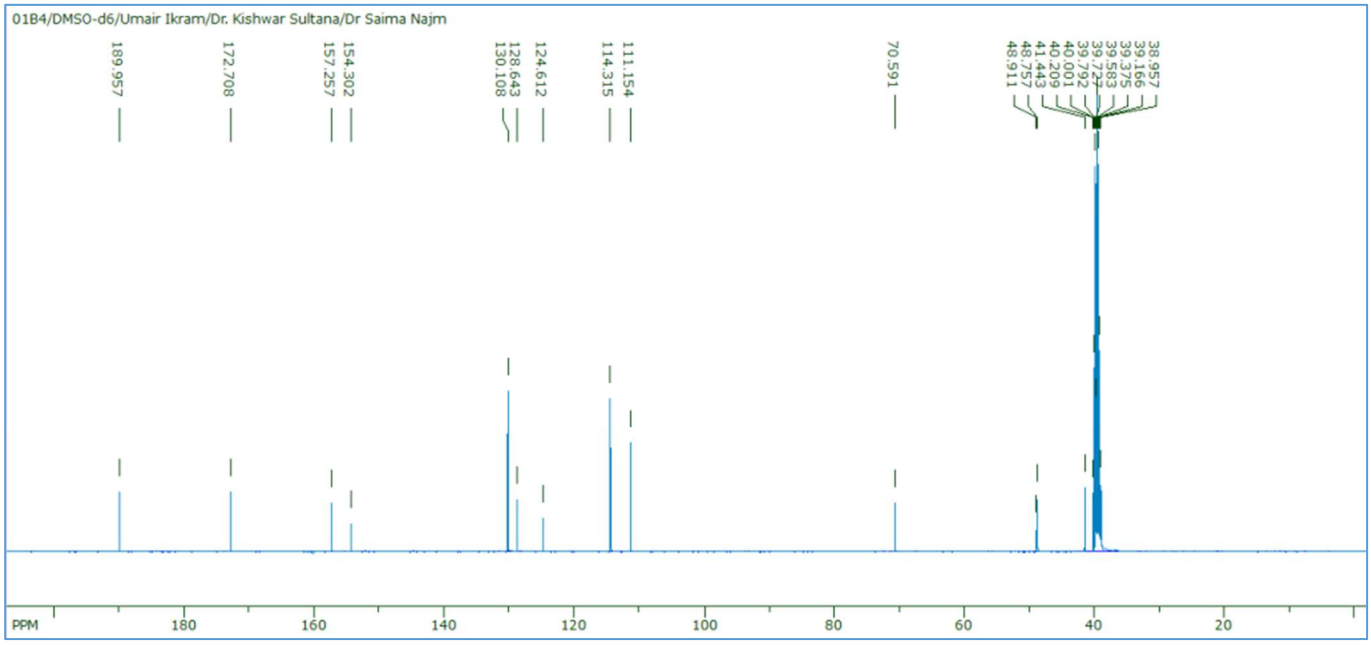



**Fig. S23**:[13]CNMR of 3b.

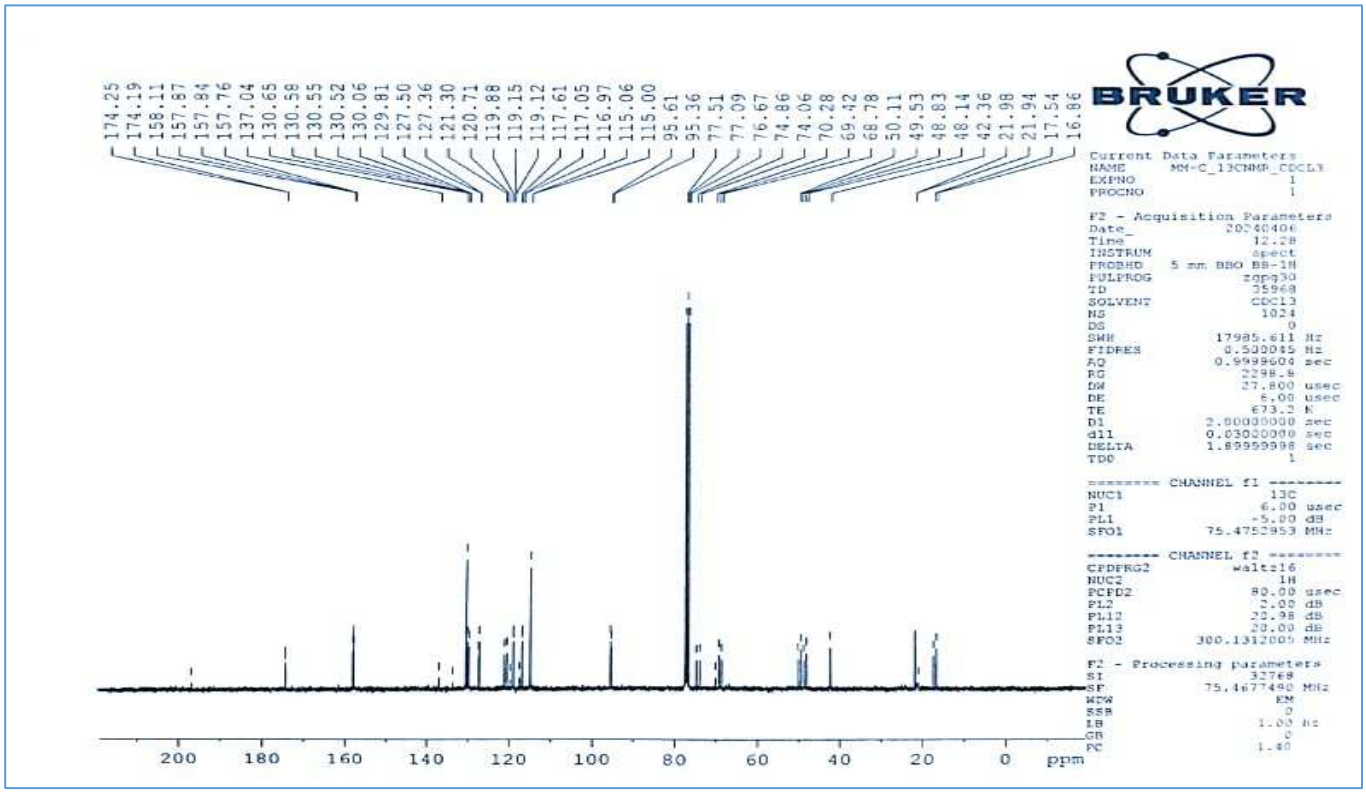



**Fig. S24**:|[13]CNMR of 3c.

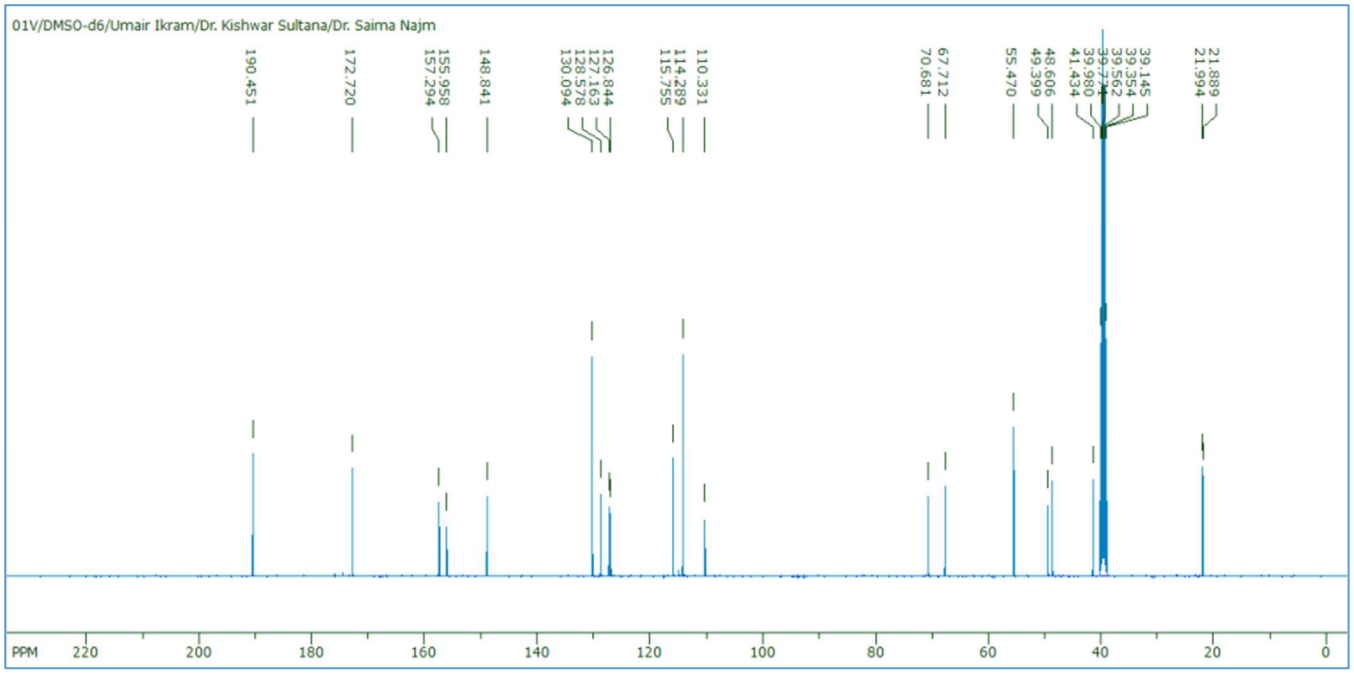



