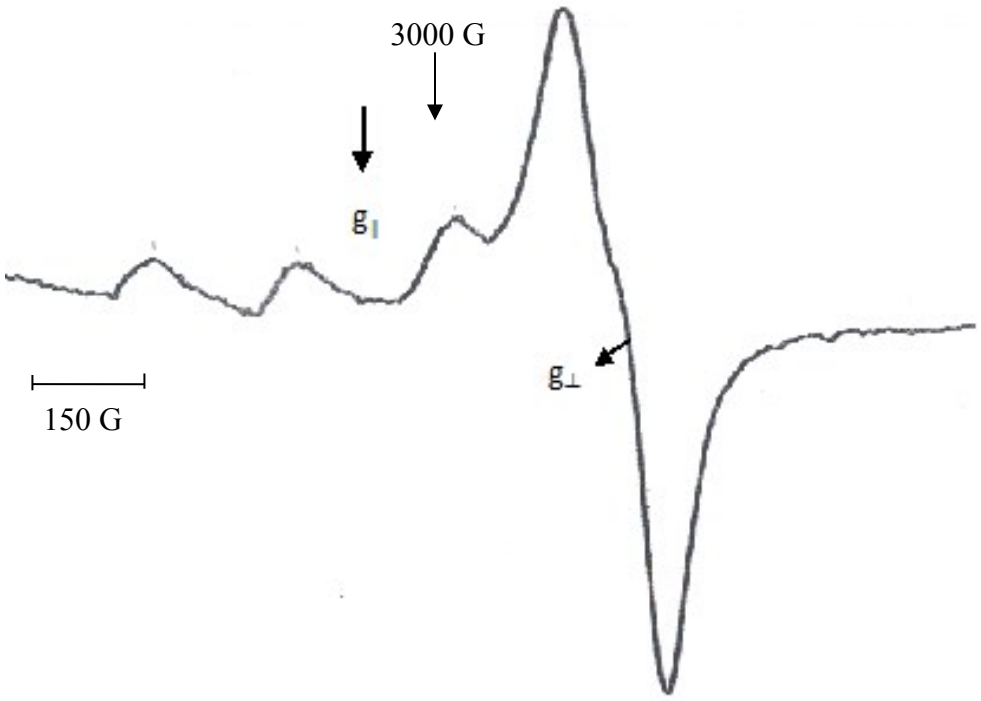
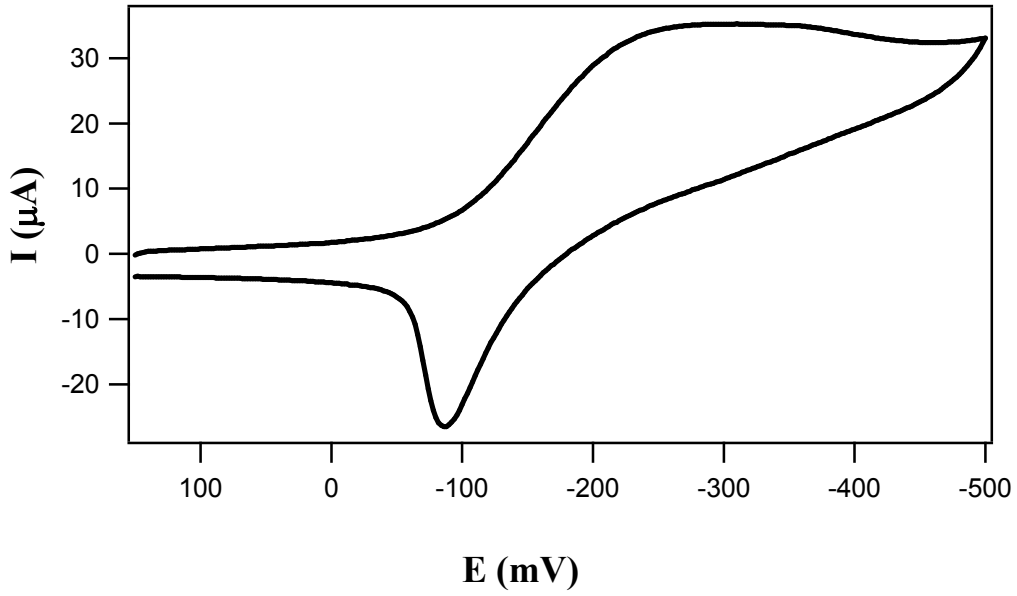


