Electronic Supplementary Material (ESI) for Dalton Transactions.

Synthesis, chemical characterization, and biological evaluation of a novel auranofin derivative as an anticancer agent

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Supporting Material

Contents

NMR characterization

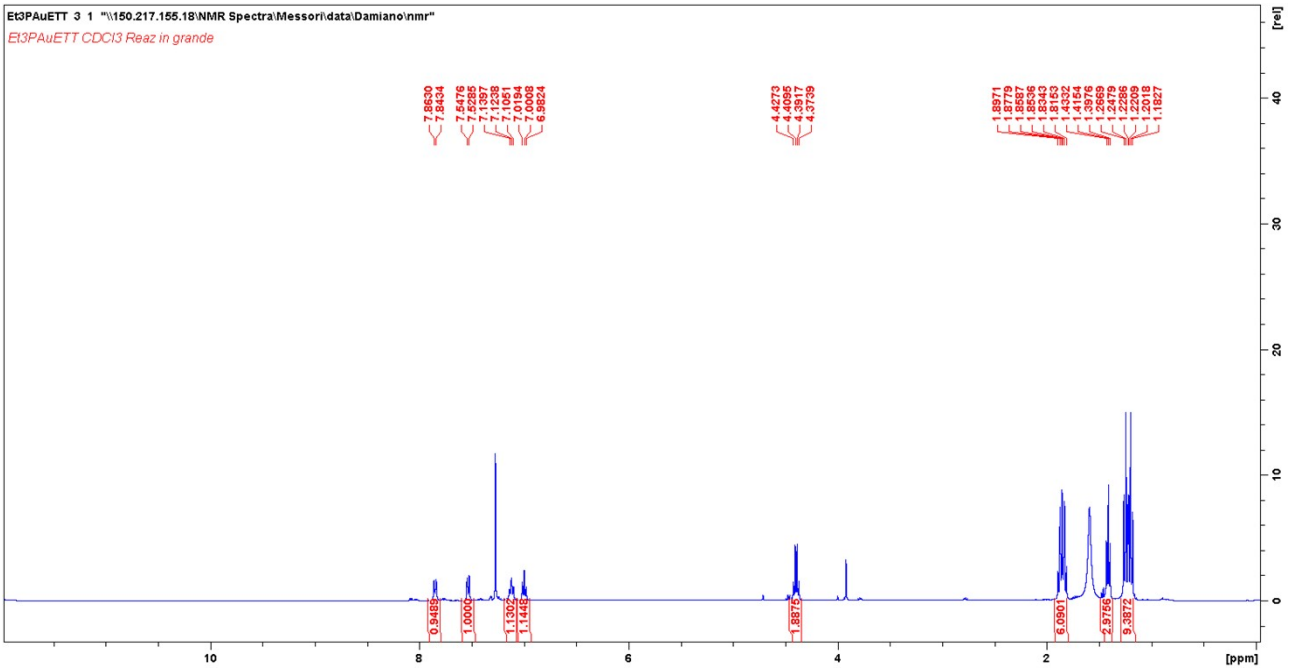

Fig.S1: ^{1}HNMR spectrum of AFETT in $CDCl_3$

