Plicatin B Conformational Landscape and Affinity to Copper (I and II) Metal Cations. A DFT Study

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Electronic Supplementary Information

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Table S1 Labels, B3LYP/6-31G* structures, absolute energies (E_h) and relative energies (kcal/mol) for E and Z stable conformers of isolated plicatin B. A few keto tautomers and fused ring derivatives are also reported.

All the compounds are listed in descending order of stability.

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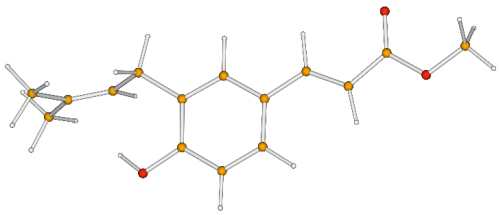
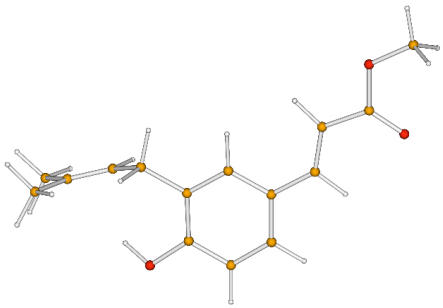
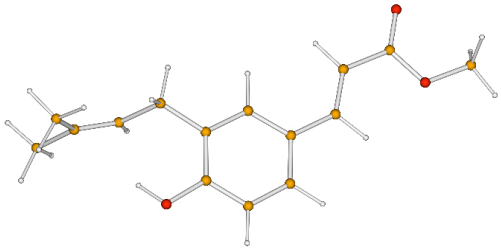
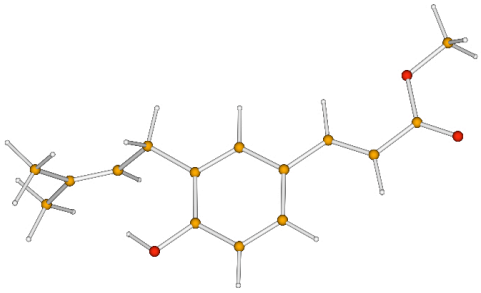
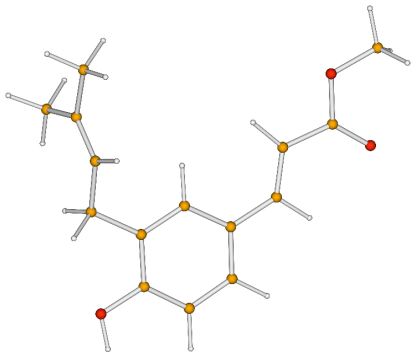
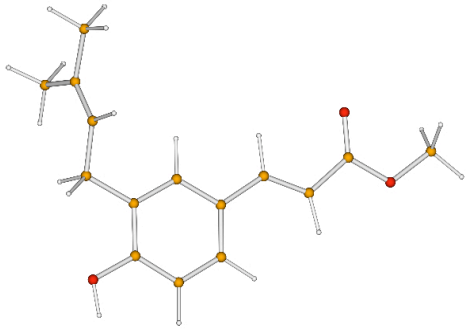
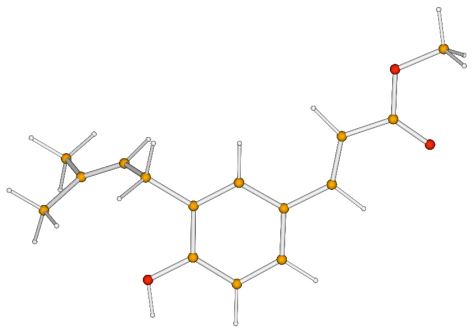