**Fig. S25**:[13]CNMR of 3d.

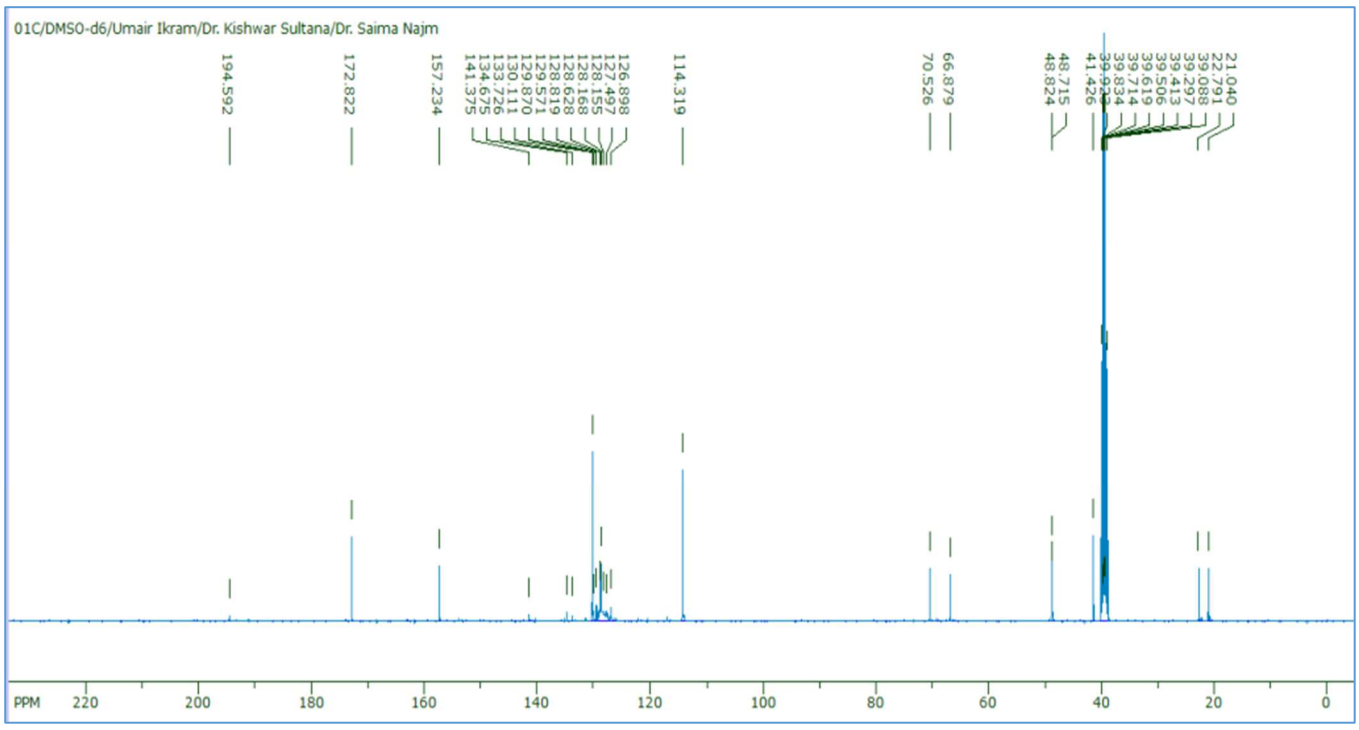



**Fig. S26**:[13]CNMR of 3e.

## Atomic absorption spectra of ATN-SB-M Derivative

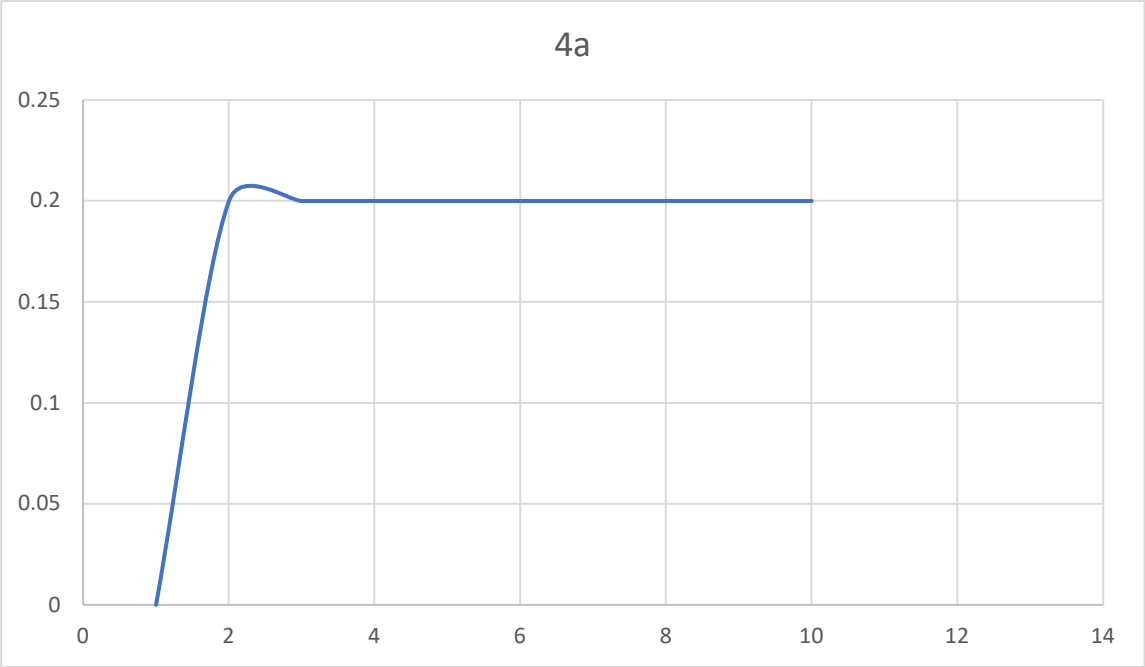



**Fig. S27**: Atomic spectra of 4a; indicates