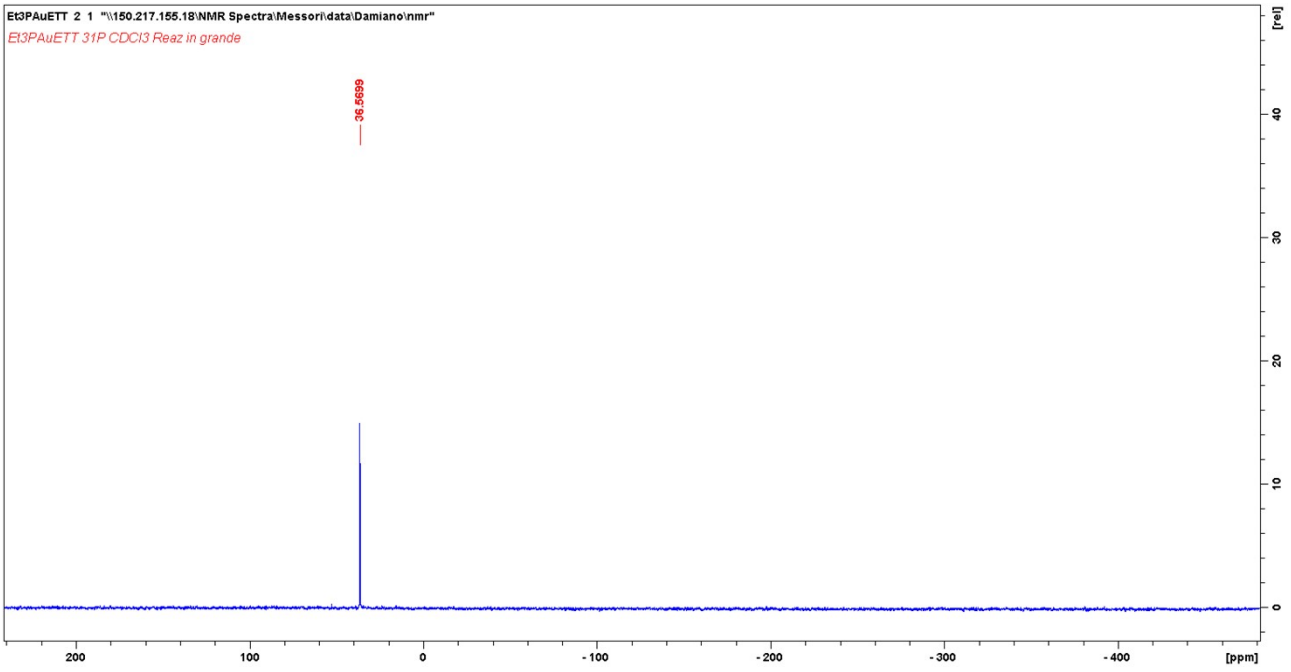

Fig.S2: ^{31}PNMR spectrum of AFETT in $CDCl_3$

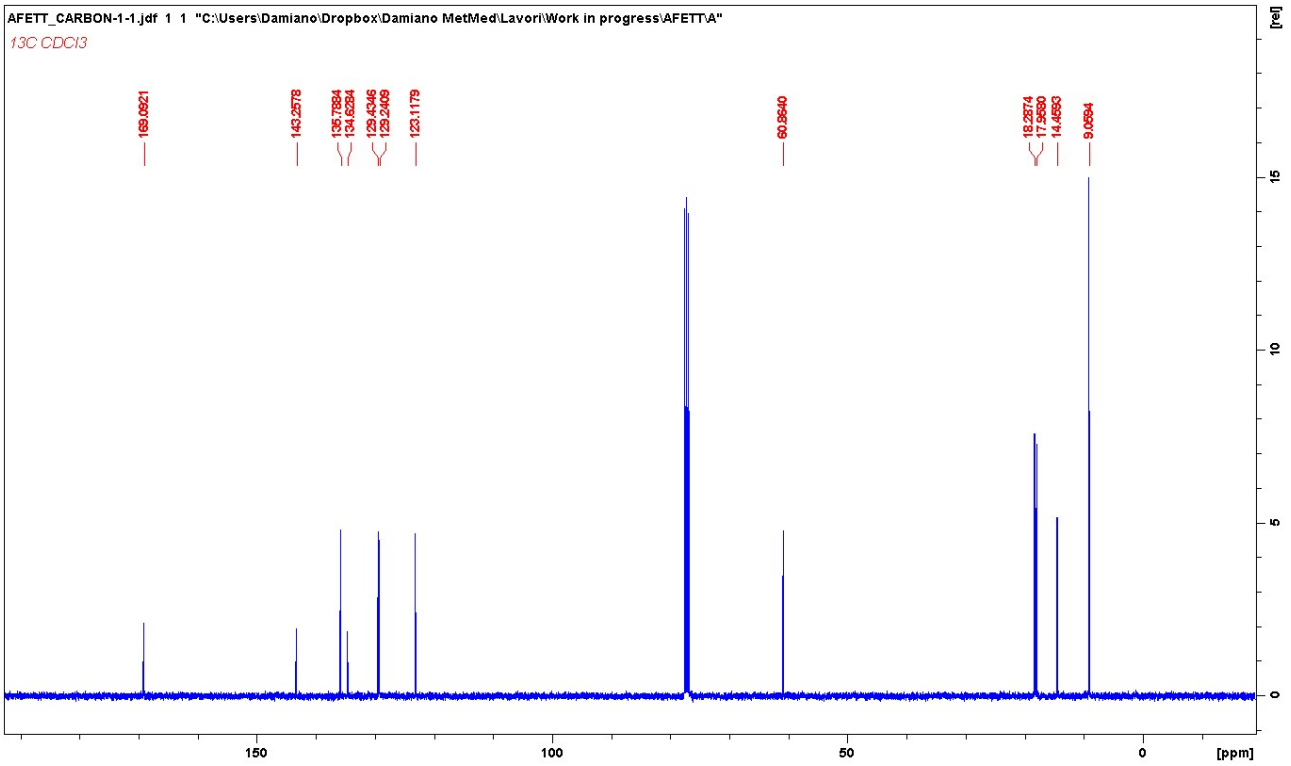

Fig.S3: ^{13}CNMR spectrum of AFETT in $CDCl_3$

Solution stability

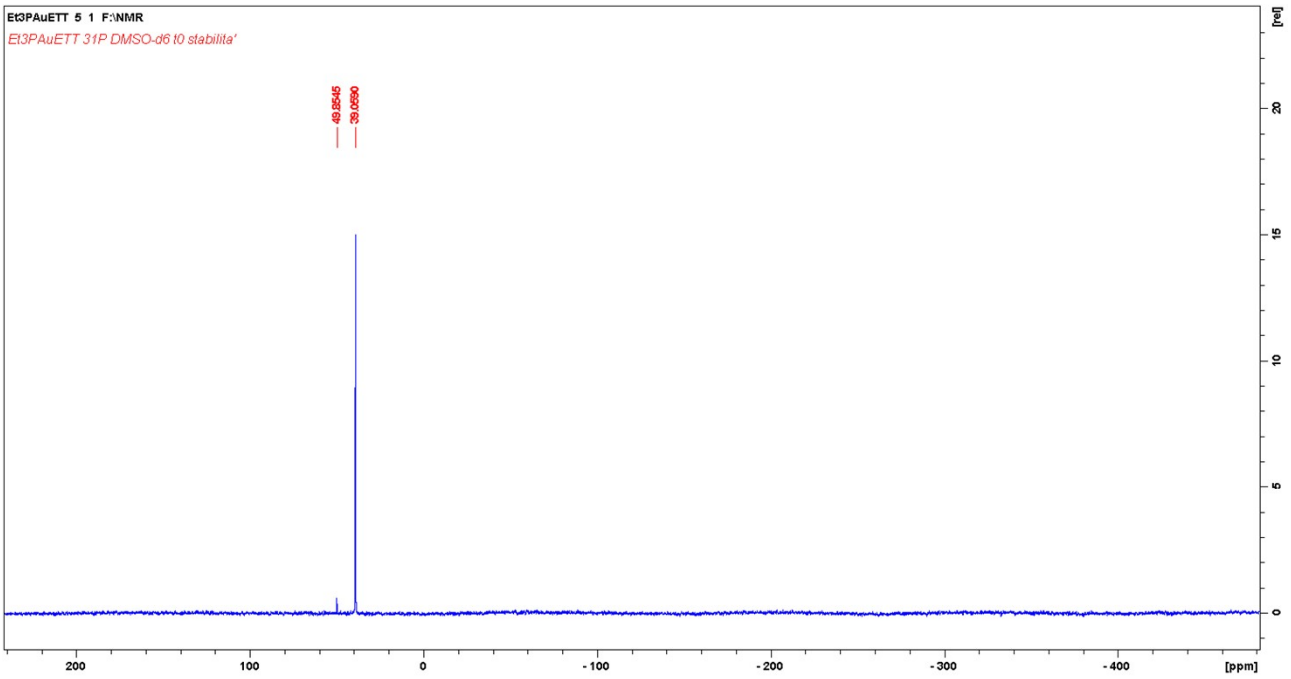

Fig.S4: AFETT stability control. ^{31}PNMR spectrum performed in dimethylsulfoxide-d_6 at t_0.