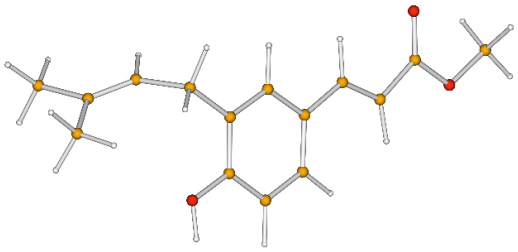
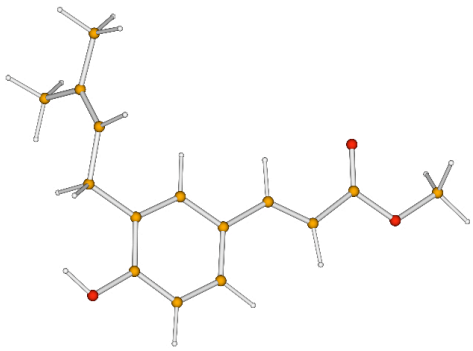
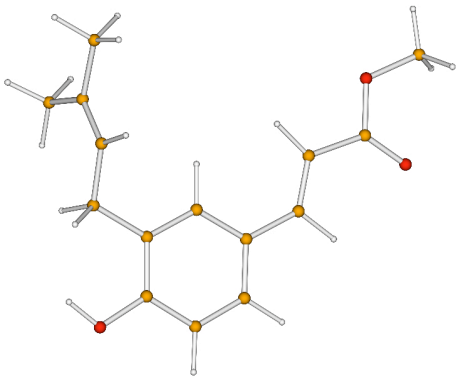
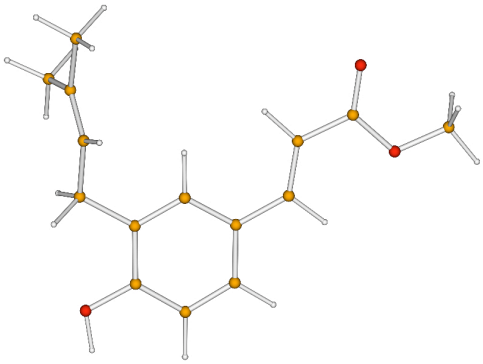
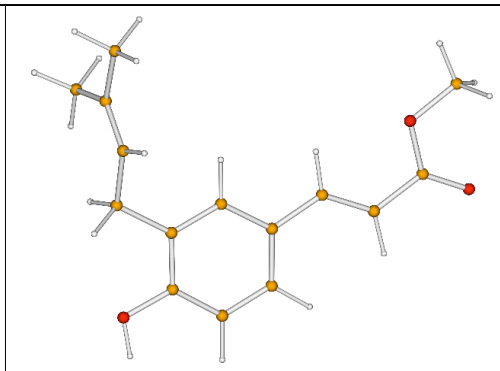
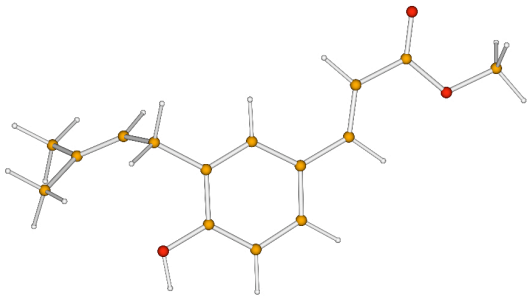
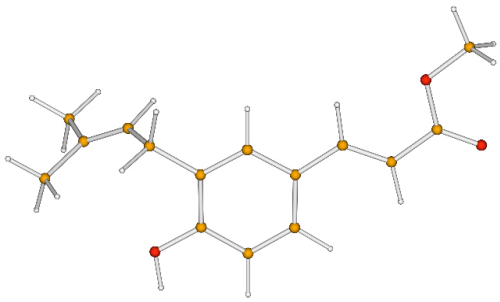
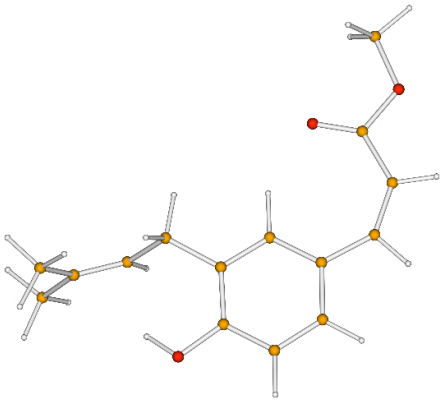
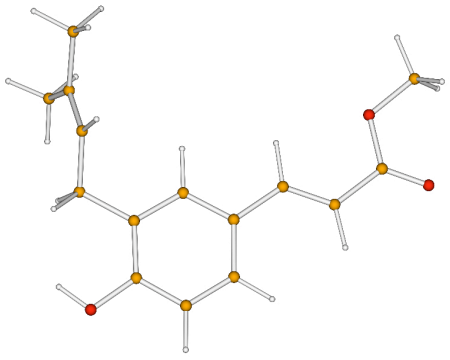
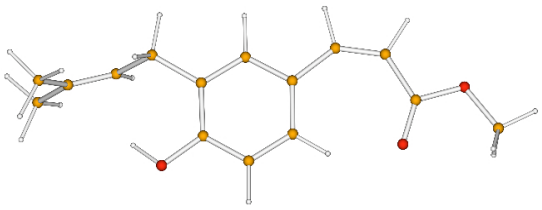
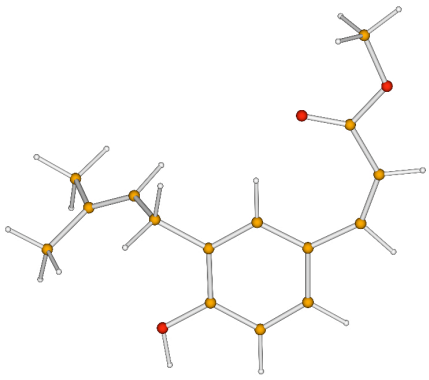
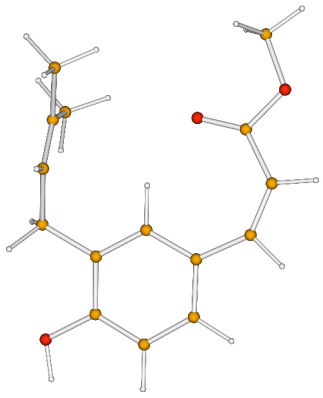
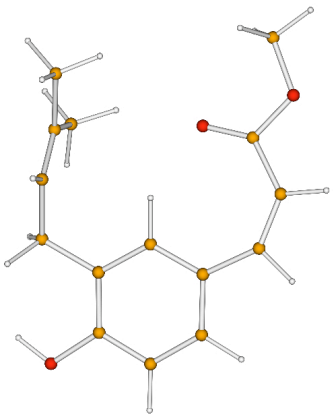
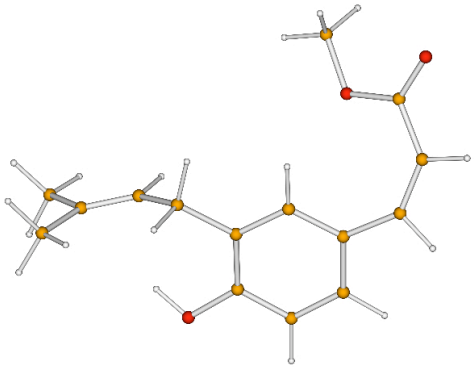
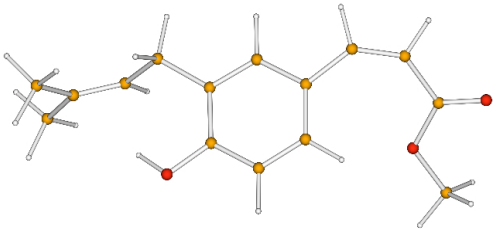
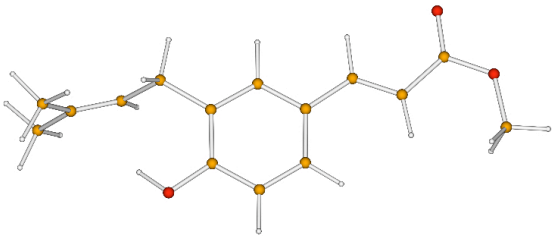
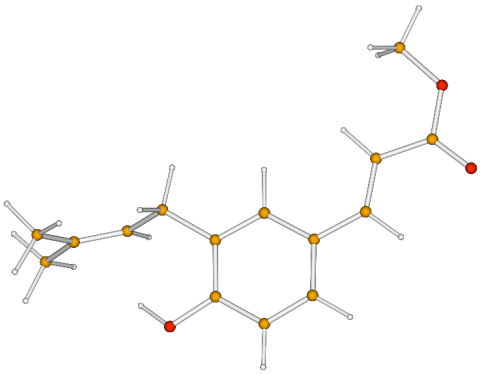
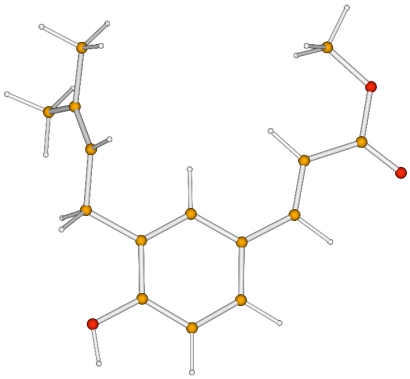
1		-808.08171040	0.0000
2		-808.08155270	0.0990
3		-808.07999360	1.0773
4		-808.07996772	1.0935
5		-808.07816630	2.2240
6		-808.07797177	2.3460