Figure S1 X-band EPR spectra of [Cu(bimda)(phen)] **2** in 5 mM Tris-HCl/50 mM NaCl buffer (pH 7.1):acetone (4:1 v/v) glass at 77 K. Microwave frequency 9.0753 GHz

(a)



(b)

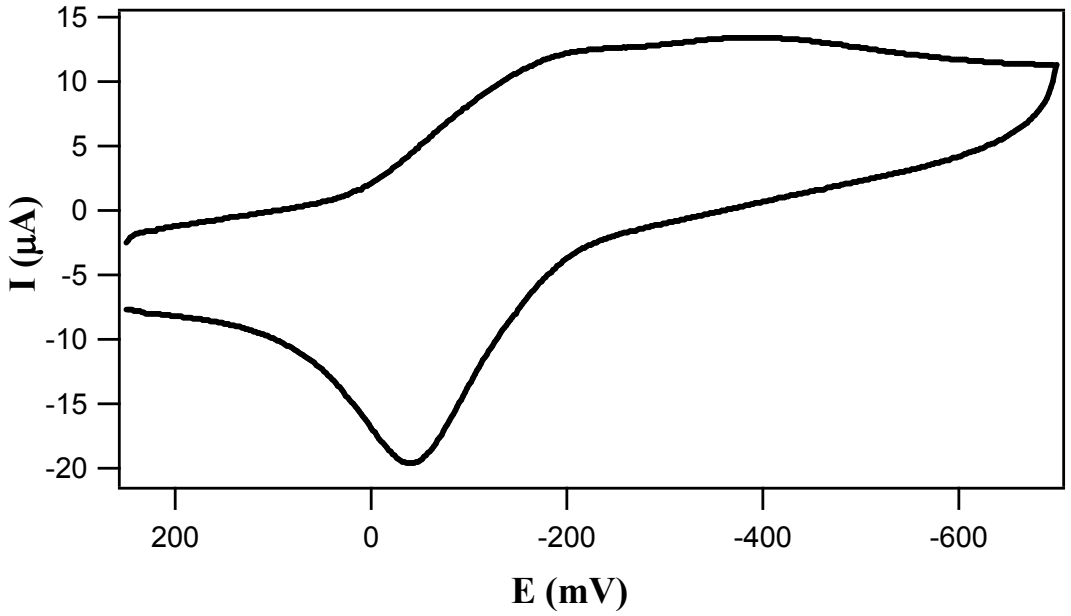


Figure S2 Cyclic voltammograms of (a) [Cu(bimda)(bpy)] **1** (0.5 mM) and (b) [Cu(bimda)(phen)] **2** (0.5 mM) in methanol at 25 ^{0}C at 50 mVs^{-1} scan rate