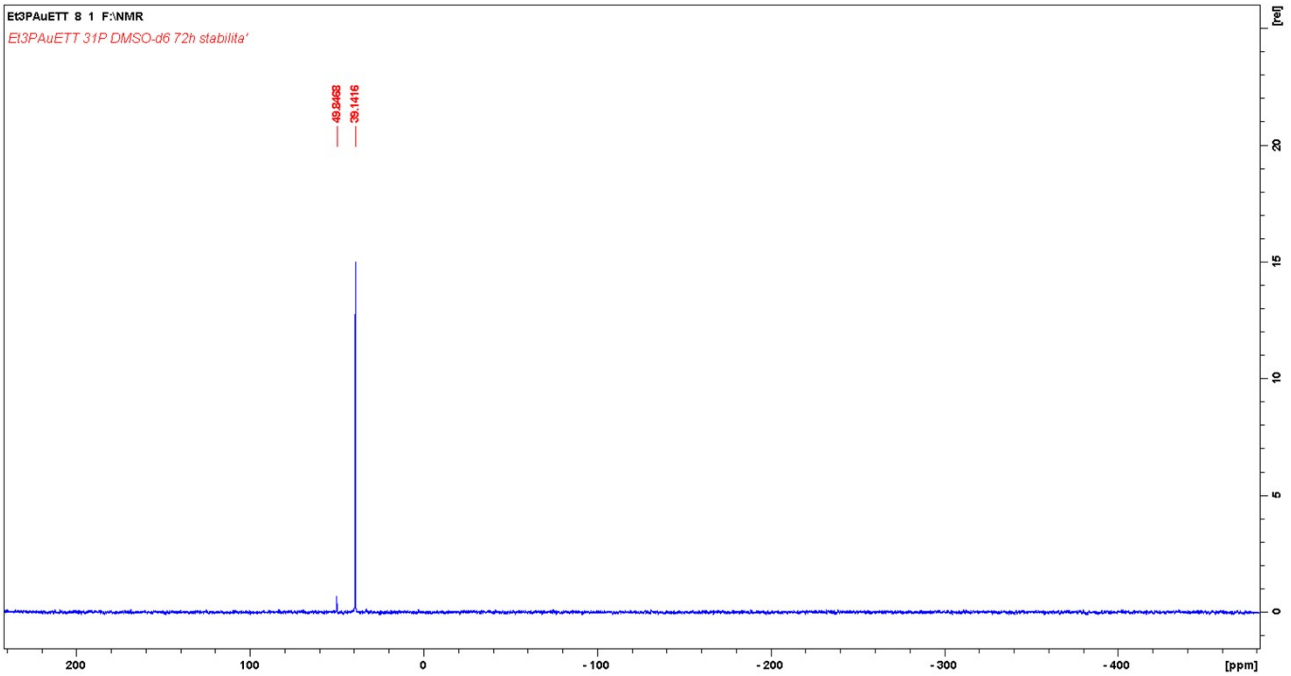

Fig.S5: AFETT stability control. ^{31}PNMR spectrum performed in dimethylsulfoxide-d_6 at 72h.

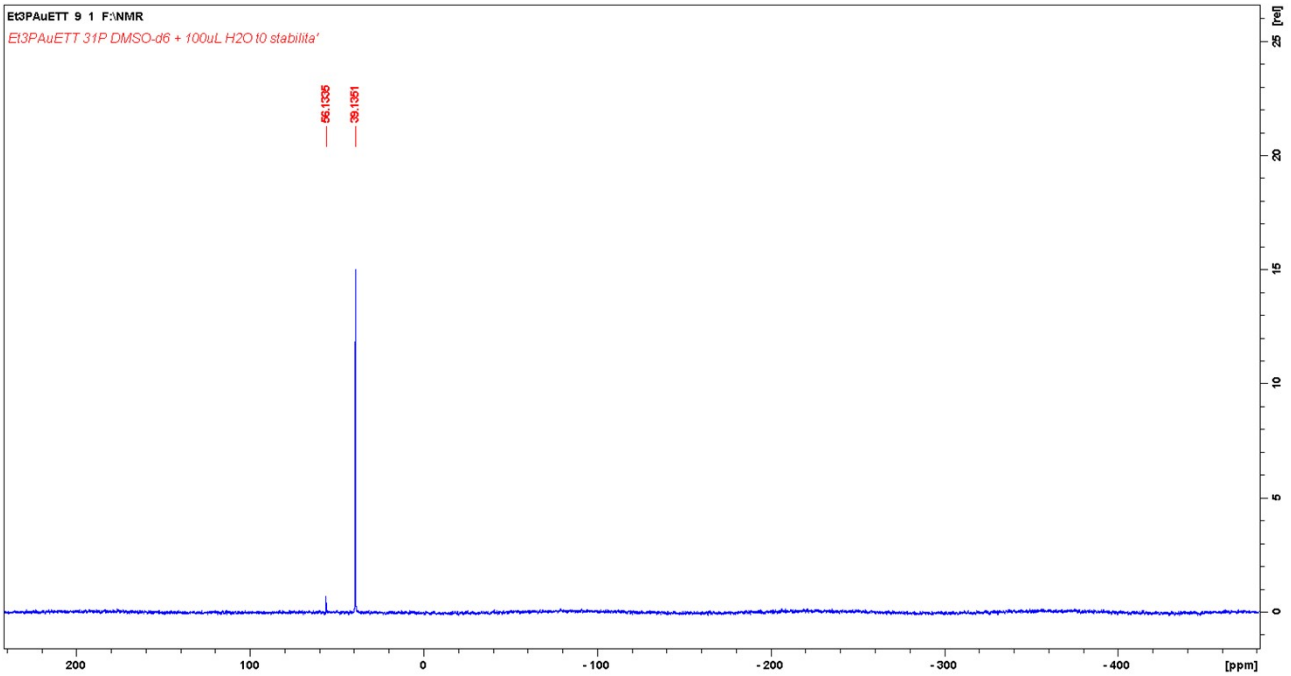

Fig.S6: AFETT stability control. ^{31}PNMR spectrum performed in dimethylsulfoxide-d_6 (400 μL) and H_2O (100 μL) at t_0.