7		-808.07783158	2.4340
8		-808.07766076	2.5412
9		-808.07702792	2.9383
10		-808.07686106	3.0430
11		-808.07647682	3.2841

12		-808.07634954	3.3640
13		-808.07608030	3.5329
14		-808.07604492	3.5551
Z2		-808.0757415	3.7455
15		-808.07523392	4.0641

Z1		-808.07499871	4.2117
Z7		-808.07124089	6.5697
Z5		-808.07098267	6.7318
Z10		-808.07068230	6.9202
Z3		-808.06953158	7.6423

Z4		-808.06950157	7.6612
1a		-808.06834847	8.3847
2a		-808.06793283	8.6456
5a		-808.06472363	10.6594
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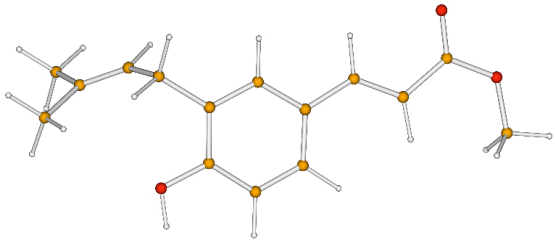
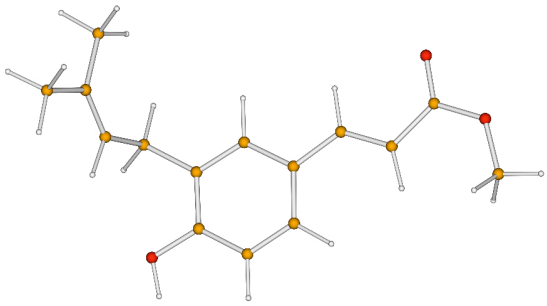
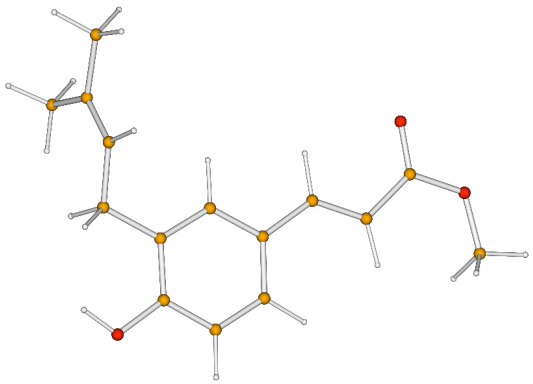
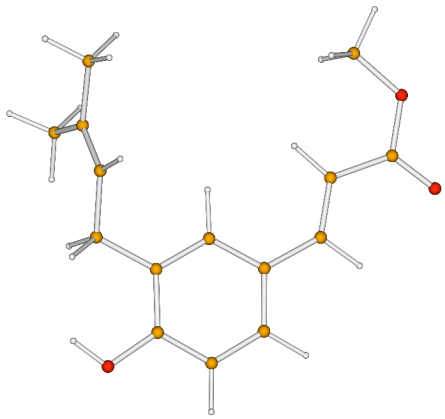
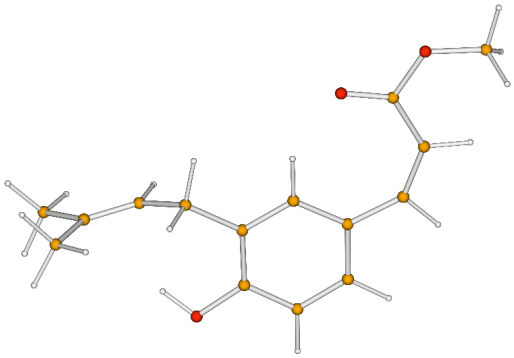
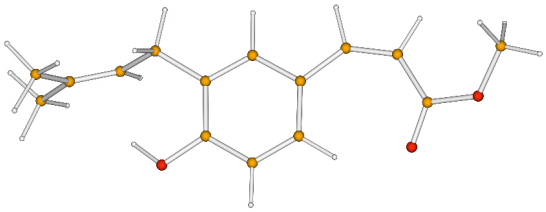
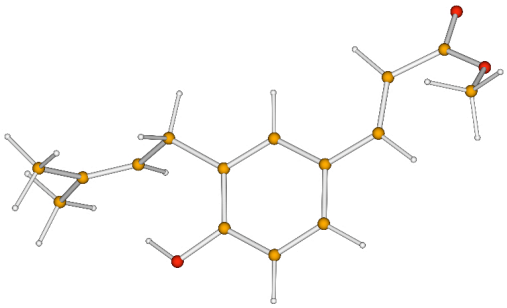
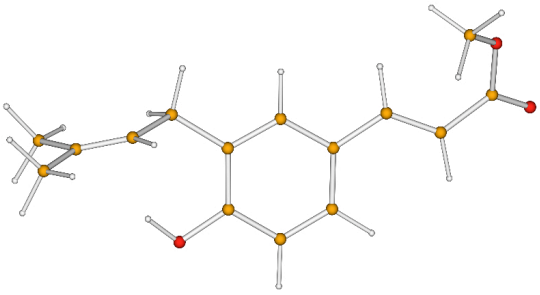
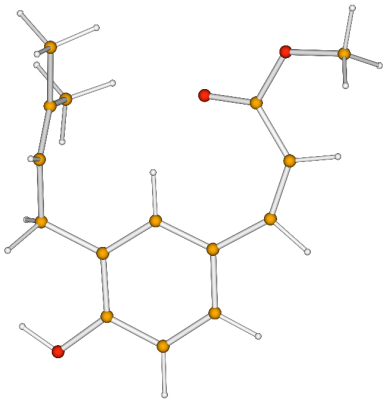
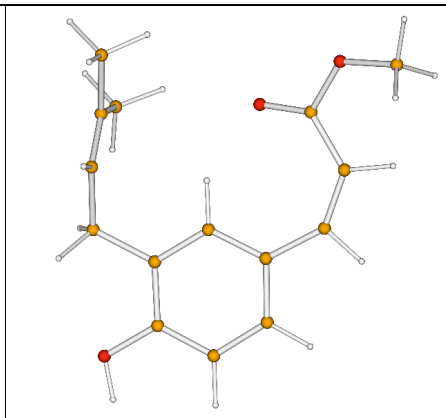
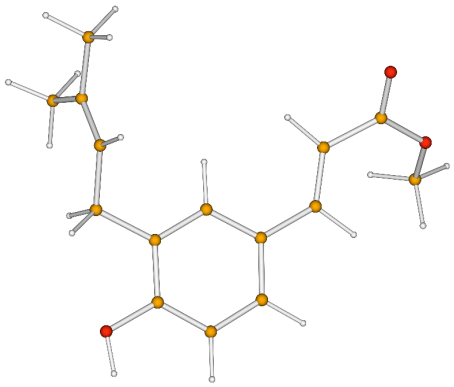
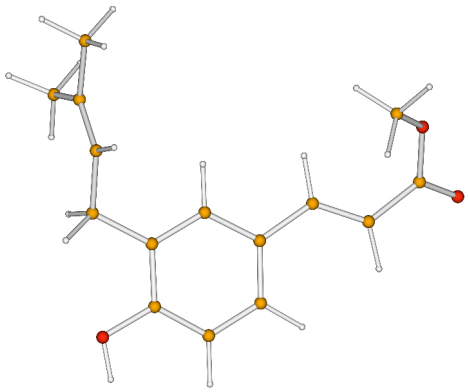
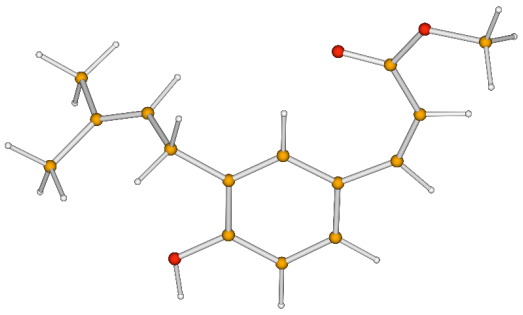
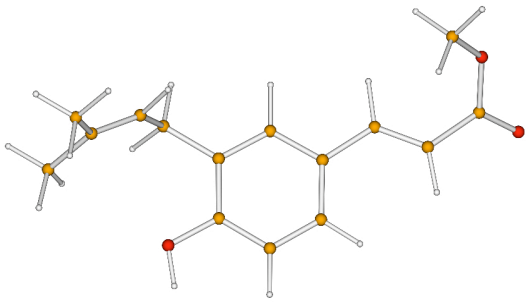
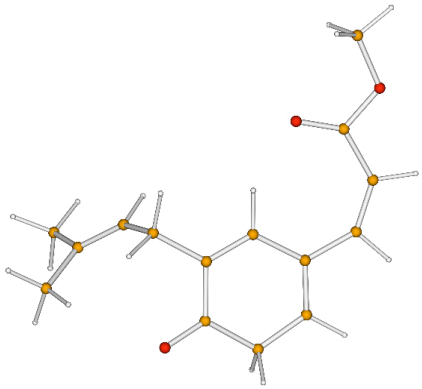
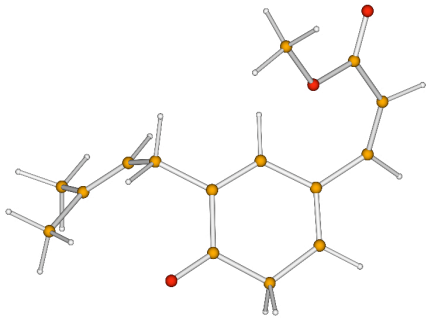
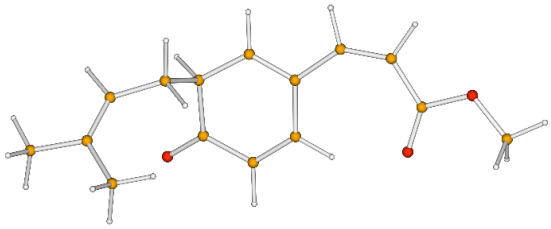
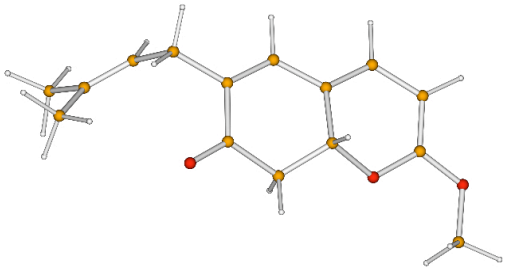
8a		-808.06401778	11.1023
8'a		-808.06387282	11.1933
9a		-808.06359662	11.3666
10a		-808.0632554	11.5807

Z2a		-808.06201780	12.3573
Z1a		-808.06098697	13.0042
3a		-808.06092338	13.0441
4a		-808.06079864	13.1223
Z10a		-808.05749024	15.1984

Z5a		-808.05743979	15.2300
11a		-808.05738314	15.2656
12a		-808.05728187	15.3291
Z7a		-808.05720483	15.3775
14a		-808.05688773	15.5765