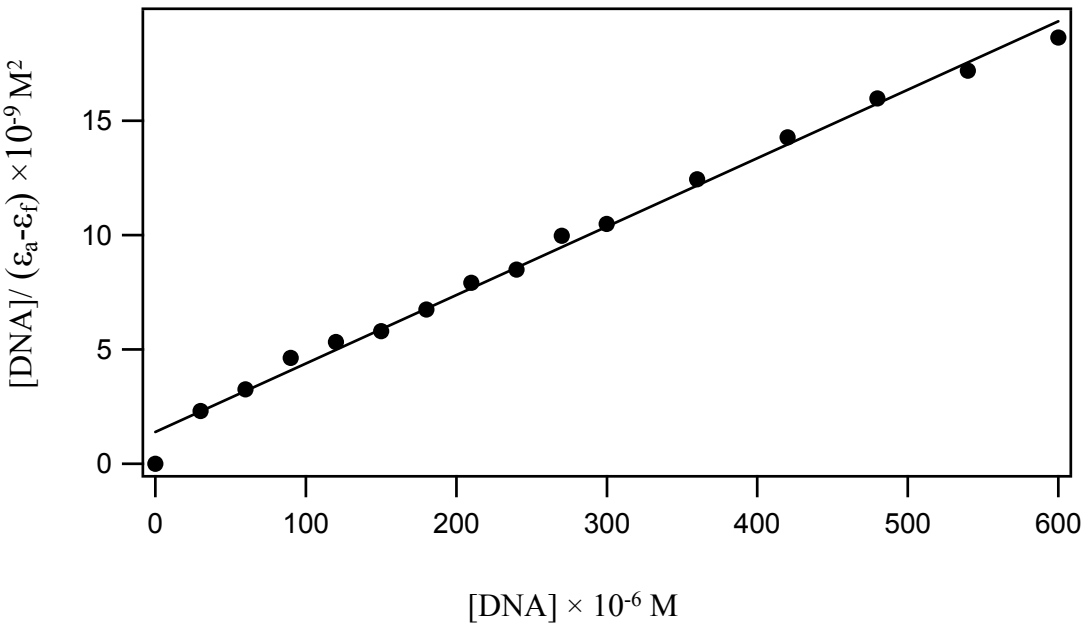


Figure S3. The plot of [DNA] *vs.* [DNA]/(ε_a-ε_b) at R = 25 of the complex [Cu(bimda)(phen)]

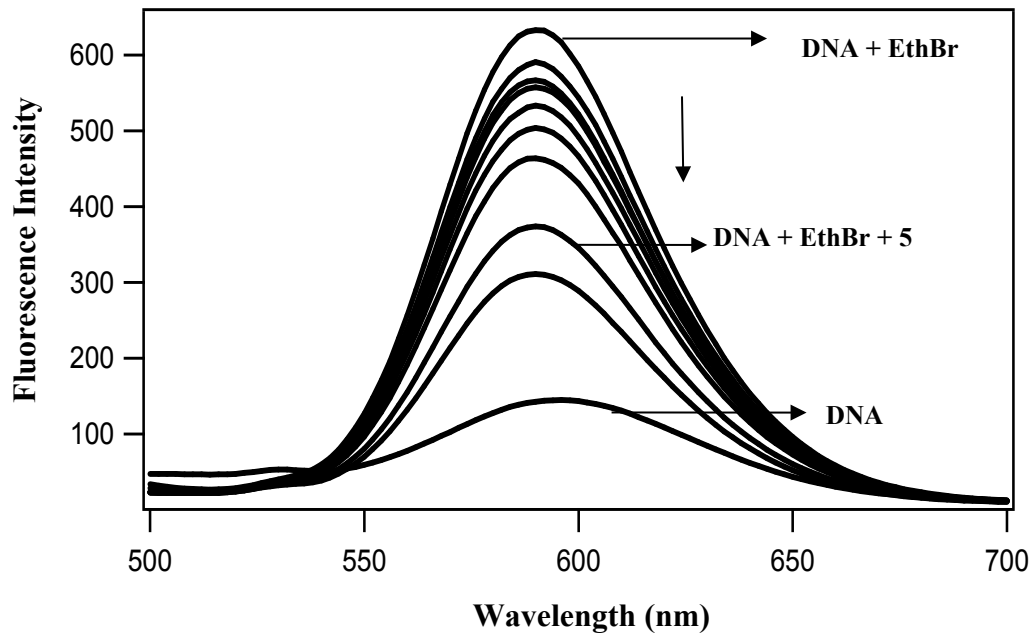


Figure S4. Effect of addition of the complex **5** on the emission intensity of the CT DNA-bound ethidium bromide (12.5 μM) at different complex concentrations in a 5 mM Tris-HCl/50 mM NaCl buffer at pH 7.1 and at 25 °C

