Therapeutic Potential of Ag(I)-, Au(I)-, Au(III)-NHC complexes of 3-pyridyl wingtip N-heterocyclic carbene against lung cancer

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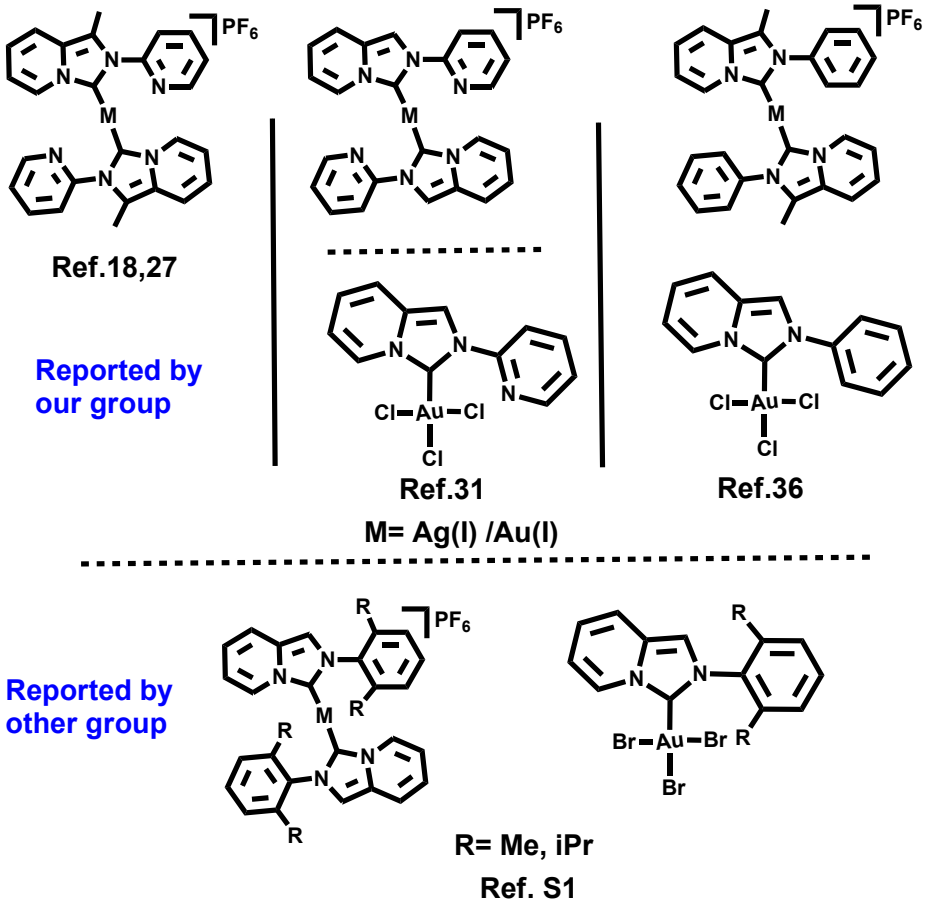

Figure S0: Chemical structures of the compounds reported by us and other groups similar to present studies.