the presence of Cu metal in synthesized compound.

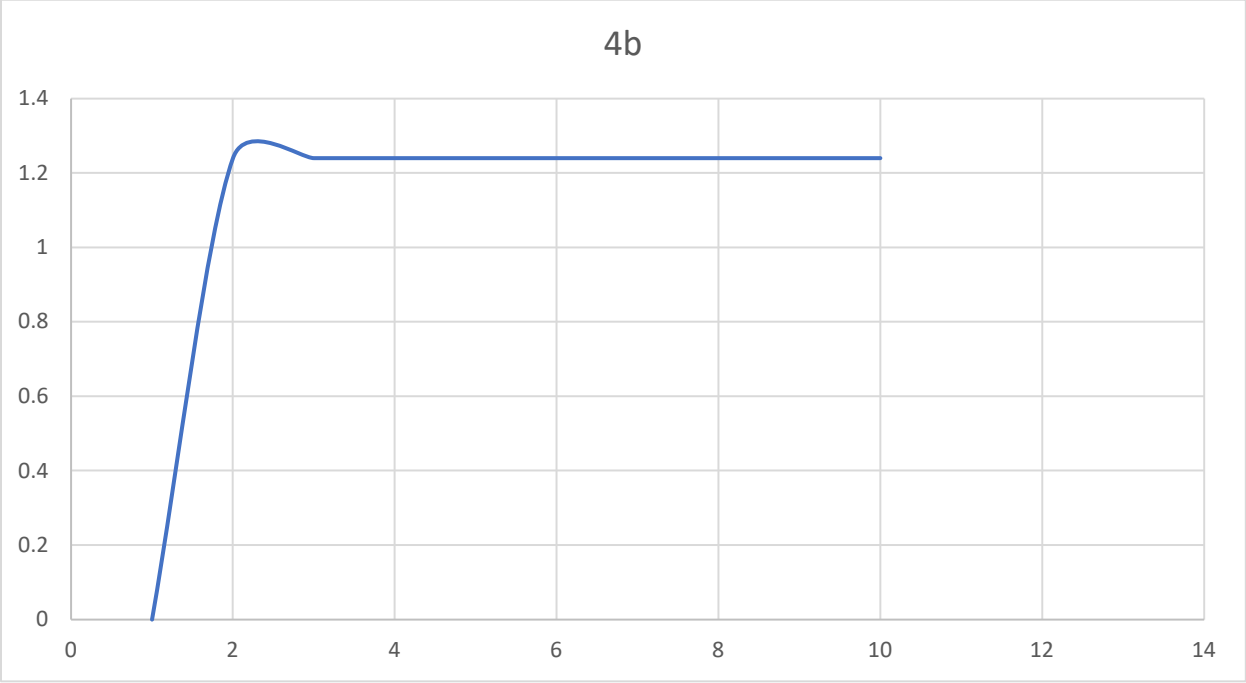



**Fig. S28**: Atomic spectra of 4b; indicates the presence of Cu metal in synthesized compound.

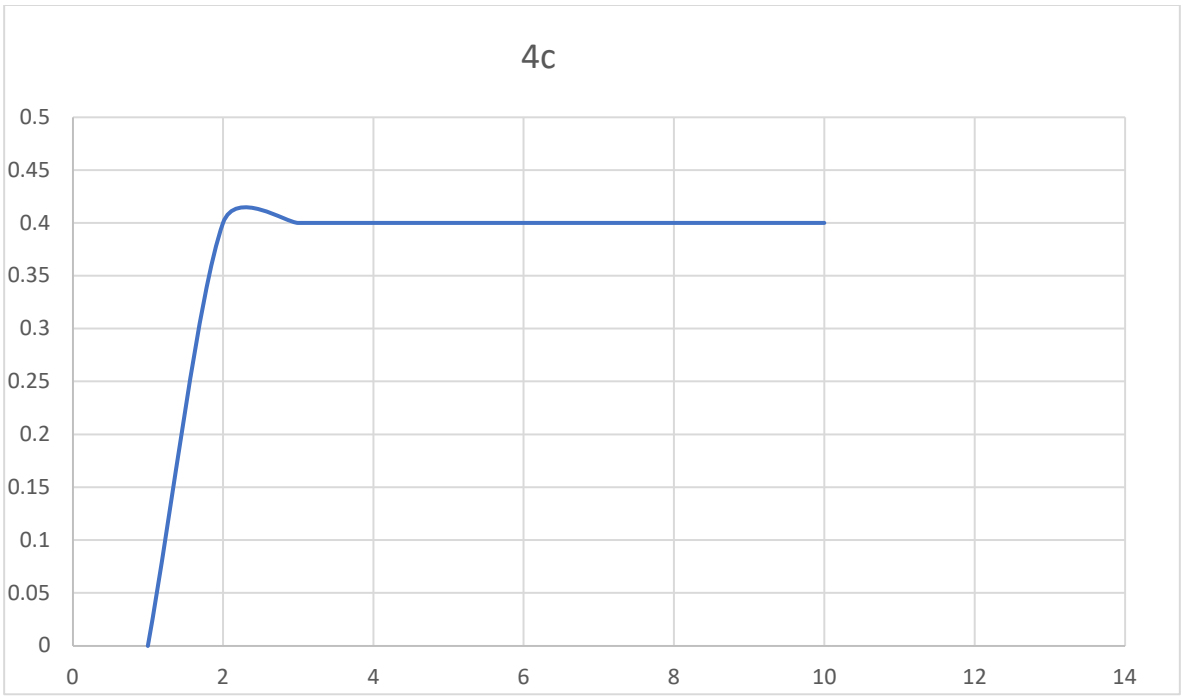