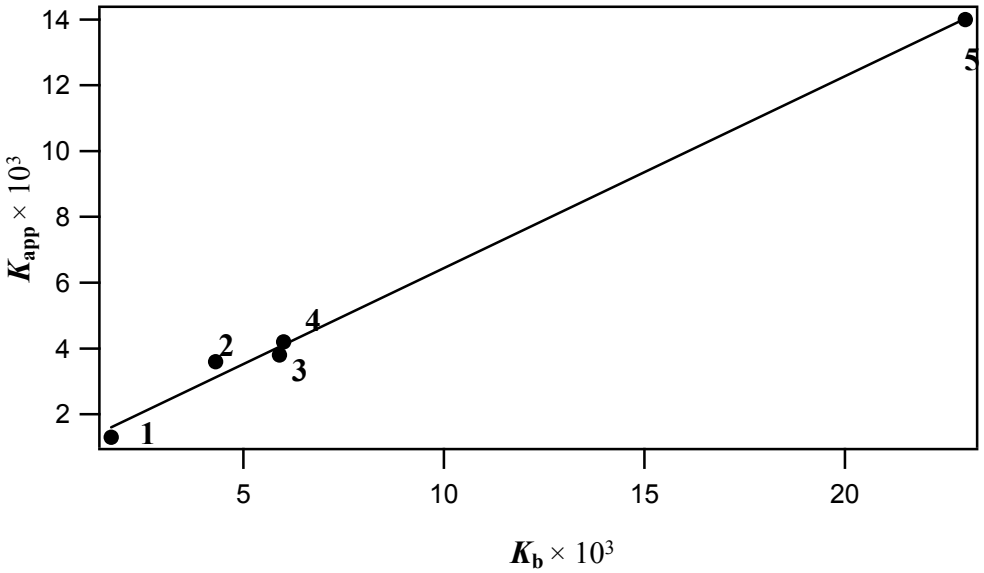


Figure S5. Plot of K_{app} *vs* K_b

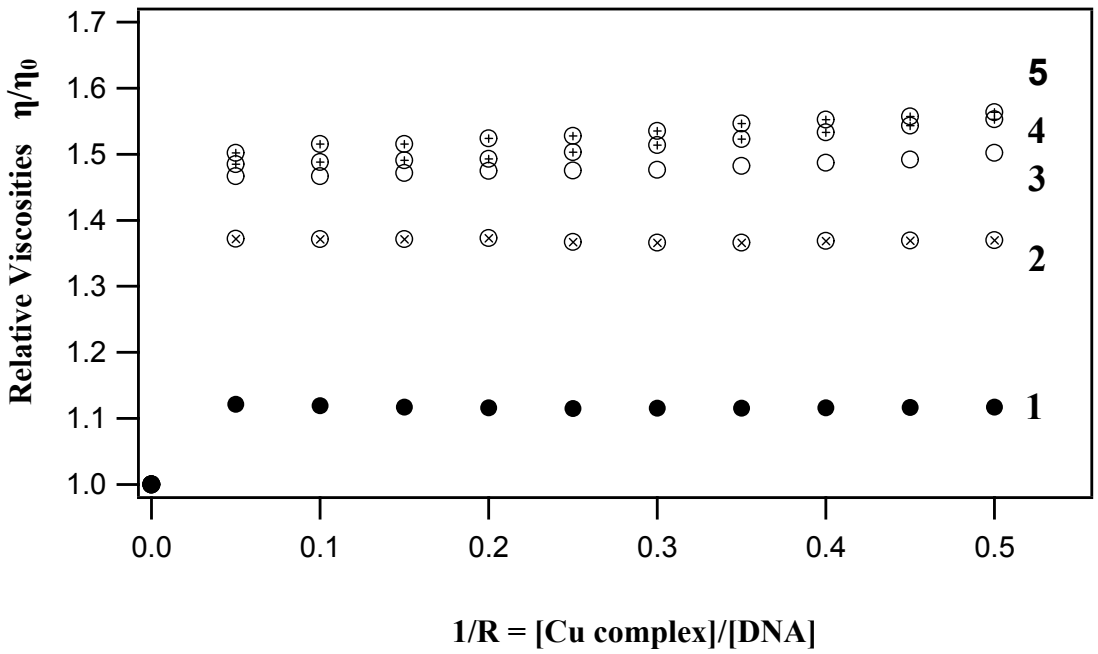


Figure S6. Effect of addition of complexes **1** – **5** to CT DNA; The relative viscosities *vs* 1/ R; [CT DNA], 500 μM

A

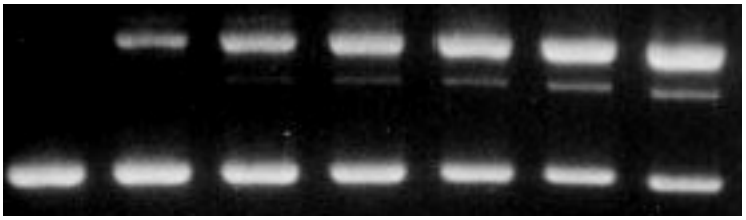


Figure S7A. Time dependent cleavage of supercoiled pUC19 DNA (40 μM) by the complex **5** (100 μM) in 5 mM Tris-HCl/50 