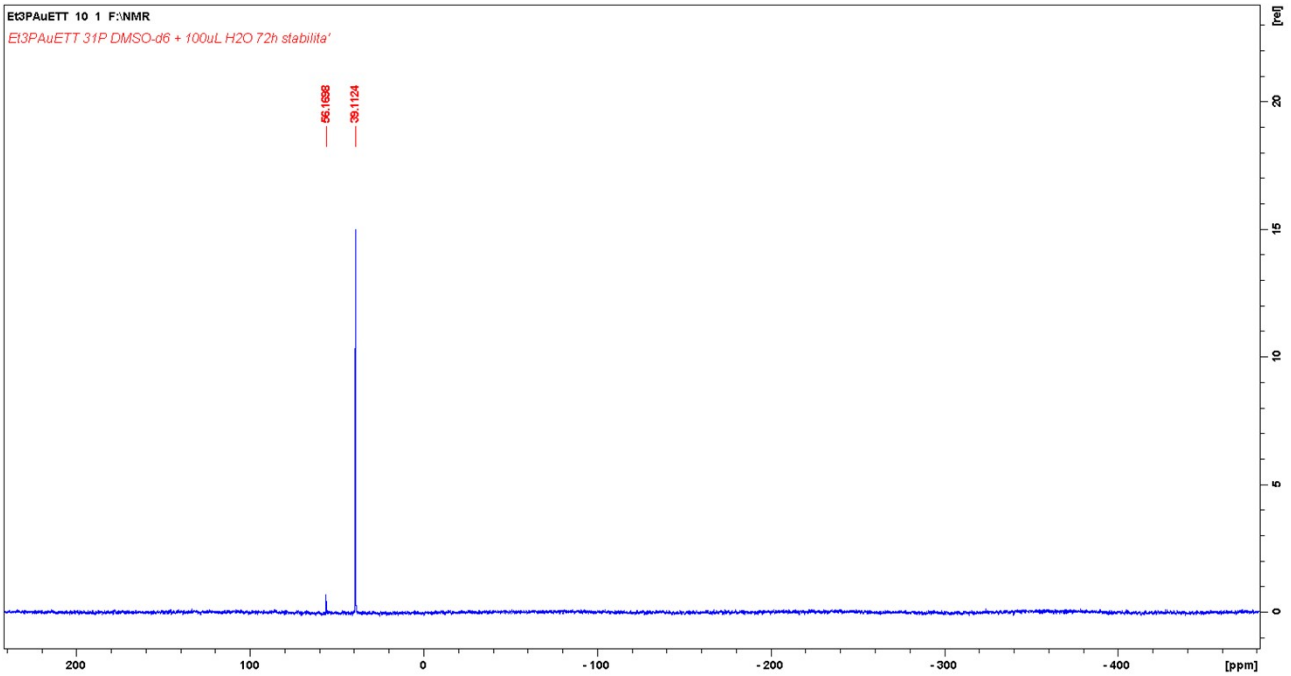

Fig.S7: AFETT stability control. ^{31}PNMR spectrum performed in dimethylsulfoxide-d_6 (400 μL) and H_2O (100 μL) at 72h.

Crystal data

Table S1: Bond lengths (Å) and angles (°) for compound ethylthiosalicylate(triethylphosphine)gold(I)

Au(1)−P(1)	2,270(2)
Au(1)−S(1)	2,325(1)
Au --- Au	3.0112(4)
P(1)−Au(1)−S(1)	175,80(6)

Table S2: Crystal data and refinement parameters for the compound ethylthiosalicylate(triethylphosphine)gold(I)

	Compound
Empirical formula	C15H24AuO2PS
Formula weight	496.36
Temperature (K)	100(2)
Wavelength (Å)	0.71073
Crystal system, space group	Orthorhombic, F dd2
Unit cell dimensions (Å)	a = 43,937(2) b = 12,2850(6) c = 12,9940(6)
Volume ($Å^3$)	7013,7(6)
Z, D_c (mg/cm^3)	16, 1,880
μ (mm^{-1})	8,599
F(000)	3840
Crystal size (mm)	
θ range (°)	2,672 – 34.335
Reflections collected / unique	36070 / 7292
Data / restraints / parameters	7292 / 1 / 185
Goodness-of-fit on F^2	1,194
Final R indices [I>2σ(I)]	R_1 = 0.0265; wR_2= 0.0624
R indices (all data)	R_1 = 0.0288; wR_2= 0.0617
Flack x =	0.070(4)