**Fig. S29**: Atomic spectra of 4c; indicates the presence of Cu metal in synthesized compound.

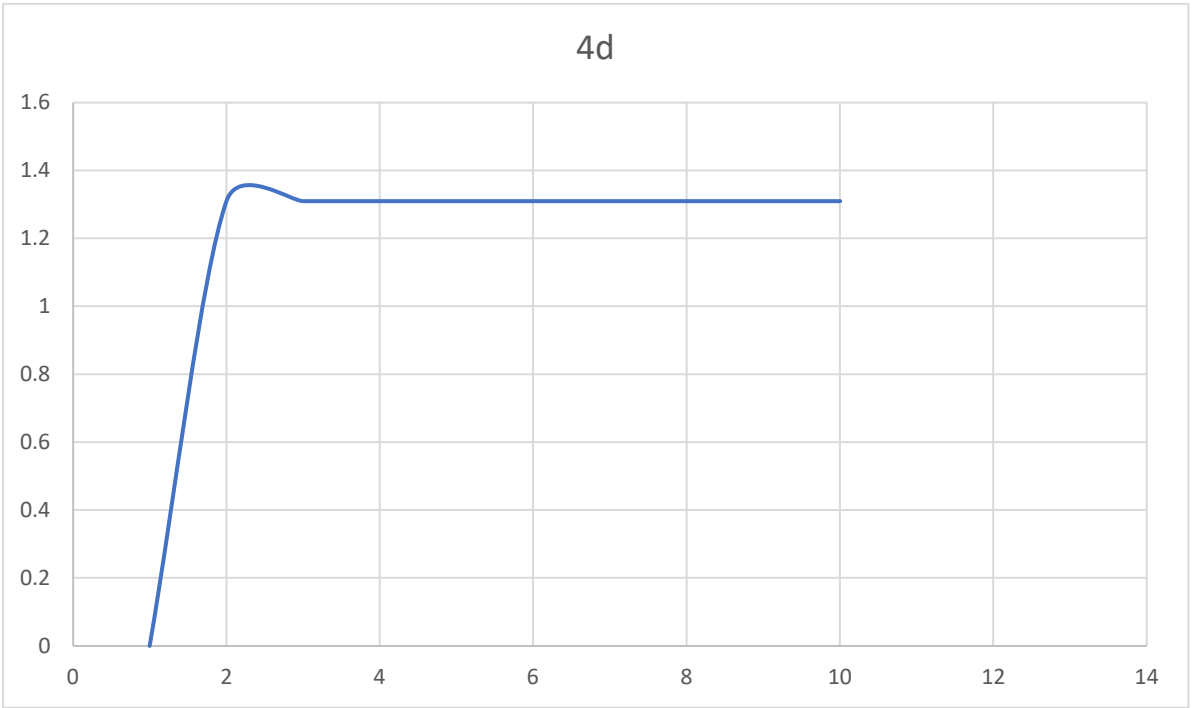



**Fig. S30**: Atomic spectra of 4d; indicates the presence of