mM NaCl at pH = 7.1 and at 37 ^{o}C Lane 1, DNA; Lane 2, DNA + **5** (10 min); Lane 3, DNA + **5** (20 min); Lane 4, DNA + **5** (30 min); Lane 5, DNA + **5** (40 min); Lane 6, DNA + **5** (50 min); Lane 7, DNA + **5** (60 min). Forms SC, NC and LC are Supercoiled, Nicked Circular and Linear Circular DNA respectively

B

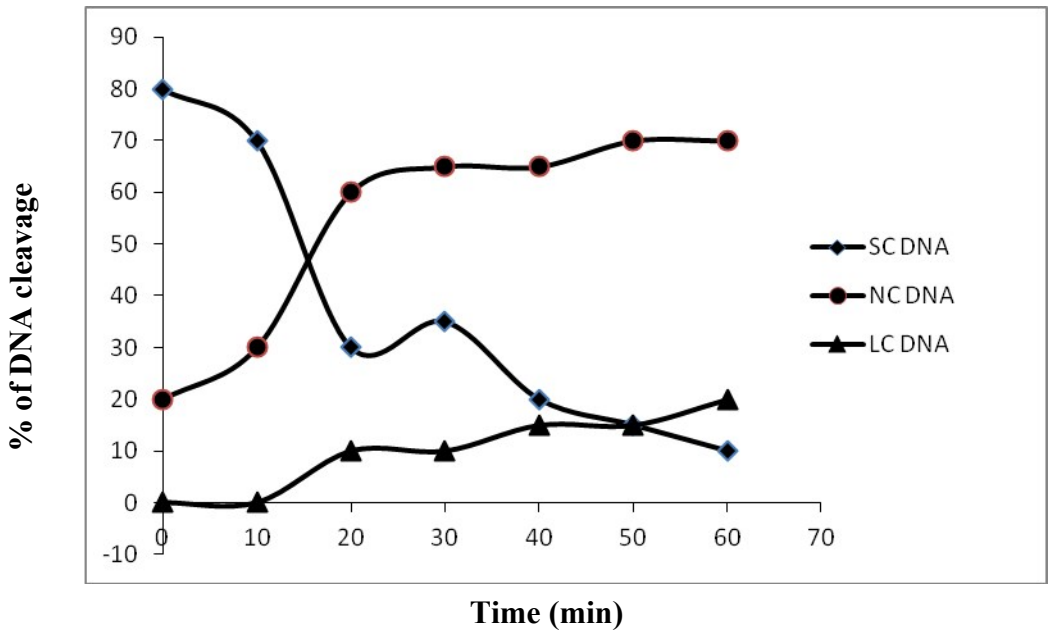
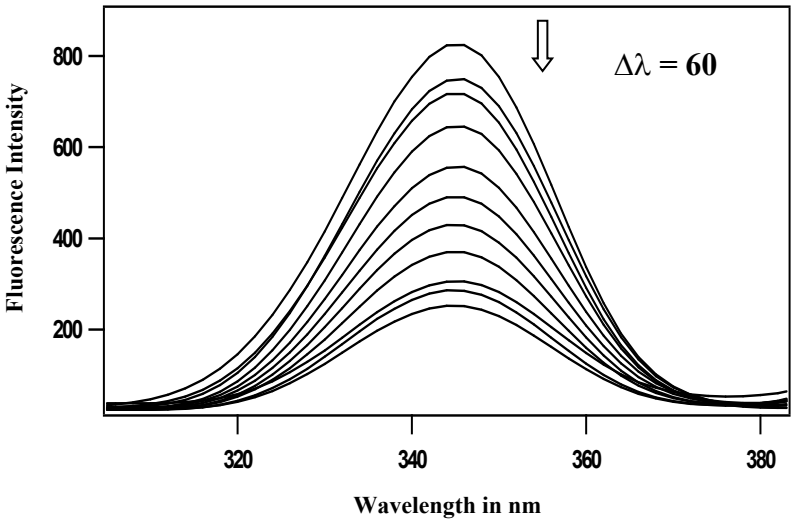