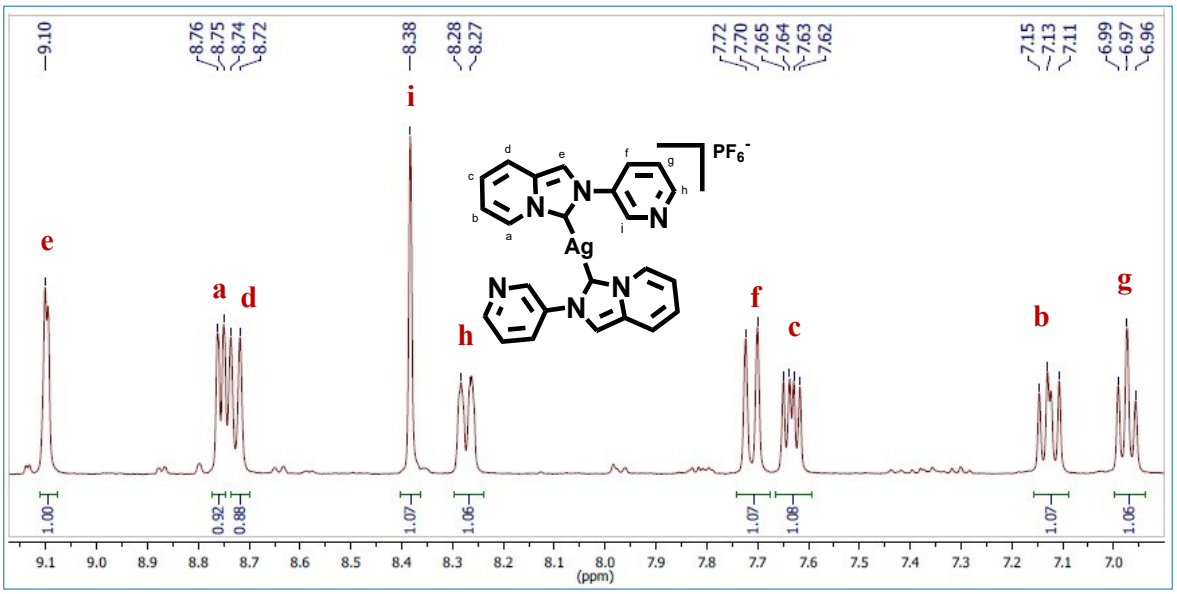

Figure S1: ^{1}H NMR (DMSO-d_6, 400 MHz, 25°C) spectrum of complex **2**.

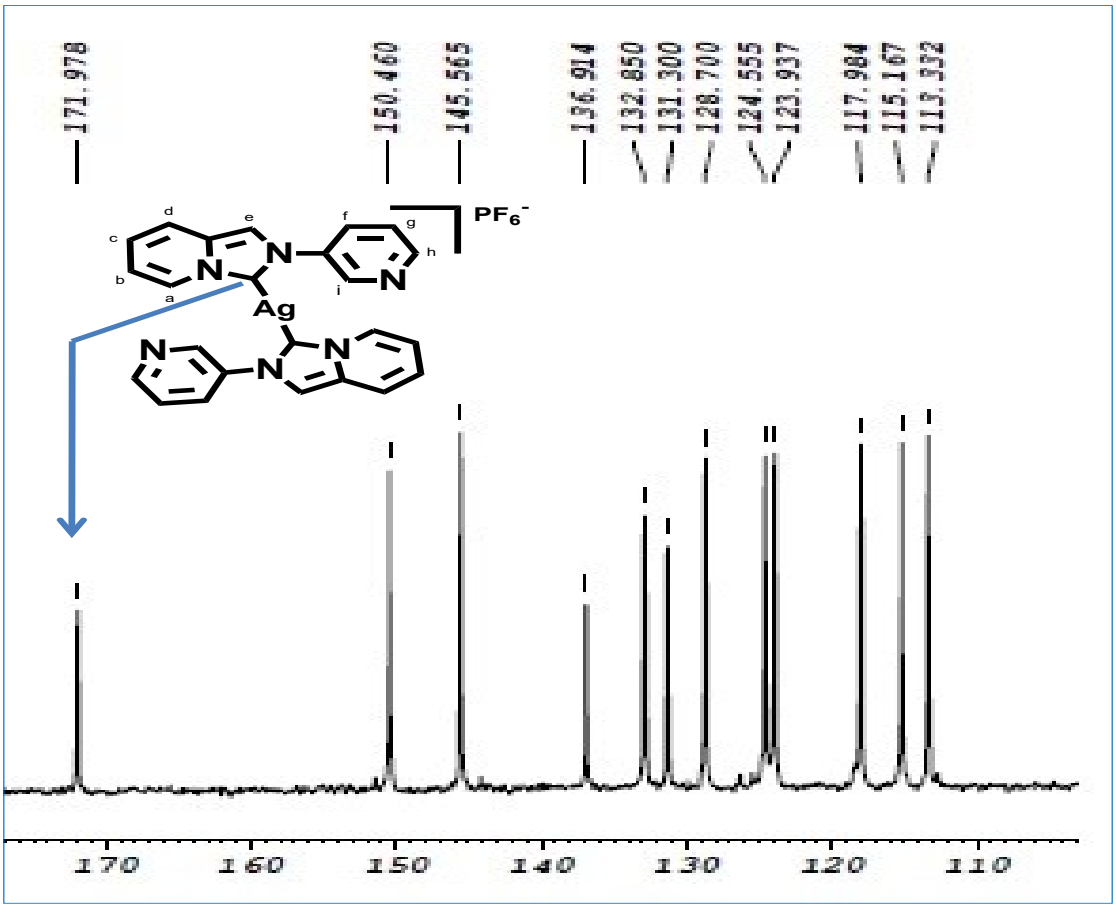

Figure S2: ^{13}C NMR(DMSO-d_6, 400 MHz, 25°C) spectrum of complex**2**.