Interaction with biological target models ^{31}PNMR spectra

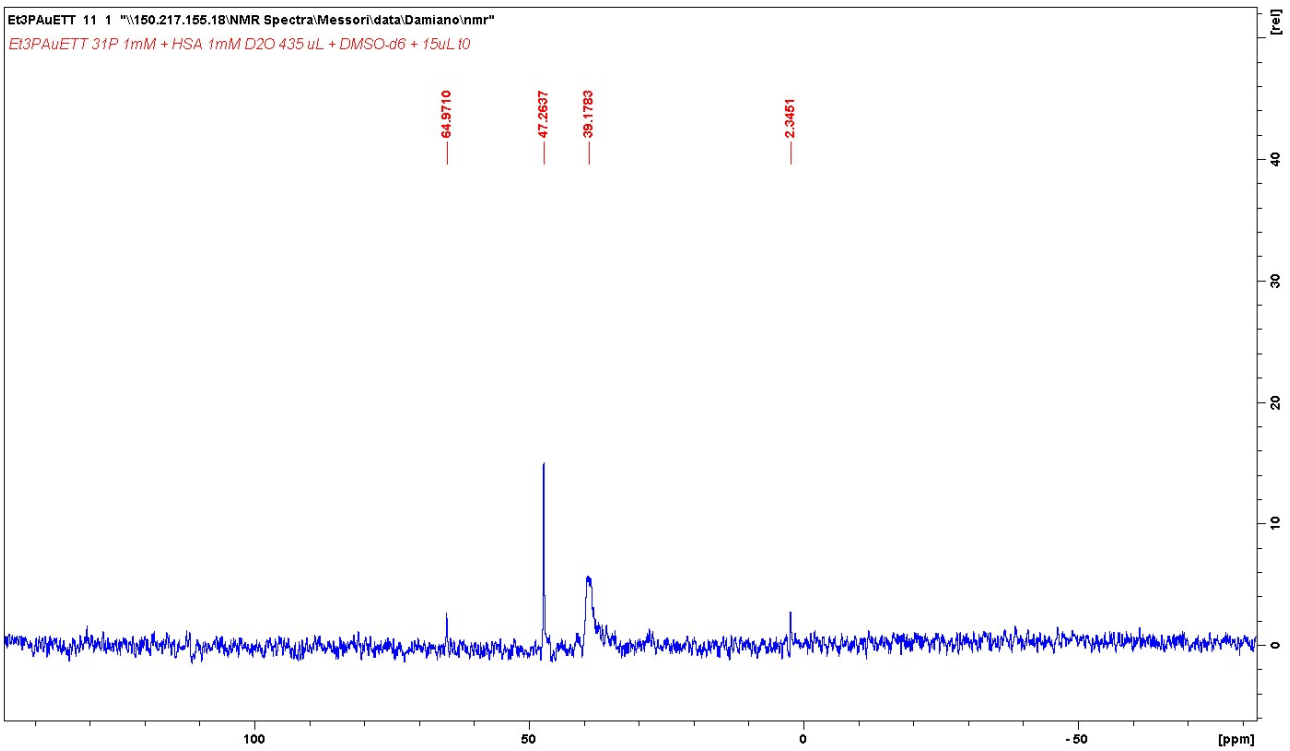

Fig.S8: ^{31}PNMR spectrum of AFETT 1 mM with HSA 1 mM acquired at t_0. Sample prepared in D_2O (435 μL) and dimethylsulfoxide-d_6 (15 μL).

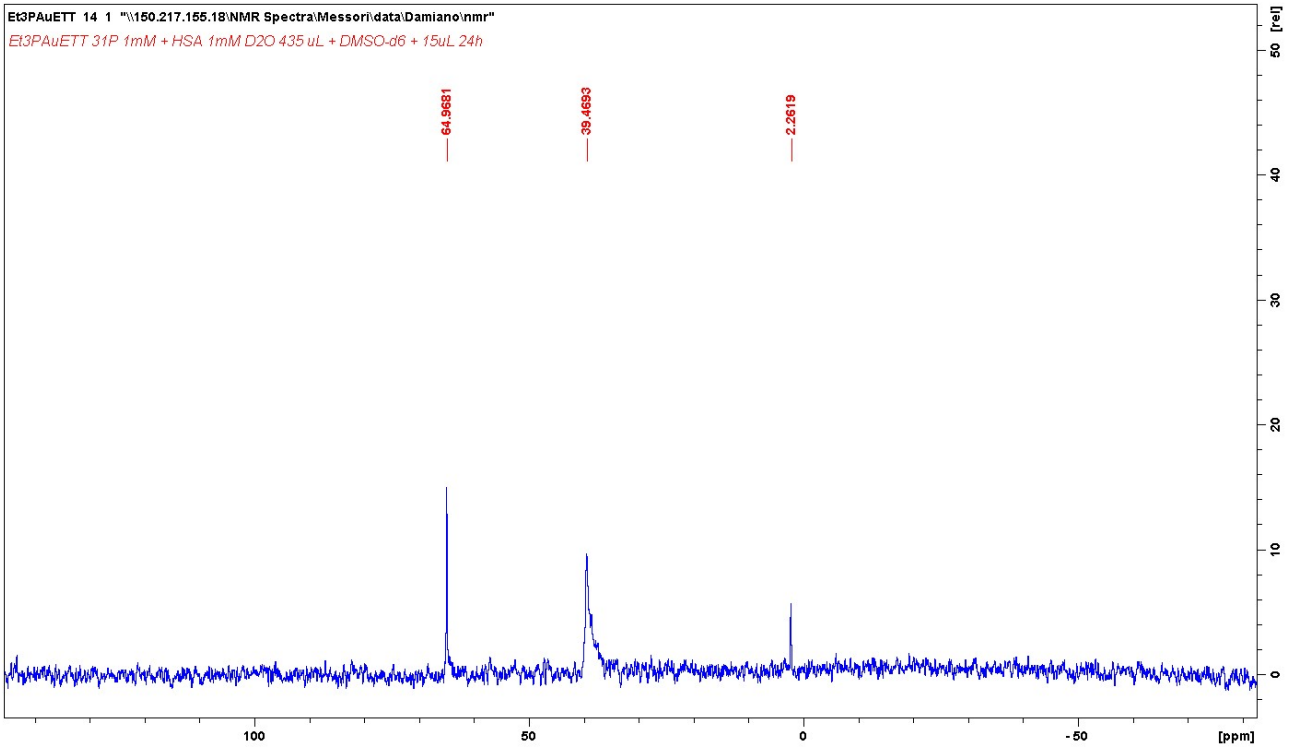

Fig.S9: ^{31}PNMR spectrum of AFETT 1 mM with HSA 1 mM acquired at 24h. Sample prepared in D_2O (435 μL) and dimethylsulfoxide-d_6 (15 μL).