Figure S7B. Plot shows % DNA cleavage *vs.* time of incubation (0 – 60 min) for complex **5** (100 μM)



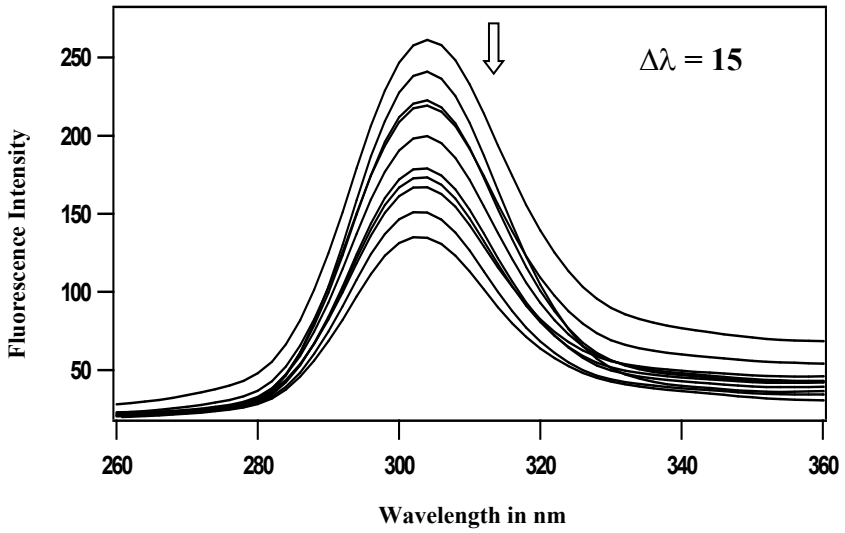


Figure S8. Synchronous fluorescence spectra of BSA upon the addition of [Cu(bimda)(5,6-dmp)] **3** (0 - 50 μM) when the Δλ between excitation wavelength and emission wavelength was fixed at 60 and 15 nm, at 298 K; [BSA] = 5 μM.