Cu metal in synthesized compound.

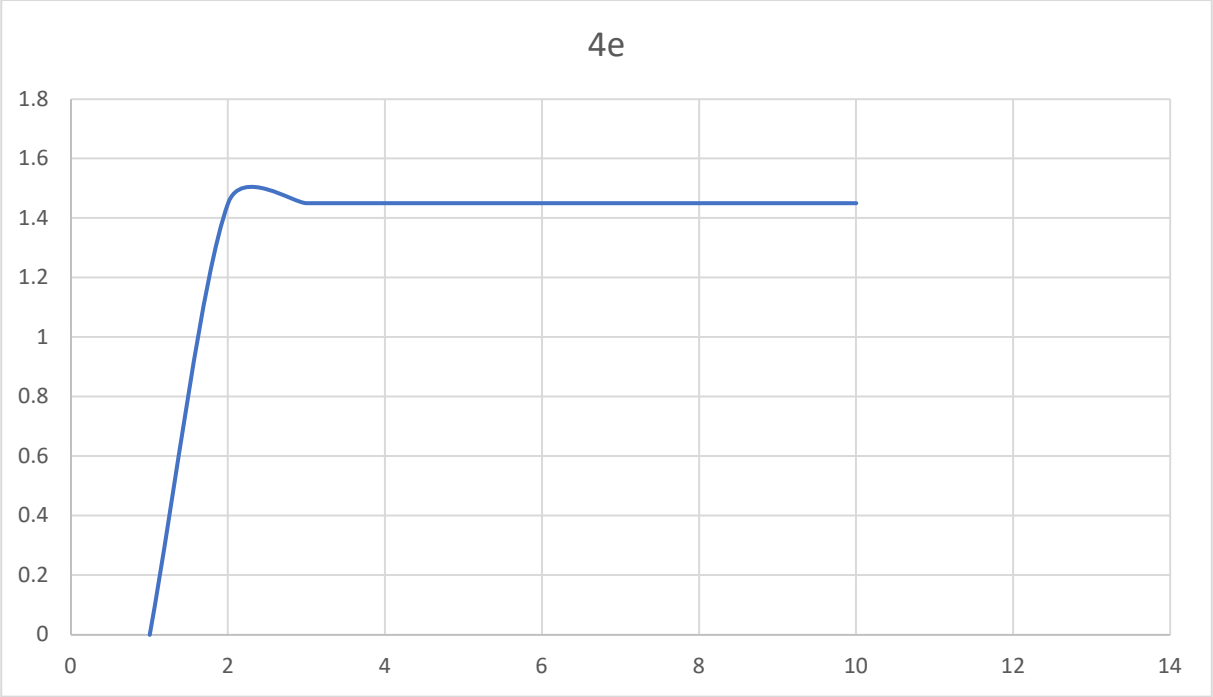



**Fig. S31**: Atomic spectra of 4e; indicates the presence of Cu metal in synthesized compound.

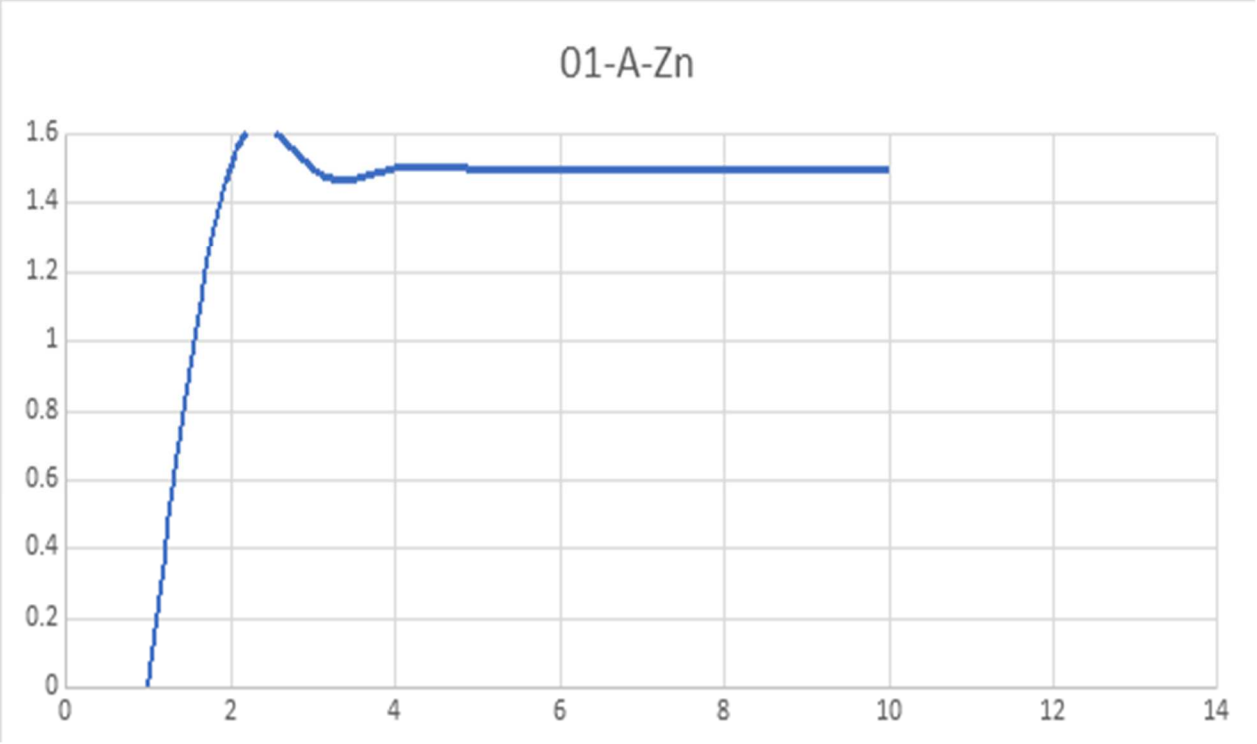