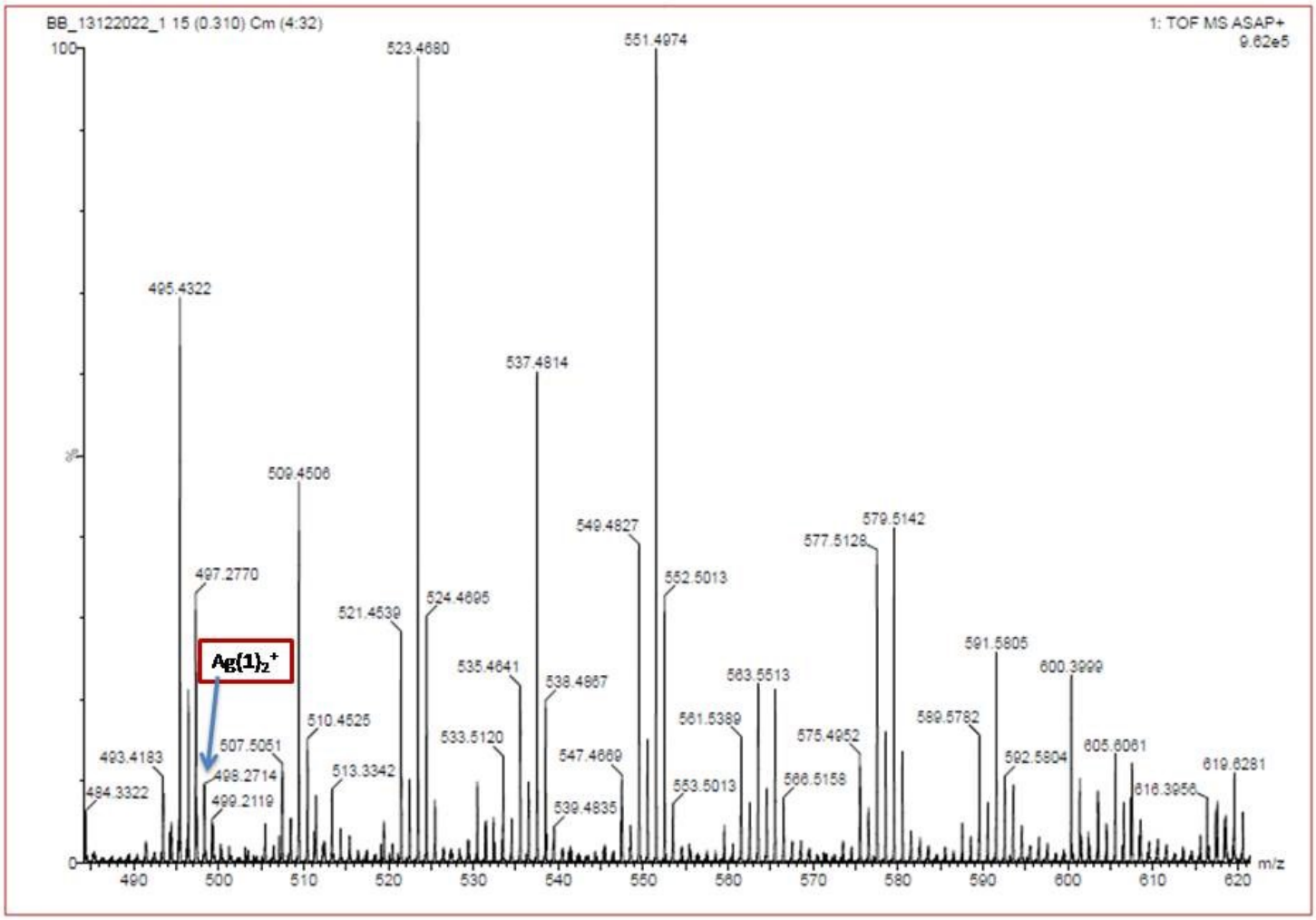

Figure S3: Mass spectrum of complex **2.**

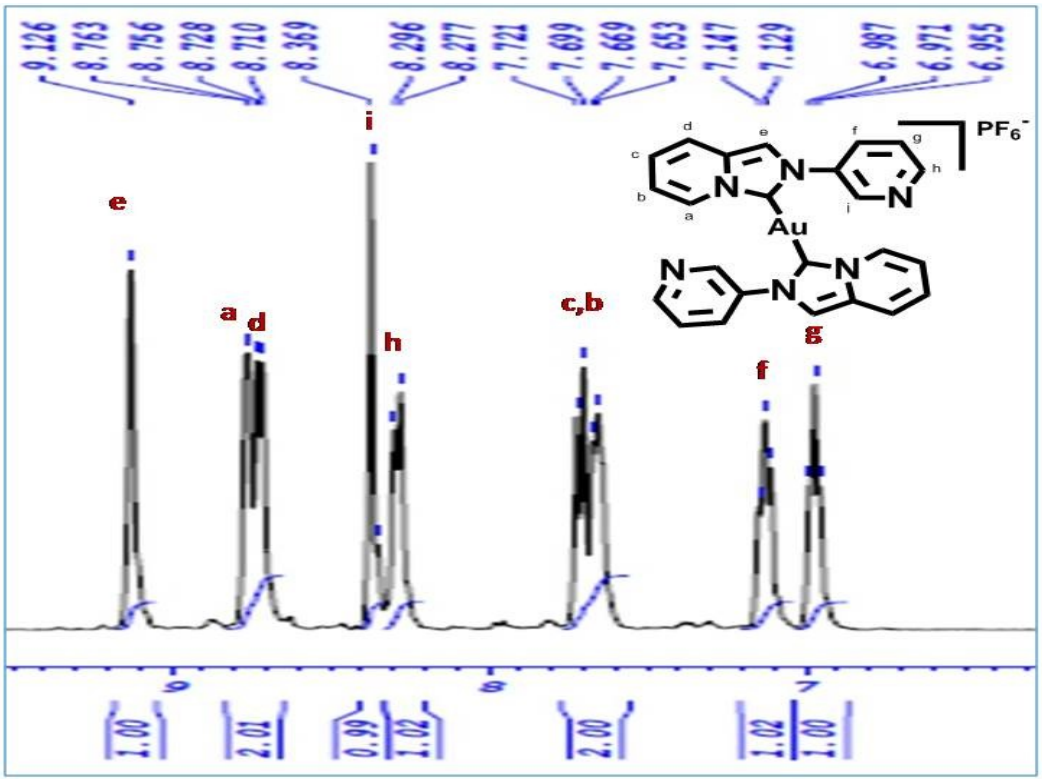

Figure S4: [1]H NMR (DMSO-d_6, 400 MHz, 25°C) spectrum of complex**3**.