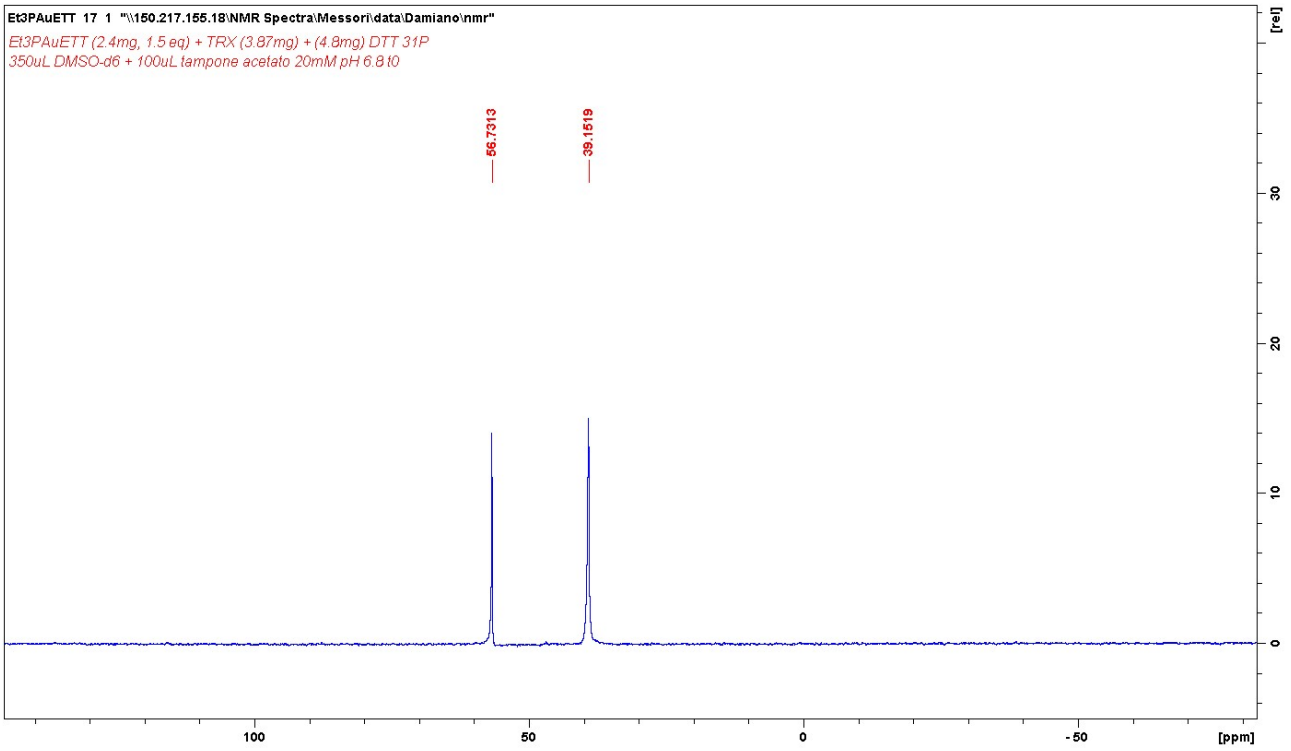

Fig.S10: ^{31}PNMR spectrum of AFETT (2.4; 1.5 eq.) with thioredoxin reductase dodecapeptide dTrxR (3.87 mg; 1 eq.) and dithiothreitol (4.8 mg; excess) acquired at t_0. Sample prepared dimethylsulfoxide-d_6 (350 μL) and ammonium acetate buffer 20 mM pH 6.8 (100 μL).