**Fig. S32**: Atomic spectra of 5a; indicates the presence of Zn metal in synthesized compound.

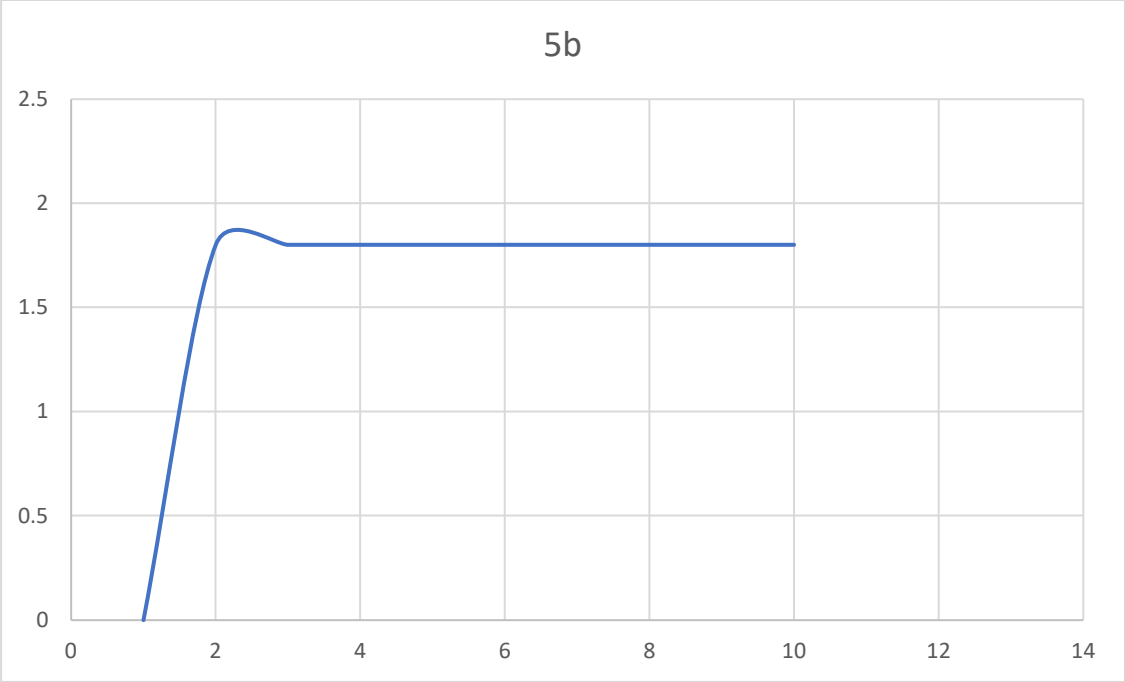



**Fig. S33**: Atomic spectra of 5b; indicates the presence of Zn metal in synthesized compound.