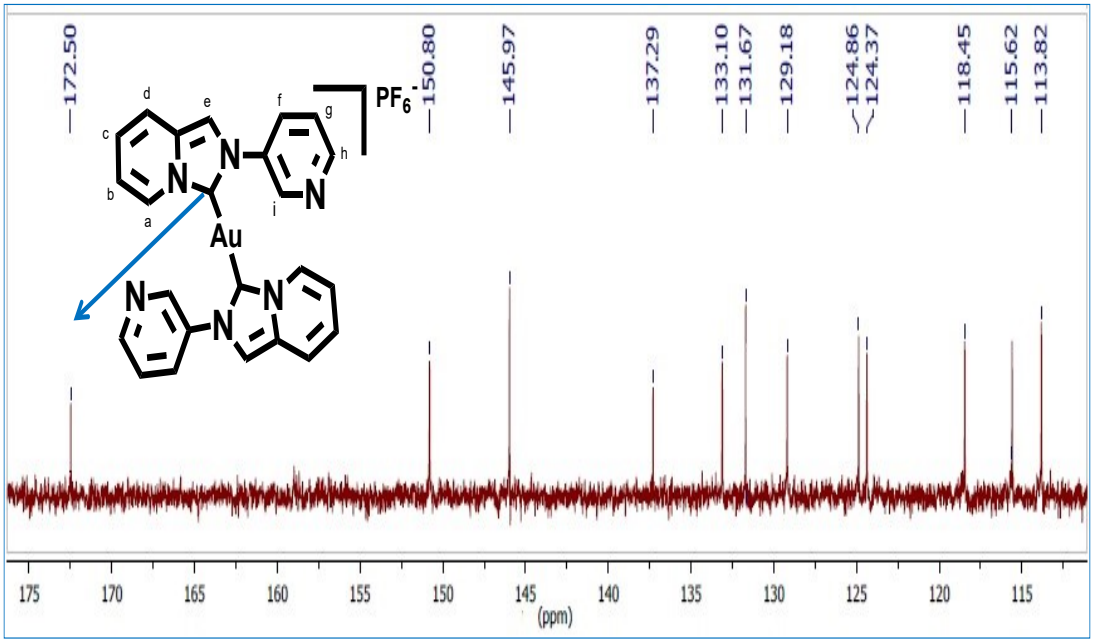

Figure S5: [13]C NMR (DMSO-d_6, 400 MHz, 25°C) spectrum of complex**3**.