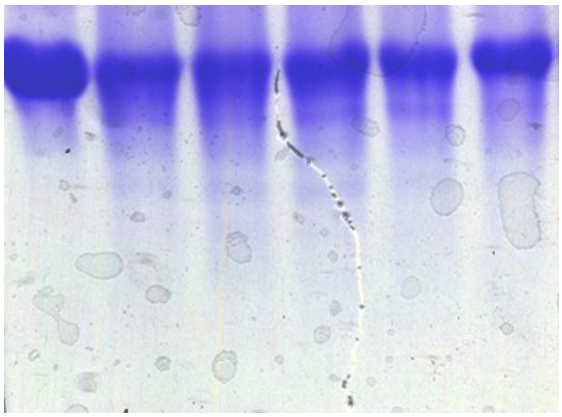


Figure S9. SDS-PAGE diagram of cleavage of bovine serum albumin (BSA, 4 μM) by complex **1 - 5** (500 μM) in 5 mM Tris-HCl/50 mM NaCl buffer at pH = 7.1 at 50 ^{o}C with an incubation time of 3 h. Lane 1, BSA; Lane 2, BSA + **1**; Lane 3, BSA + **2**; Lane 4, BSA + **3**; Lane 5, BSA + **4**; Lane 6, BSA + **5**

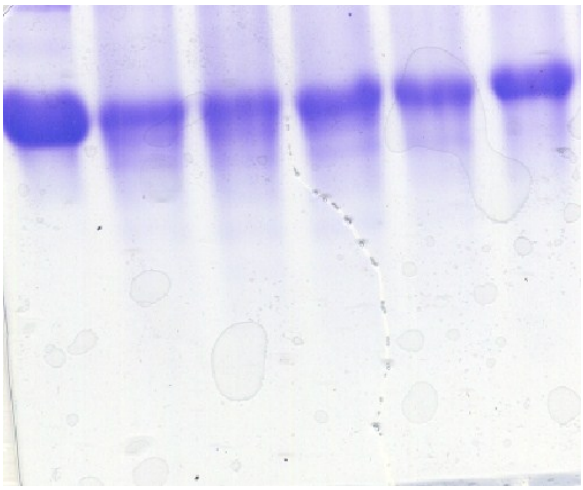


Figure S10. SDS-PAGE diagram of cleavage of bovine serum albumin (BSA, 4 μM) by complex **1 - 5** (500 μM) in 5 mM Tris-HCl/50 mM NaCl buffer at pH = 7.1 and in the presence of hydrogen peroxide (H_2O_2, 500 μM) at 50 ^{o}C with an incubation time of 3 h. Lane 1, BSA + H_2O_2; Lane 2, BSA + H_2O_2 + **1**; Lane 3, BSA + H_2O_2 + **2**; Lane 4, BSA + H_2O_2 + **3**; Lane 5, BSA + H_2O_2 + **4**; Lane 6, BSA + H_2O_2 + **5.**