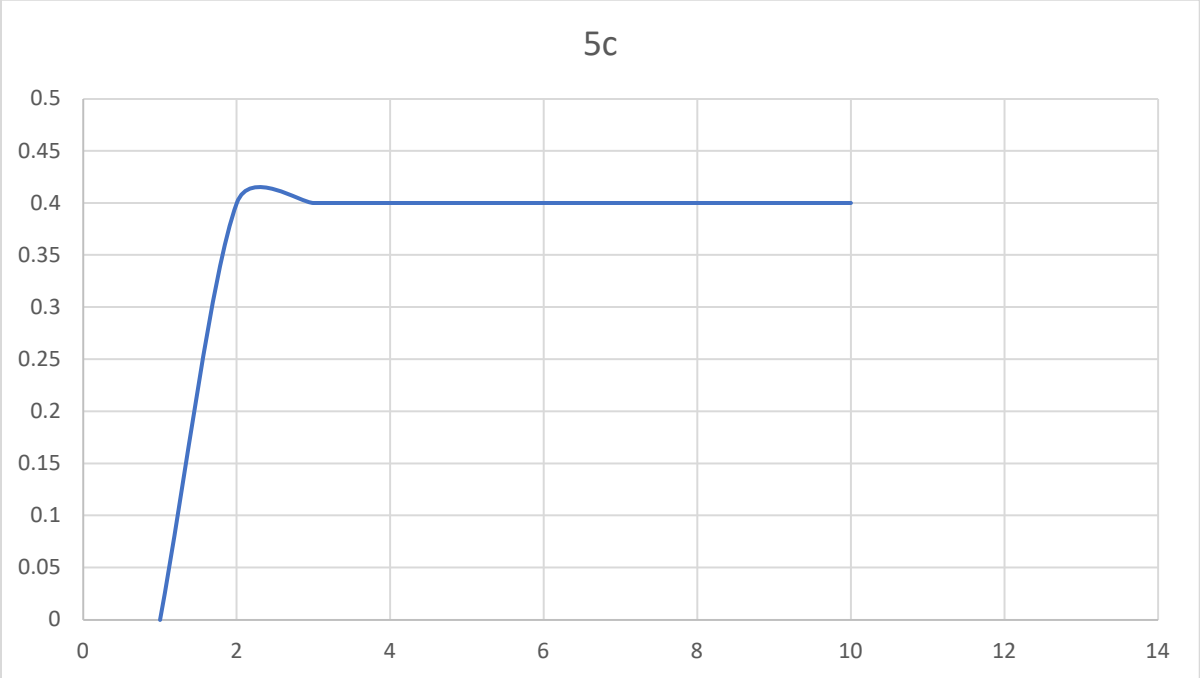



**Fig. S34**: Atomic spectra of 5c; indicates the presence of Zn metal in synthesized compound.

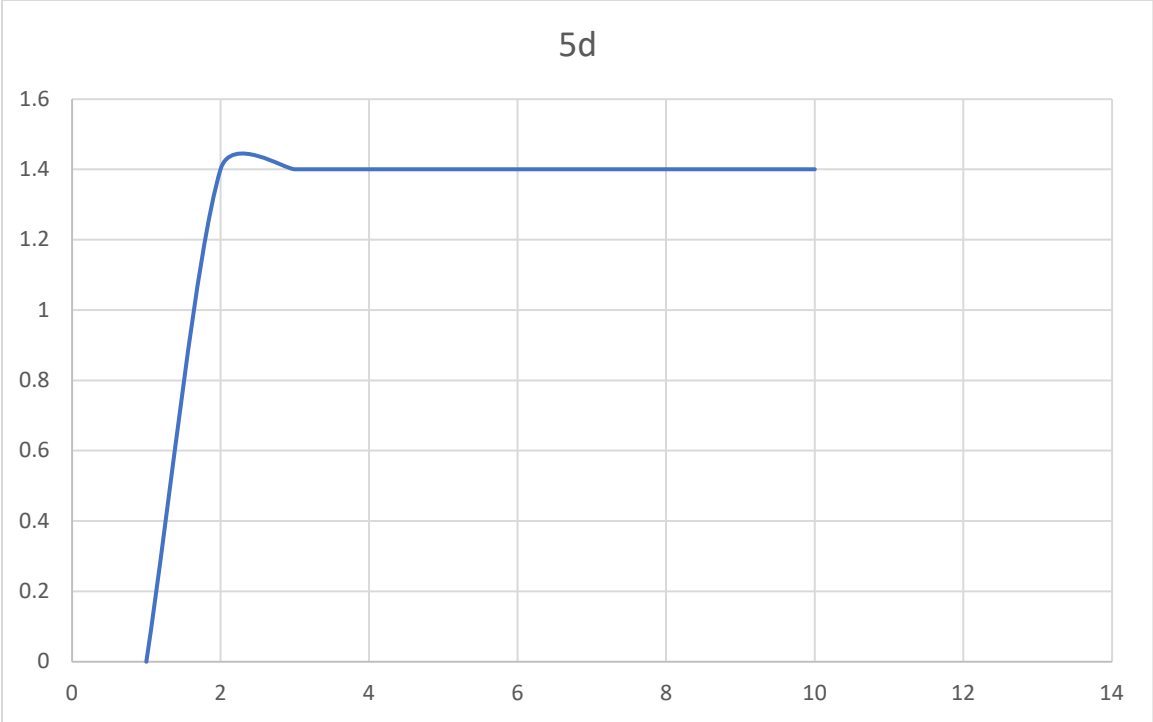