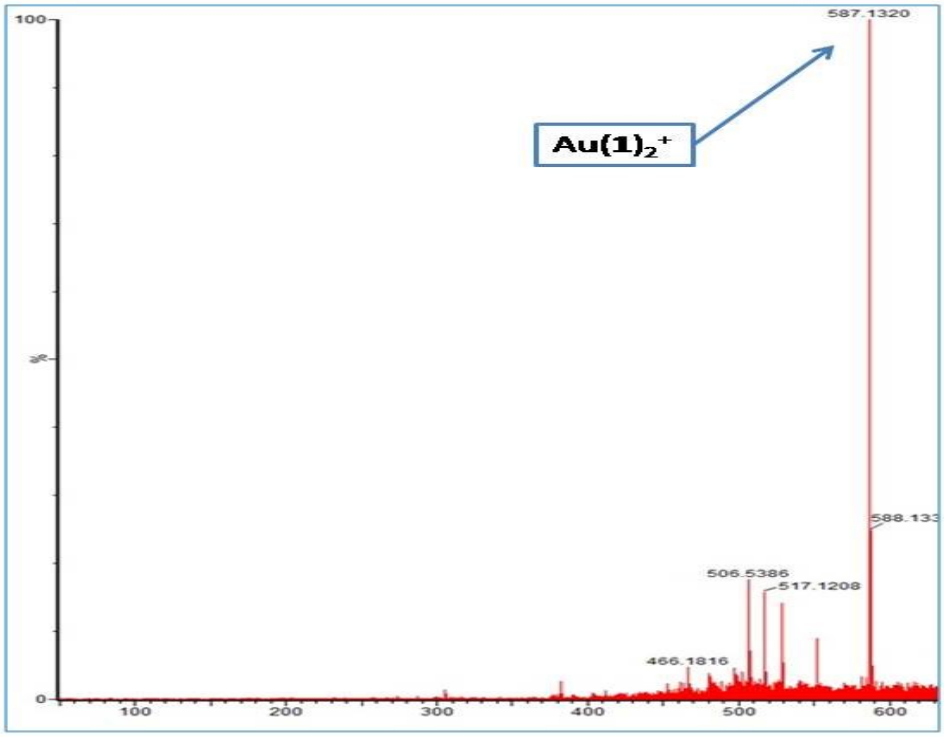

Figure S6: Mass spectrum of complex **3.**

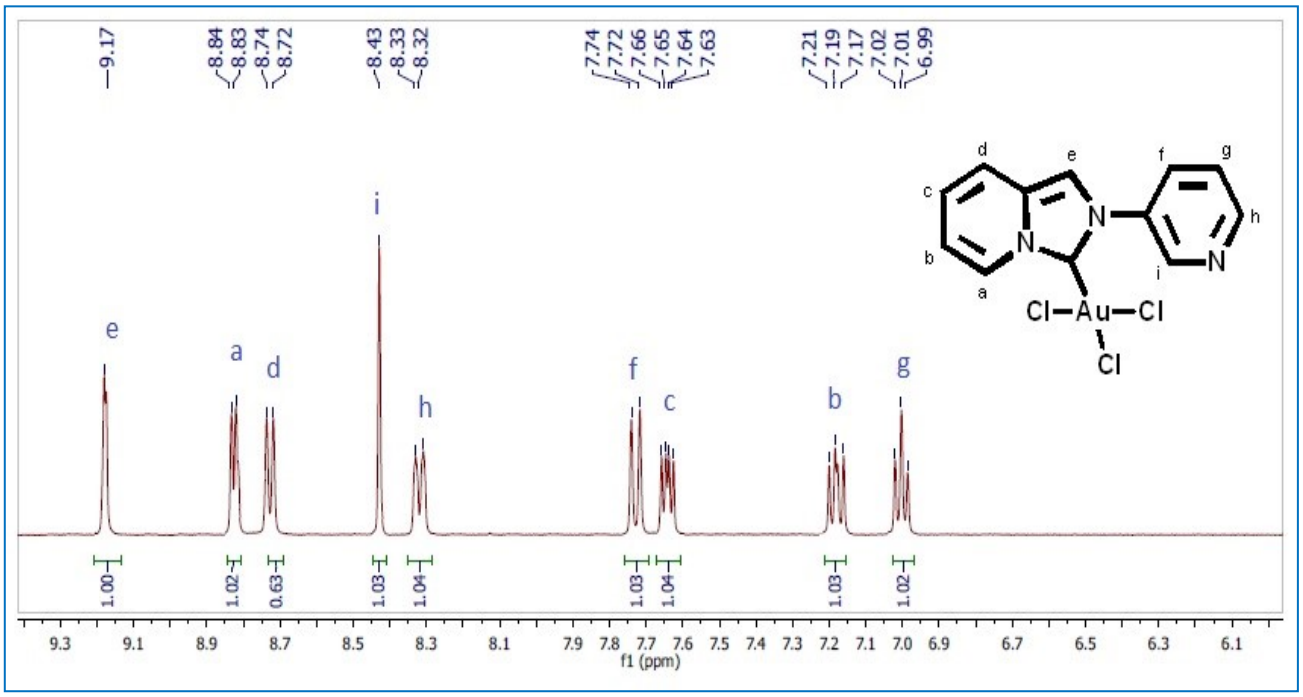

Figure S7: ^{1}H NMR (DMSO-d_6, 