K2		-808.04782599	21.2628
K3		-808.04349173	23.9826
K1		-808.04043214	25.9025
FK1		-808.03763548	27.6575
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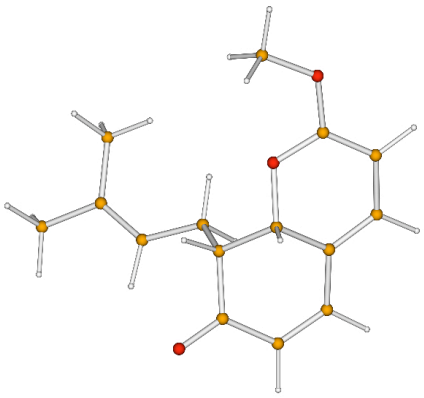
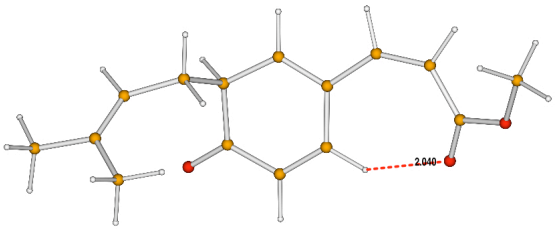
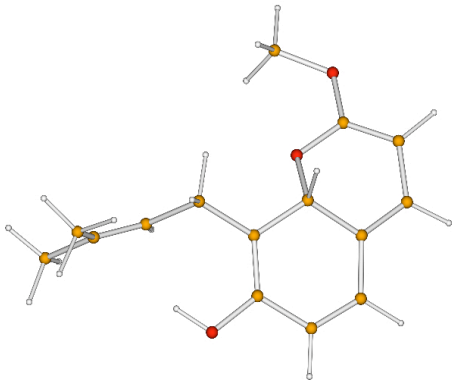
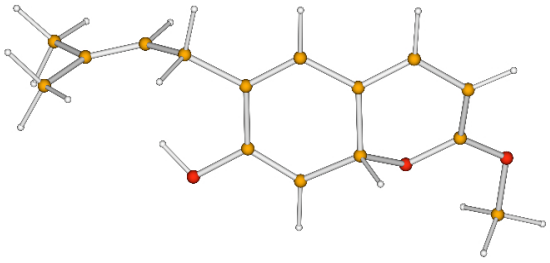
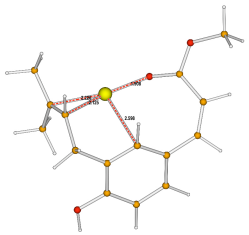
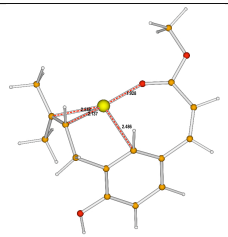
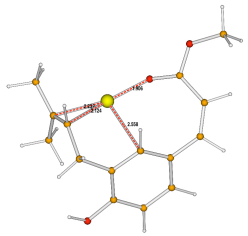
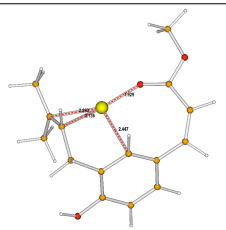
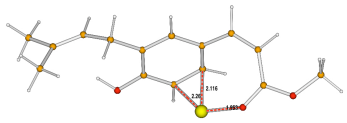
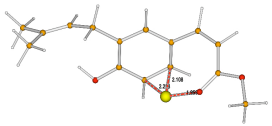
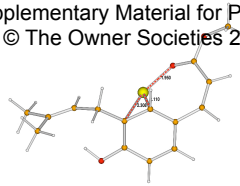
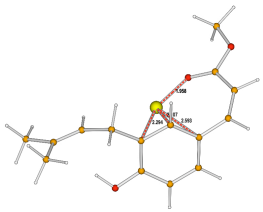
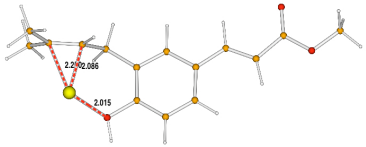
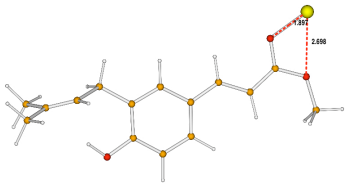
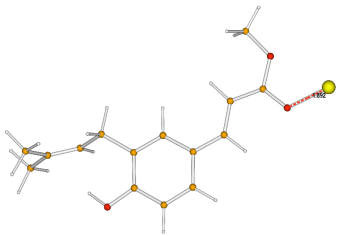
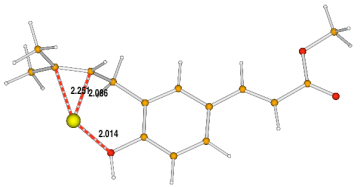
FK2		-808.03022239	32.3092
K1a		-808.02578931	35.0910
FZ2		-808.01061354	44.6140
FZ1		-808.00976930	45.1438

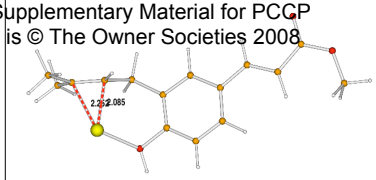
Table S2 Labels, B3LYP/6-31G*/LANL2DZ structures, absolute energies (E_h) for E and Z plicatin $B^{\cdots}Cu^{+}$ stable complexes, together with the deformation energy, E_{def} (kcal/mol), and the metal ion affinity, MIA (kcal/mol).

All the complexes are listed in descending order of MIA.

Comments: The plicatin B absolute energies (E_h) in each complex (*SP*) and after optimization starting from it (*Opt*) are reported to allow the calculation of the deformation energy, E_{def}, defined as *SP* – *Opt*, and the metal ion affinity, MIA, which is assumed to be the negative of the enthalpy change ($-\Delta H$) for the process leading to the $Plic_{(i)}{}^{\cdots}Cu^{+}{}_{(i)}$ complex (where *i* is the complex label), evaluated using the plicatin B geometry optimized in that complex (*SP*). $H_{(Cu+)} = -195.829202\ E_h + PV$.

ID	Structure	E (a.u.)	E (Plicatin SP)	E (Plicatin Opt)	Edef (kcal/mol)	MIA (kcal/mol)
Z5a_b		-1004.05441659	-808.03899259	-808.05720483	11.4284	116.8561
Z5_b		-1004.06426159	-808.05241831	-808.07124089	11.8114	114.6092
Z10a_b		-1004.04872896	-808.03719413	-808.06201780	15.5771	114.4156
Z10_b		-1004.05860972	-808.05010958	-808.07571556	16.0680	112.5113
Z1a_b		-1004.03320796	-808.04476541	-808.06097082	10.1691	99.9250
Z1_b		-1004.04507079	-808.05789925	-808.07499871	10.7301	99.1274

Z2a_b		-1004.03101834	-808.04576646	-808.06201654	10.1971	97.9228
Z2_b		-1004.04269670	-808.05781901	-808.07574153	11.2466	97.6880
8_po		-1004.03442138	-808.06788250	-808.07765505	6.1324	86.1802
1a_e		-1004.02622488	-808.06049402	-808.06834847	4.9287	85.6732
2a_e		-1004.02568936	-808.06003038	-808.06793283	4.9589	85.6280
14_po		-1004.03191820	-808.06627232	-808.07605976	6.1417	85.6198

8a_po	 Cu…O=2.017 Å	-1004.01839390	-808.05406732	-808.06401841	6.2444	84.7919
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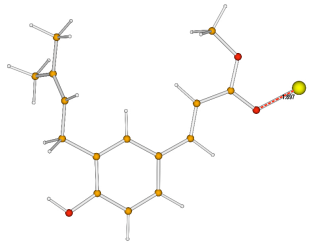
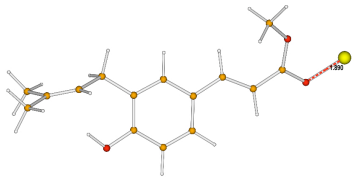
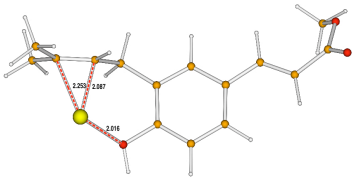
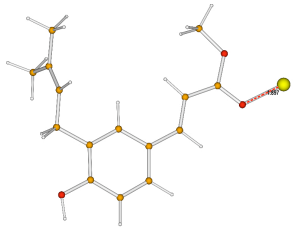
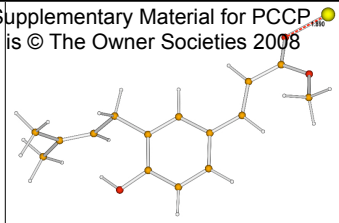
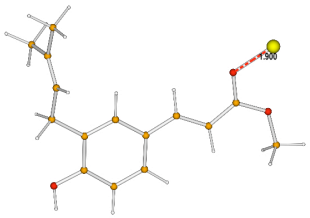
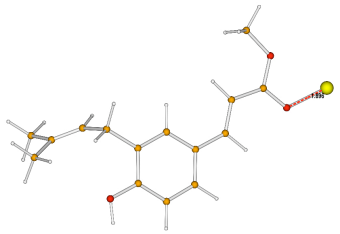
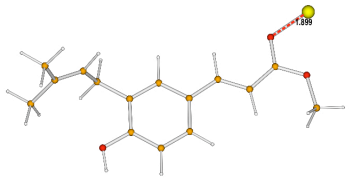
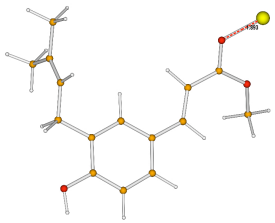
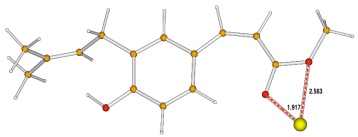
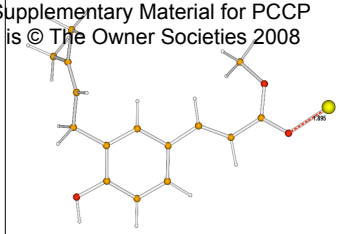
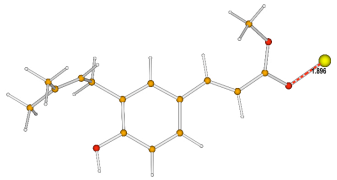
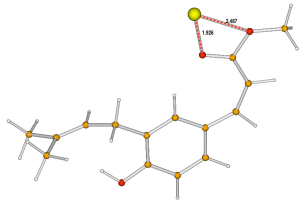
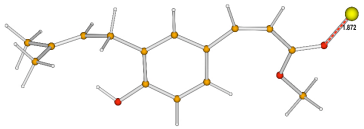
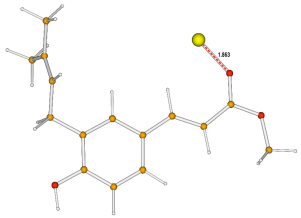
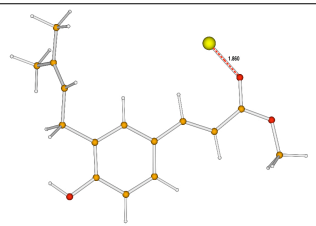
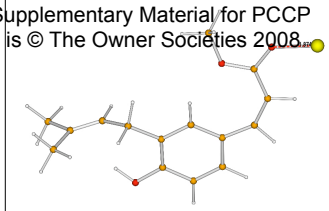
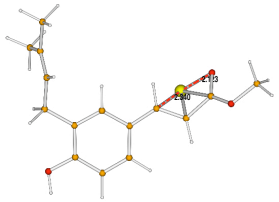
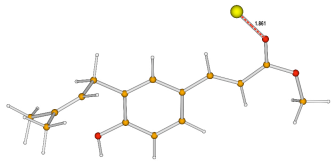
10a_e		-1004.01997852	-808.05575781	-808.06325538	4.7048	84.7255
4a_e		-1004.01641516	-808.05228495	-808.06079864	5.3424	84.6687
14a_po		-1004.01064309	-808.04673226	-808.05687890	6.3671	84.5311
5a_e		-1004.02123456	-808.05732776	-808.06472363	4.6410	84.5285