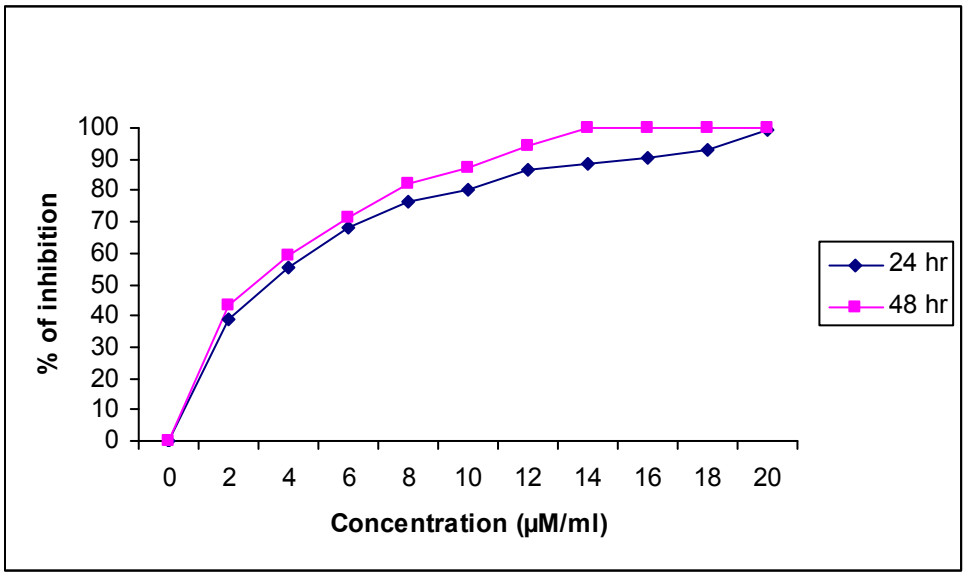


Figure S11. Growth inhibitory effects of [Cu(bimda)(3,4,7,8-tmp)] **4** on MCF-7 breast cancer cell lines for 24 and 48 h, cell viability was measured by the MTT Assay. Each data points represents the mean of three separate experiments

Table S1. Electronic absorption[a] spectral properties of Cu(II) complexes

Complex	λ_{max} in nm (ε, M^{-1} cm^{-1})	
	Ligand field[b]	Ligand based
[Cu(bimda)(bpy)] **1**	687(30)	298(9460)[c]
[Cu(bimda)(phen)] **2**	670(44)	272(31290)[d]
[Cu(bimda)(5,6-dmp)] **3**	662(41)	278 (19610)[c]
[Cu(bimda)(3,4,7,8-tmp)] **4**	667(40)	279(16160)[c]
[Cu(bimda)(dpq)] **5**	674(41)	251(24770)[e]

[a]In 5 mM Tris-HCl/50 mM NaCl buffer solution at pH 7.1
[b]Concentration, 5×10^{-3} M ; [c]Concentration, 20×10^{-6} M ; [d]Concentration, 40×10^{-6} M ; [e]Concentration, 60×10^{-6} M;

Table S2. EPR spectral properties[a] of Cu(II) complexes

Complexes	$g_{\|}$	$A_{\|}$ (10^{-4} cm^{-})	$g_{\|}/A_{\|}$ (cm)	$g_{\perp}$
[Cu(bimda)(bpy)] **1**	2.252	181	124	2.063
[Cu(bimda)(phen)] **2**	2.256	182	124	2.062
[Cu(bimda)(5,6-dmp)] **3**	2.257	180	125	2.060
[Cu(bimda)(3,4,7,8-tmp)] **4**	2.257	183	123	2.063
[Cu(bimda)(dpq)] **5**	2.258	180	125	2.064

[a]In 5 mM Tris-HCl/50 mM NaCl buffer (pH 7.1):acetone (4:1 V/V) glass at 77 K

Table S3. Electrochemical data of Cu(II) complexes

Complex		E_{pa} (mV)	E_{pc} (mV)	ΔE_p (mV)	$E_{1/2}$ (V) CV[a]	$E_{1/2}$ (V) DPV[b]
[Cu(bimda)(bpy)]	**1**	-90.0	-280.0	110	-0.185	-0.168
[Cu(bimda)(phen)]	**2**	-20.0	-200.0	180	-0.110	-0.105
[Cu(bimda)(5,6-dmp)]	**3**	-84.0	-278.0	194	-0.181	-0.176
[Cu(bimda)(3,4,7,8-tmp)]	**4**	-80.0	-260.0	180	-0.170	-0.153
[Cu(bimda)(dpq)]	**5**	10.0	-180.0	170	-0.085	-0.065

[a]Measured *vs.*non-aqueous Ag/Ag^{+} reference electrode; add 544 mV [300 mV, Ag/Ag^{+} to SCE + 244 mV, SCE to SHE] to convert to standard hydrogen electrode (SHE); Fc/Fc^{+} couple, $E_{1/2}$, 0.039 V (CV); 0.042 (DPV), Scan rate 50 mV s^{-1}; Supporting electrolyte, *Tetra-N*-butylammonium perchlorate mol dm^{-3}); Complex concentration, 0.5 mmol.dm^{-3};[b]Differential Pulse Voltammetry, scan rate 5 mVs^{-1}; pulse height 25 mV.