400 MHz, 25°C) spectrum of complex **4**.

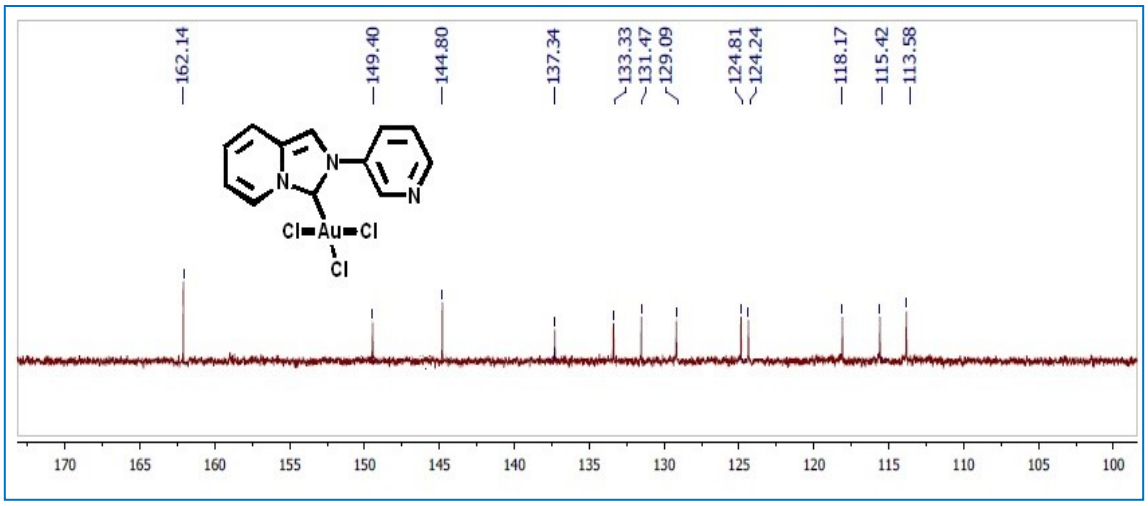

Figure S8: ^{13}C NMR (DMSO-d_6, 400 MHz, 25°C) spectrum of complex**4**.