3a_e		-1004.01637804	-808.05250338	-808.06092338	5.2836	84.5084
6a_e		-1004.02070121	-808.05697158	-808.06437487	4.6456	84.4174
7a_e		-1004.02024276	-808.05691067	-808.06435391	4.6707	84.1679
8a_e		-1004.01977674	-808.05663593	-808.06401778	4.6322	84.0479
11a_e		-1004.01173280	-808.04939408	-808.05738314	5.0132	83.5445
Z1a_e		-1004.01606032	-808.05383020	-808.06098697	4.4909	83.4764

12a_e		-1004.01143523	-808.04932575	-808.05728187	4.9925	83.4007
14a_e		-1004.01036388	-808.04892972	-808.05688773	4.9937	82.9769
Z2a_e		-1004.01463580	-808.05475386	-808.06201654	4.5574	82.0029
Z4_ea		-1004.01205177	-808.06078295	-808.06950157	5.4710	76.5981
6a_ea		-1004.00620902	-808.05584154	-808.06437487	5.3548	76.0325
9a_ea		-1004.00520172	-808.05484195	-808.06359662	5.4936	76.0276

Z3_ea		-1004.01113125	-808.06082195	-808.06953158	5.4654	75.9960
6_b		-1004.01276001	-808.06287578	-808.07797177	9.4729	75.7292
8a_ea		-1004.00494460	-808.05545520	-808.06401778	5.3731	75.4815
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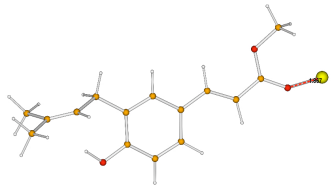
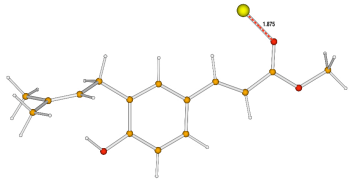
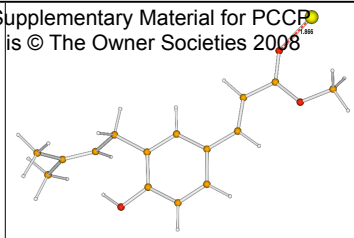
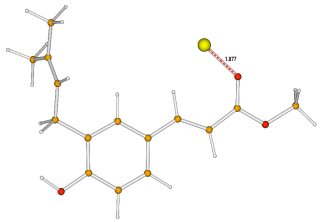
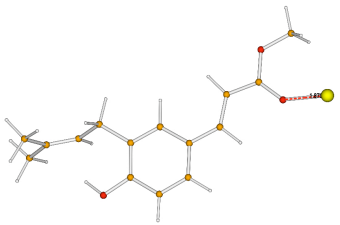
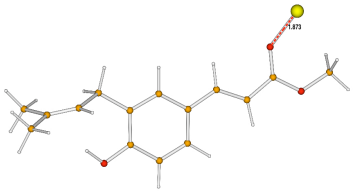
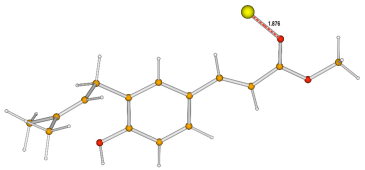
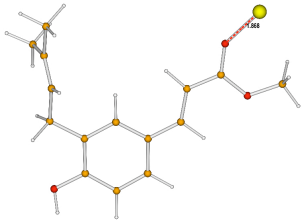
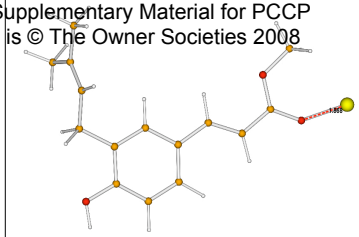
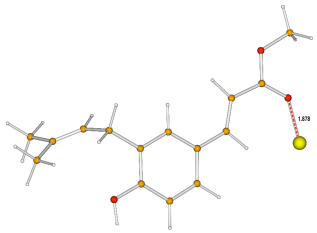
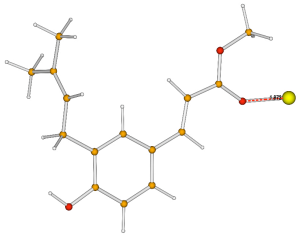
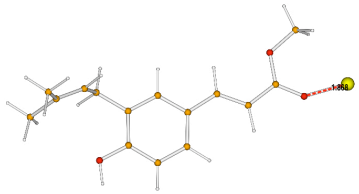
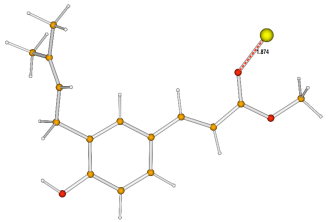
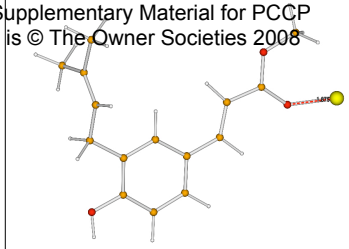
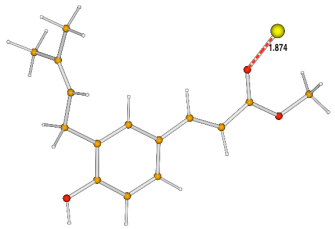
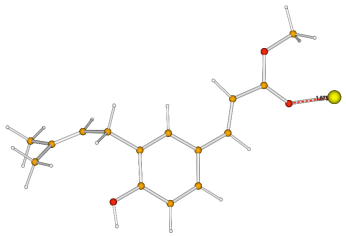
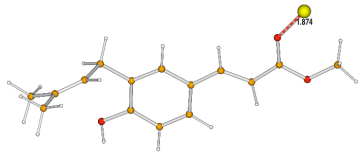
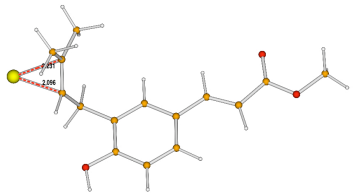
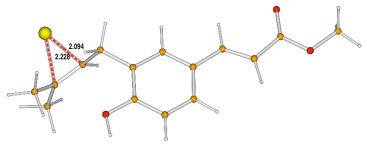
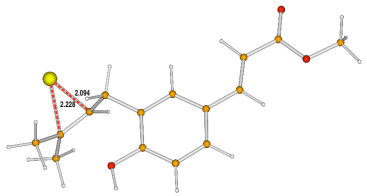
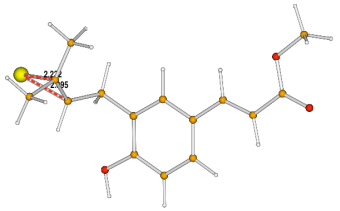
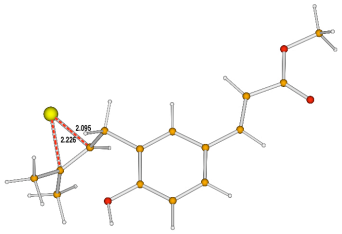
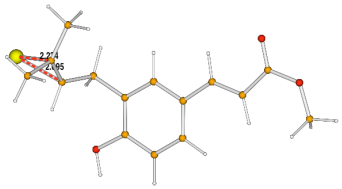
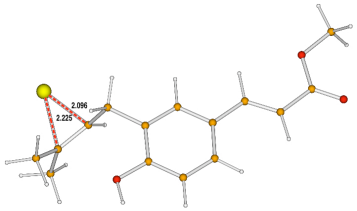
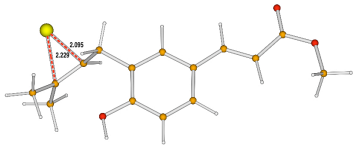
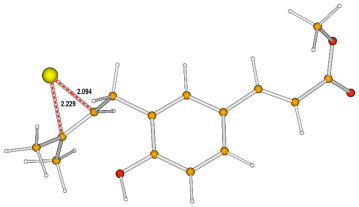
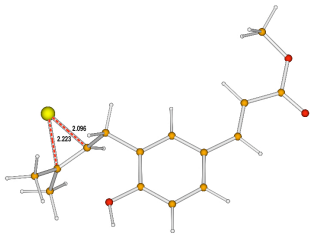
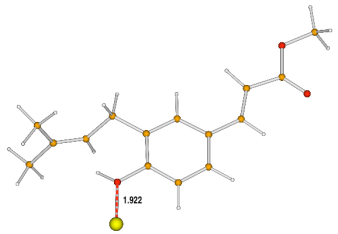
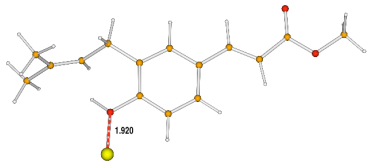
4_e		-1004.01831297	-808.07199215	-808.07996772	5.0048	73.4932
1_ea		-1004.01959622	-808.07349597	-808.08171040	5.1546	73.3547