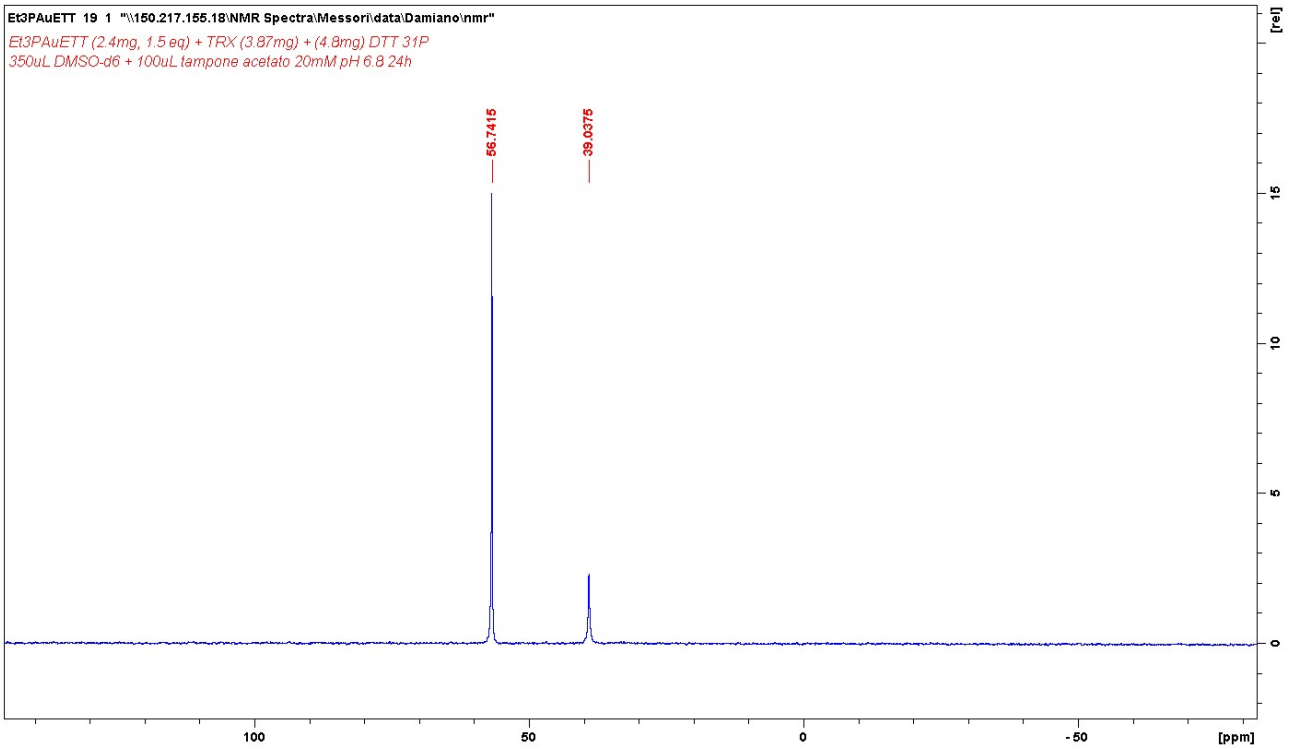

Fig.S11: ^{31}PNMR spectrum of AFETT (2.4; 1.5 eq.) with thioredoxin reductase dodecapeptide dTrxR (3.87 mg; 1 eq.) and dithiothreitol (4.8 mg; excess) acquired at 24h. Sample prepared dimethylsulfoxide-d_6 (350 μL) and ammonium acetate buffer 20 mM pH 6.8 (100 μL).

In vitro cells analysis

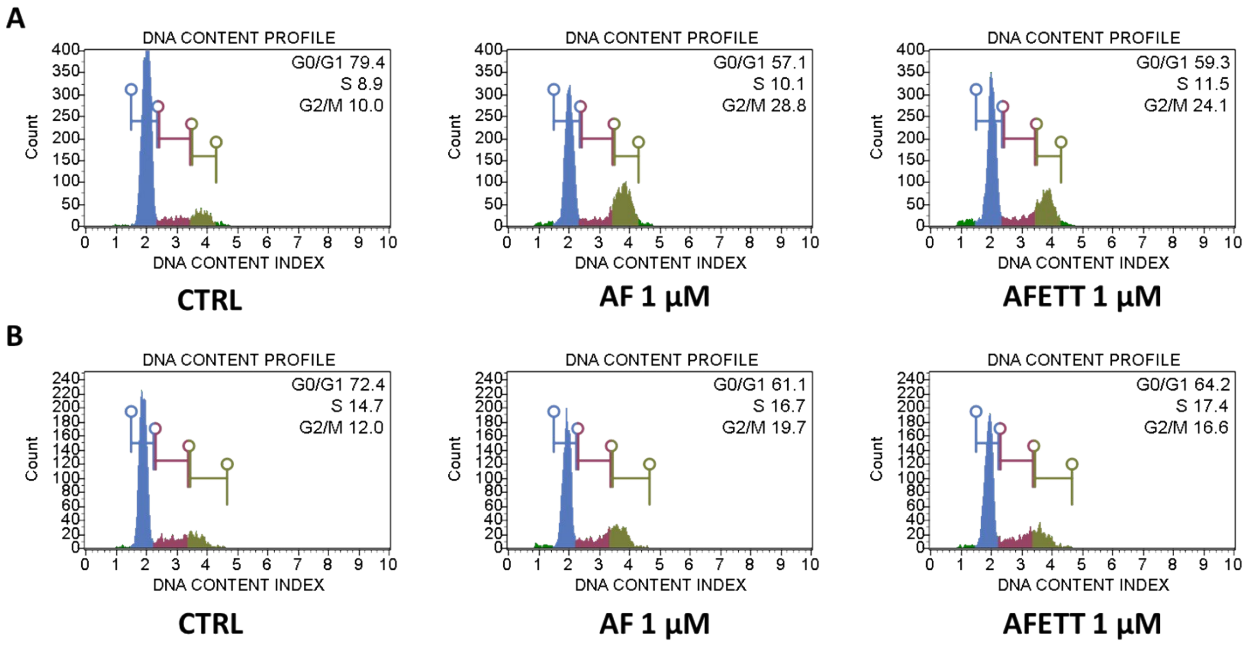

Fig.S12: Representative cell cycle histograms of untreated and treated A2780 (A) and A2780-R (B) cells were reported. The figure summarised the results for AFETT, auranofin (AF) and untreated cells (CTRL).