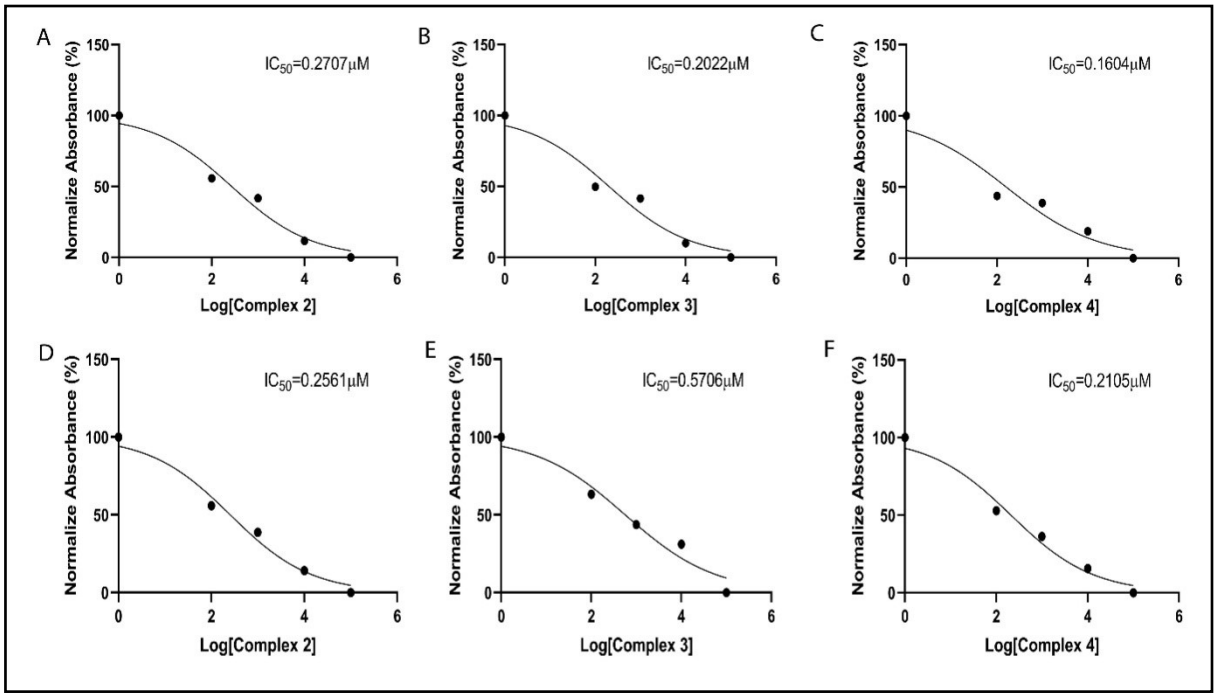

Figure S9. FigA-C, IC_{50} analysis of complex **2**,**3** and**4** in ovarian cancer cells (SKOV3) by MTT assay; Fig D-F, IC_{50} analysis of complex **2**,**3** and**4**in breast cancer cells (MDA-MB-231) by MTT assay.

Pharmacokinetic studies:

To detail the function of our synthesized complexes as a drug molecule, we investigated some prime properties like absorption, distribution, metabolism, and excretion (ADME) viaSwissADME tool, a web tool that facilitates to anticipate the physicochemical properties to know the drug-likeness nature of compounds [S2]. The summary of ADME data found for complexes **2**, **3**, and **4** are presented in the following figure (Figure S10). The complexes are moderately soluble and possess high GI absorption affinity. Complexes **2** and **3** are having 4 rotatable bonds, 2 no. of H-acceptor moieties and zero no. of H-donor moiety, whereas complex **4** is showing 2 rotatable bonds, only one H-acceptor moiety and zero no. of H-donor moiety. All the complexes have bioavailability score 0.55 with only one violation to Lipinski's 'Rule-of-five' due to high molecular weight (MW > 500). Rest of the parameters are compatible with the Lipinski's rule. In the radar plot shown below, 5 parameters are in the physicochemical range (represented as pink area) in case of complexes **2** and **4**, whereas only 4 parameters are in the physicochemical range in case of complex **3**. From this study it may conclude that, the complexes **2**, **3** and **4** have the potential to be used as drug as also supported by other studies.