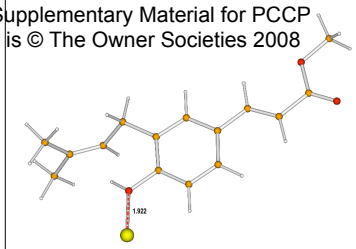
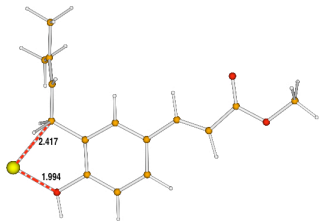
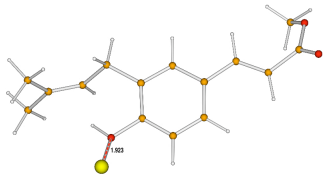
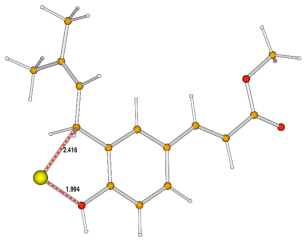
3_e		-1004.01778672	-808.07226953	-808.07999360	4.8469	72.9889
9_ea		-1004.01407396	-808.06914223	-808.07702792	4.9483	72.6215
2_e		-1004.01839648	-808.07365403	-808.08155270	4.9565	72.5027
1_e		-1004.01844525	-808.07379400	-808.08171040	4.9676	72.4455
8_ea		-1004.01403641	-808.06984076	-808.07766076	4.9071	72.1596
11_e		-1004.01330435	-808.06912391	-808.07647682	4.6140	72.1500

12_e		-1004.01297198	-808.06898462	-808.07634954	4.6216	72.0289
7_ea		-1004.01399316	-808.07001929	-808.07783158	4.9023	72.0204
10_e		-1004.01280177	-808.06923236	-808.07686160	4.7874	71.7666
14_e		-1004.01205127	-808.06868743	-808.07604492	4.6169	71.6376
9_e		-1004.01266527	-808.06936358	-808.07702792	4.8094	71.5986

5_e		-1004.01380087	-808.07065625	-808.07816630	4.7126	71.5001
6_e		-1004.01337006	-808.07043208	-808.07797177	4.7312	71.3704
7_e		-1004.01278303	-808.07032425	-808.07783158	4.7109	71.0697
8_e		-1004.01251082	-808.07018246	-808.07766076	4.6927	70.9878
8_p		-1004.00492346	-808.06819136	-808.07754541	5.8698	67.4761
8_p(up)		-1004.00417783	-808.06813830	-808.07767578	5.9849	67.0415

8_p	 Starting from OH up	-1004.00418724	-808.06832229	-808.07766873	5.8650	66.9320
13_p		-1004.00205467	-808.06644248	-808.07606319	6.0371	66.7734
14_p		-1004.00199026	-808.06673397	-808.07589956	5.7515	66.5501
7_p		-1004.00339137	-808.06837823	-808.07783374	5.9334	66.3975
8'a_p		-1003.98978145	-808.05477532	-808.06389662	5.7237	66.3931
14_p		-1004.00132992	-808.06668354	-808.07606527	5.8871	66.1673

13a_p		-1003.98147174	-808.04707151	-808.05692104	6.1807	66.0129
8a_p		-1003.98896453	-808.05461247	-808.06401967	5.9031	65.9826
14a_p		-1003.98050756	-808.04677838	-808.05687721	6.3371	65.5918
7a_p		-1003.98678744	-808.05445830	-808.06428894	6.1688	64.7132
2_oh		-1003.99454559	-808.07563731	-808.08155712	3.7147	56.2915
1_oh		-1003.99453950	-808.07574529	-808.08173707	3.7599	56.2199

4_oh		-1003.99247121	-808.07404529	-808.0799677	3.7164	55.9888
3_oh		-1003.99239949	-808.07404952	-808.0799936	3.7300	55.9412
6_po		-1003.98997428	-808.07219354	-808.07796302	3.6204	55.5840
4a_oh		-1003.97130328	-808.05455892	-808.0607986	3.9155	54.9336
12_po		-1003.98739137	-808.07082301	-808.05728187	-8.4972	54.8232

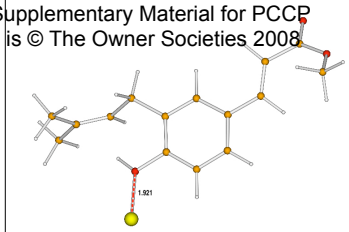
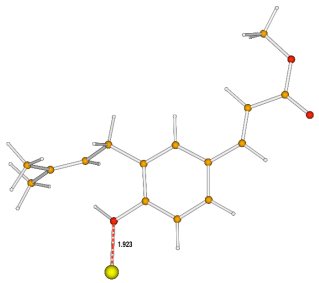
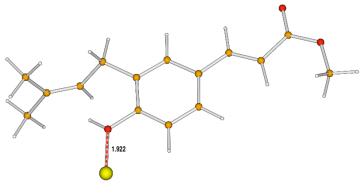
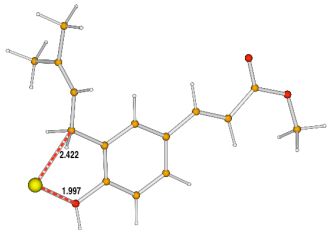
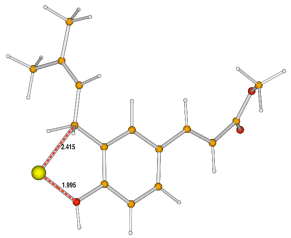
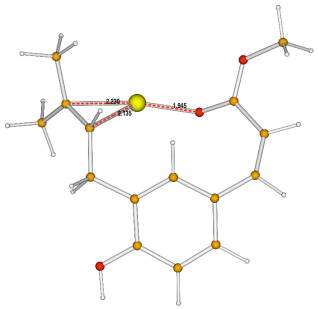
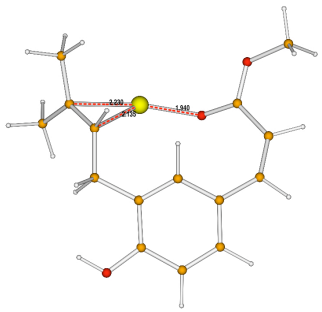
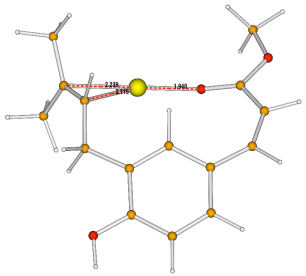
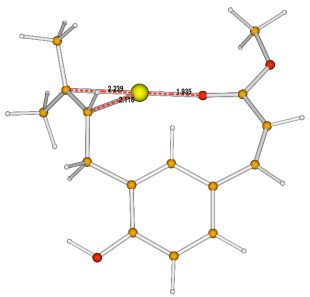
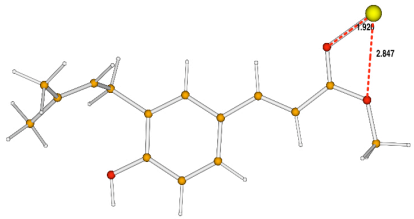
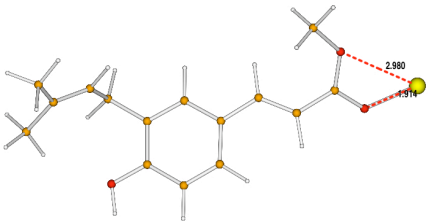
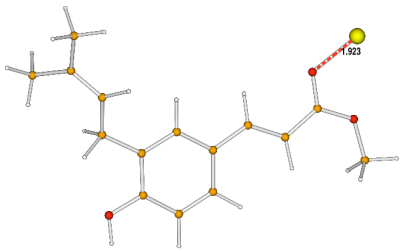
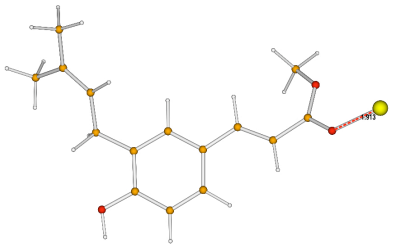
3a_oh		-1003.97106058	-808.05452747	-808.0609234	4.0135	54.8011
2a_oh		-1003.97829277	-808.06190901	-808.0679328	3.7800	54.7074
1a_oh		-1003.97831054	-808.06227344	-808.0683485	3.8121	54.4898
6a_po		-1003.97406557	-808.05859669	-808.06435493	3.6134	54.1333
12a_po		-1003.96597763	-808.05132265	-808.05728187	3.7395	53.6225