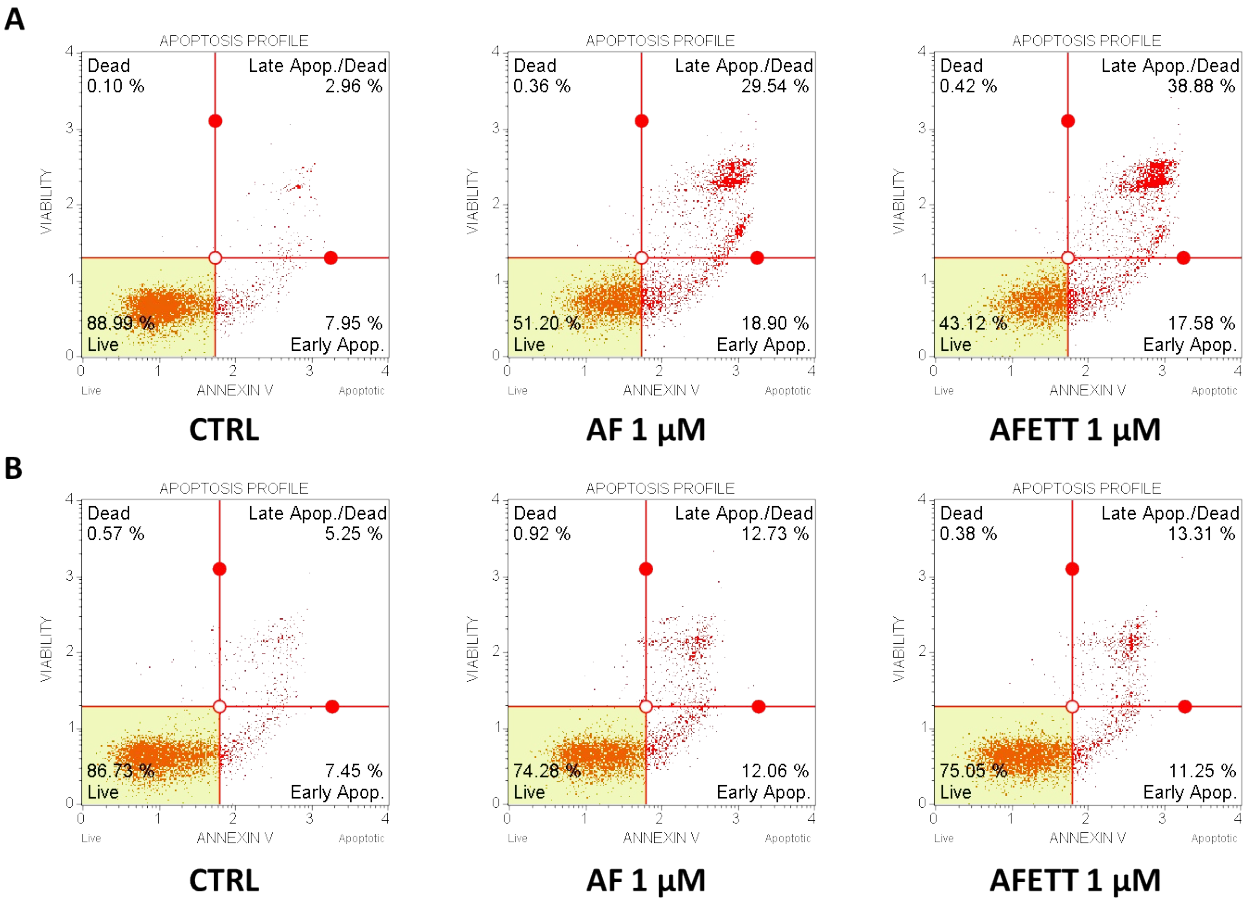

Fig.S13: Representative Annexin V/7-AAD histograms of untreated and treated A2780 (A) and A2780-R (B) cells were reported. The figure summarised the results for AFETT, auranofin (AF) and untreated cells (CTRL).

Accurate mass analysis of ethylthiosalicylate (triethylphosphine) gold(I)

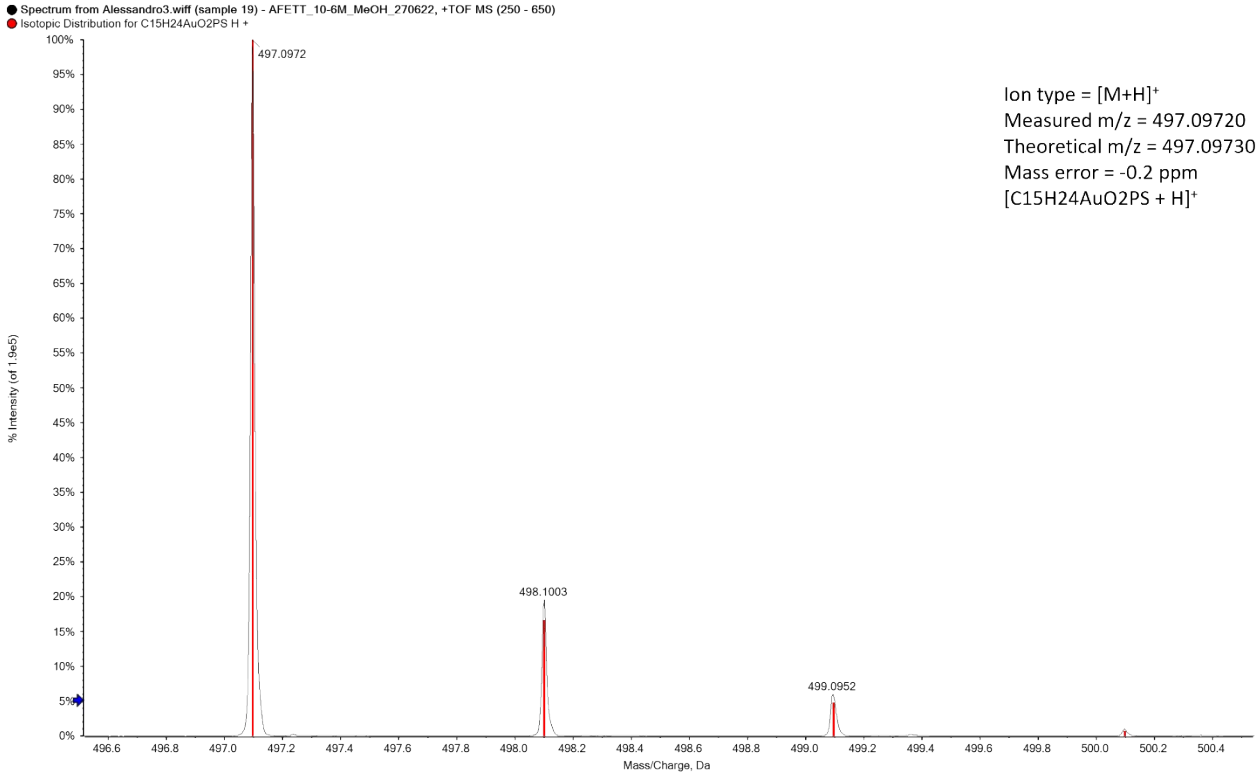

Fig. S14: Superimposition of the theoretical and the experimental isoptopic distribution of the ethylthiosalicylate (triethylphosphine) gold(I) complex. HR-ESI-MS: $[M]^+$ *m/z* = 497.09720 (theoretical for $[C_{15}H_{24}AuO_2PS + H]^+$: *m/z* = 497.09730; error: -0.2 ppm).