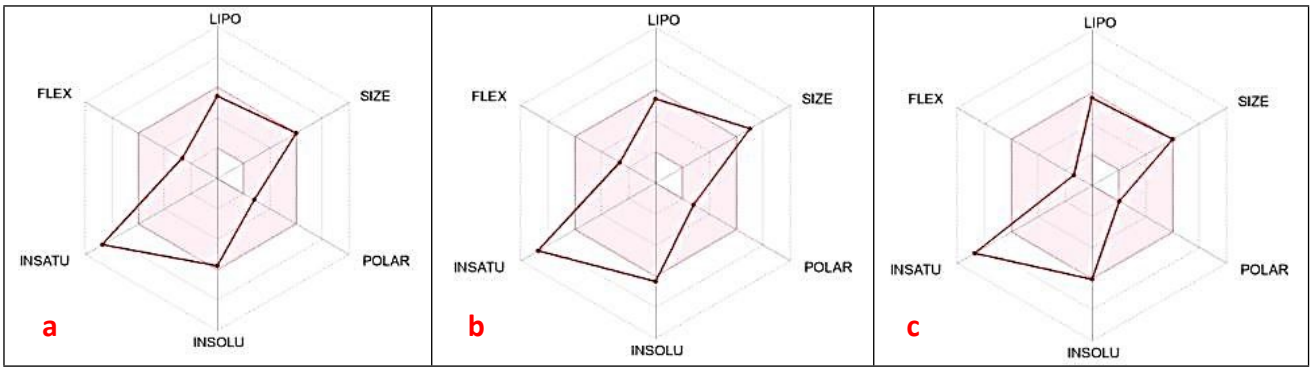

Figure S10: The bioavailability radar illustrating drug-likeness nature of complexes **2** (a), **3** (b), and **4** (c), the pink area is representing the optimal range for each property of complexes.

Table S1: Summary of X-Ray crystallographic data of proligand **1**.HPF_6 and complex **3**.

	Proligand	**Complex 3**
Empirical formula	$C_{12}H_{10}N_3F_6P$	$C_{24}H_{18}AuF_6N_6P$
Formula weight	341.20	732.38
Crystal system	Monoclinic	Monoclinic
Space group	C 2/c	P 2_1/n
Temperature/K	296	298
a /Å	18.3998(12)	8.6993(5)
b / Å	9.7138(6)	14.4139(8)
c / Å	15.2920(10)	10.5286(6)
α (°)	90	90
β (°)	94.451(2)	106.7960(10)
γ (°)	90	90
Volume / Å^3	2724.9(3)	1263.87(12)
Z	8	2
Density / g cm^{-3}	1.663	1.924
Absorption coefficient	0.271	5.954 mm^{-1}
Theta range	2.220 to 28.406	2.685 to 28.36
Index ranges	-24<=h<=24, -12<=k<=12, -20<=l<=20	-11<=h<=11, -19<=k<=19, -14<=l<=14
Total / unique / obs. data	48053 /3409/2511	65736 /3151/2465
No. of Parameters	199	175
Final R indices [I>2sigma(I)] R indices (all data)	R1 = 0.0828, wR2 = 0.2429 R2 = 0.1080 wR2 = 0.2730	R1 = 0.0284, wR2 = 0.0783 R2 = 0.0384, wR2 = 0.0880
GOF	1.068	1.02

Reference

S1. M. Kriechbaum, D. Otte, M. Listb and U. Monkowius, *Dalton Trans.,* 2014, 43, 8781.

S2. S. Grimme, J. Antony, S. Ehrlich and H. A. Krieg, *J. Chem. Phys*. 2010, 132, 154104.