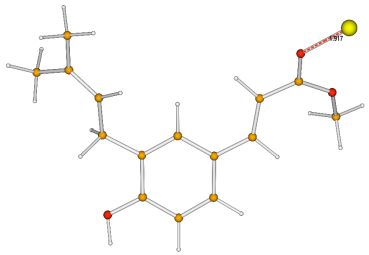
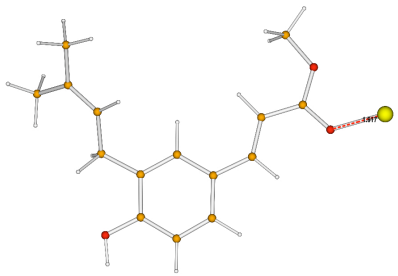
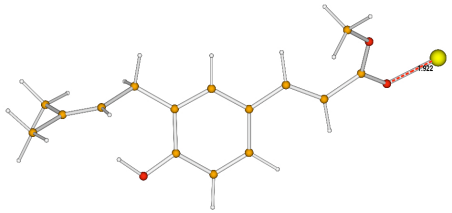
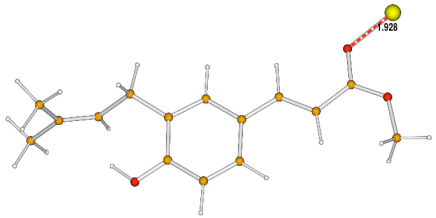
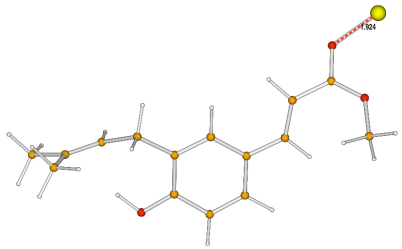
Table S3 Labels, B3LYP/6-31G*/LANL2DZ structures, absolute energies (E_h) for E and Z plicatin $B^{\cdots}Cu^{2+}$ stable complexes, together with the deformation energy, E_{def} (kcal/mol), and the metal ion affinity, MIA (kcal/mol).

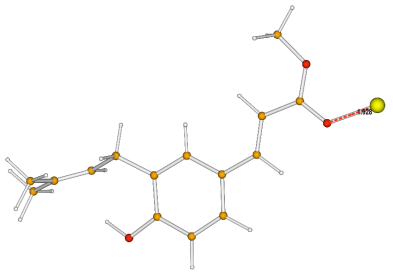
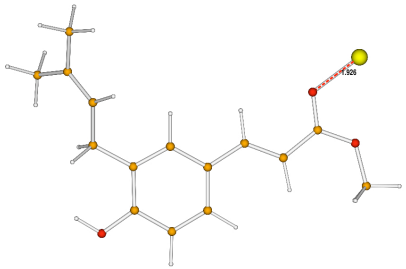
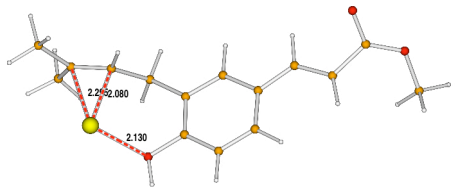
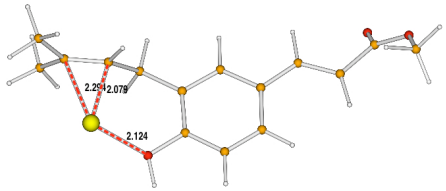
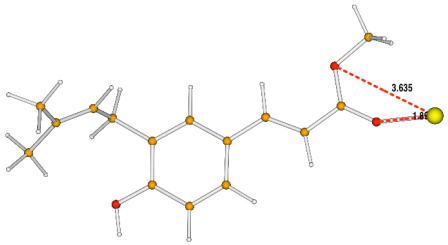
All the complexes are listed in descending order of MIA.

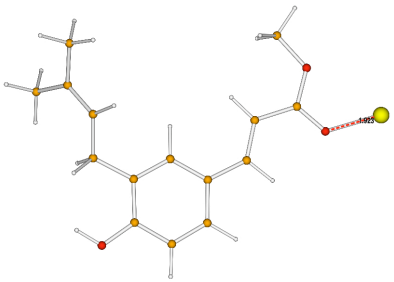
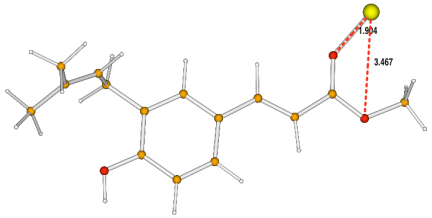
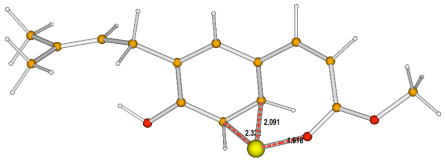
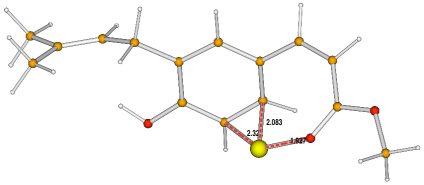
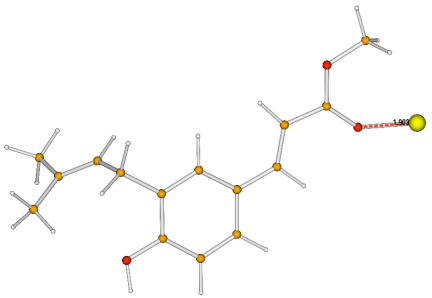
Comments: The plicatin B absolute energies (E_h) in each complex (*SP*) and after optimization starting from it (*Opt*) are reported to allow the calculation of the deformation energy, E_{def}, defined as *SP* – *Opt*, and the metal ion affinity, MIA, which is assumed to be the negative of the enthalpy change ($-\Delta H$) for the process leading to the $Plic_{(i)}{}^{\cdots}Cu^{2+}{}_{(i)}$ complex (where *i* is the complex label), evaluated using the plicatin B geometry optimized in that complex (*SP*). $H_{(Cu^{2+})} = -195.065696\ E_h + PV$.

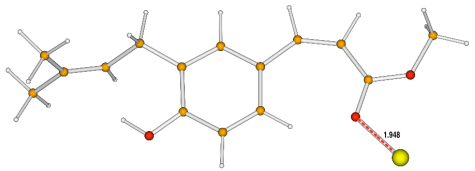
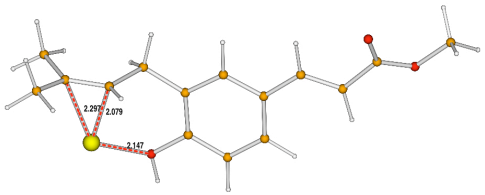
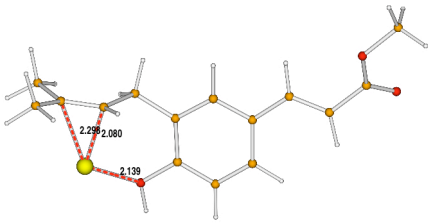
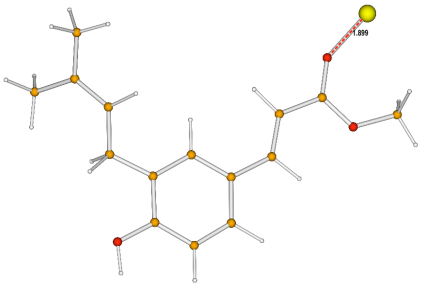
ID	Structure	E (a.u.)	E (Plicatin SP)	E (Plicatin Opt)	Edef (kcal/mol)	MIA (kcal/mol)
Z5a_B		-1003.66269017	-808.02968263	-808.05743979	17.4179	355.9938
Z10a_B		-1003.65676052	-808.02902472	-808.05749024	17.8624	352.6857
Z5_B		-1003.67061597	-808.04670181	-808.07100133	15.2482	335.0394
Z10_B		-1003.66429567	-808.04581883	-808.07068230	15.6021	331.2736