**Fig. S35**: Atomic spectra of 5d; indicates the presence of Zn metal in synthesized compound.

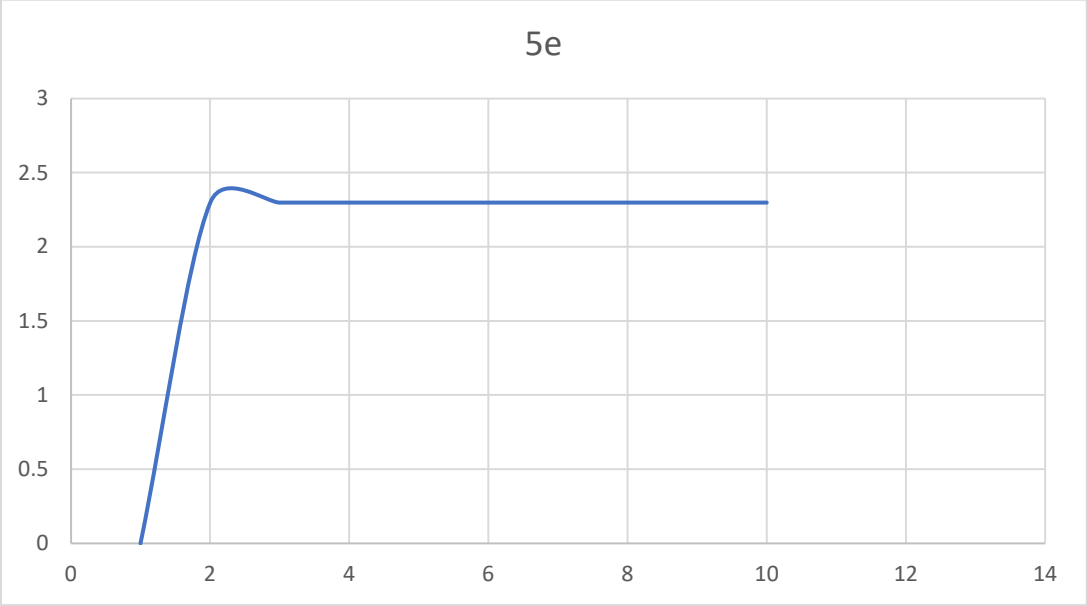



**Fig. S36**: Atomic spectra of 5e; indicates the presence of Zn metal in synthesized compound.