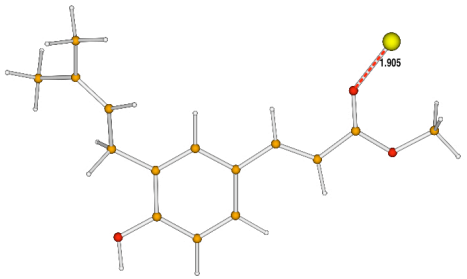
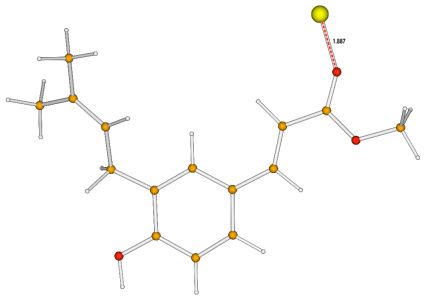
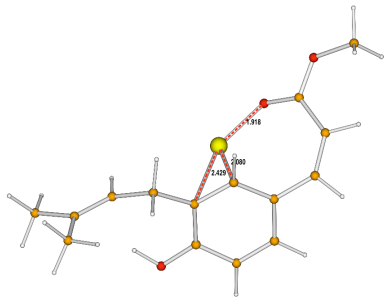
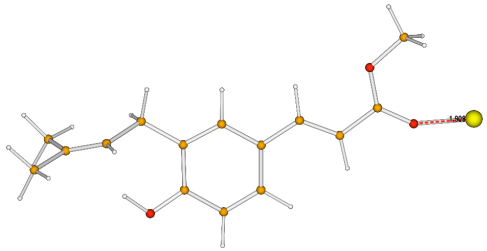
8a_E		-1003.66208164	-808.04950967	-808.06401778	9.1040	334.0663
14a_E		-1003.65320083	-808.04264133	-808.05688773	8.9398	332.9677
7a_E		-1003.66032251	-808.05051266	-808.06435391	8.6855	332.7515
6a_E		-1003.65900929	-808.05043811	-808.06437487	8.7455	331.9143
12a_E		-1003.64997981	-808.04364018	-808.05728187	8.5603	330.6991

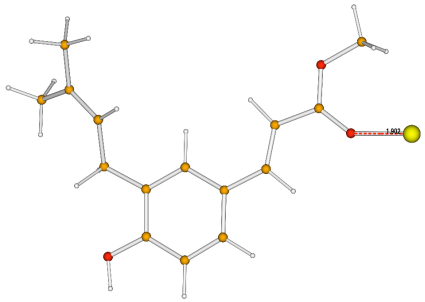
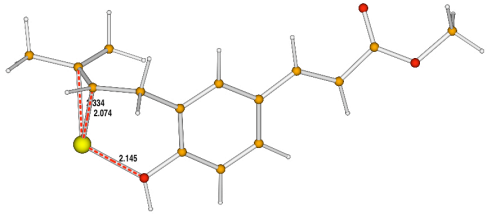
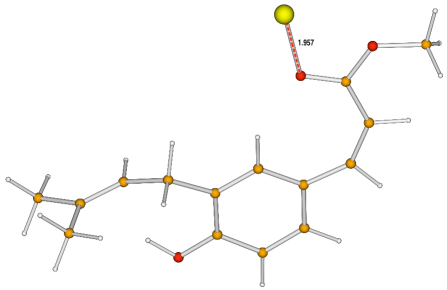
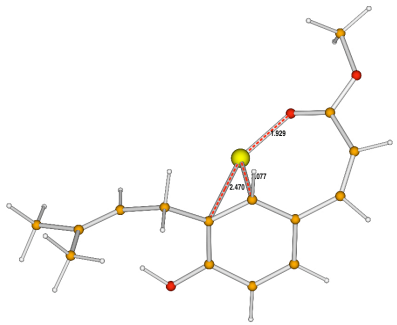
11a_E		-1003.64862408	-808.04329440	-808.05738314	8.8408	329.7848
5a_E		-1003.65621131	-808.05105304	-808.06472363	8.5784	329.9397
4a_E		-1003.64901718	-808.04716958	-808.06079864	8.5524	327.8883
1a_E		-1003.65707851	-808.05569295	-808.06834847	7.9415	328.2092
3a_E		-1003.64802488	-808.04705738	-808.06092338	8.7011	327.1873

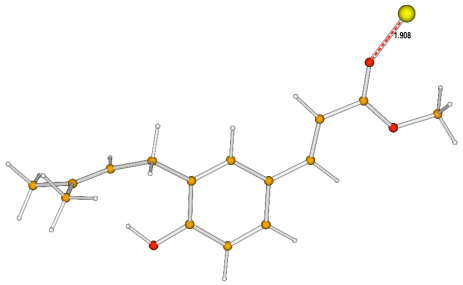
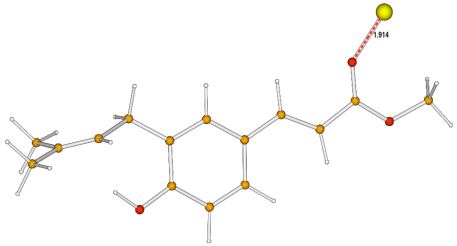
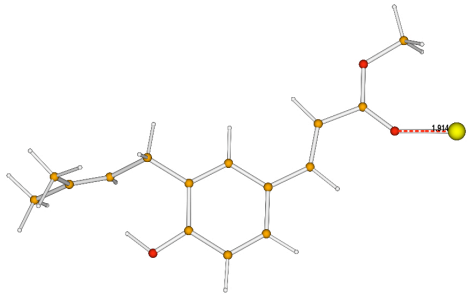
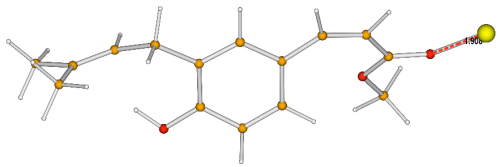
2a_E		-1003.65561391	-808.05465297	-808.06793283	8.3332	327.5510
9a_E		-1003.65143875	-808.05198224	-808.06359662	7.2881	327.6520
8a_PO		-1003.63530449	-808.03599818	-808.06401152	17.5786	317.2673
14a_PO		-1003.63494341	-808.03592084	-808.06402902	17.6382	317.0297
14_E		-1003.66038944	-808.06208423	-808.07604492	8.7605	325.4573

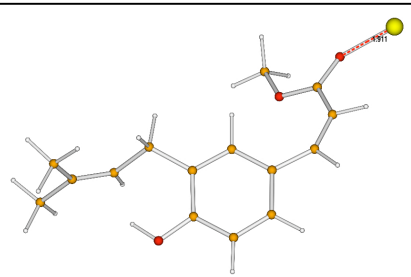
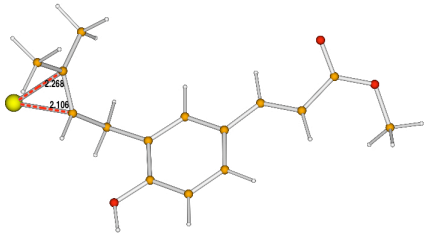
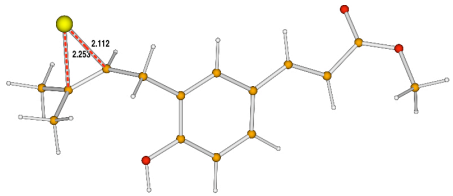
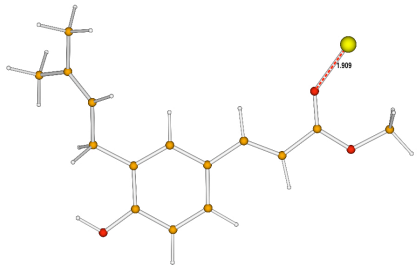
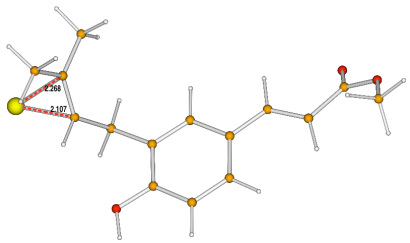
10a_E		-1003.64846171	-808.05190759	-808.06325699	7.1219	325.9970
8_E		-1003.65937880	-808.06309974	-808.07766076	9.1372	323.8091
Z1a_B		-1003.63482078	-808.03872685	-808.06097082	13.9583	318.8718
Z1_B		-1003.64708275	-808.05218071	-808.07499871	14.3185	317.7637
7_E		-1003.65870541	-808.06418091	-808.07783158	8.5659	323.2794

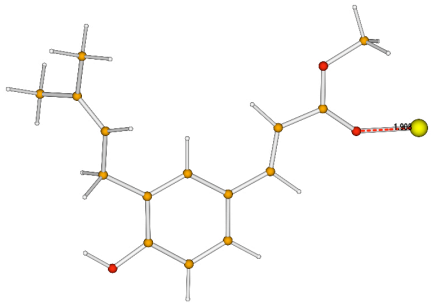
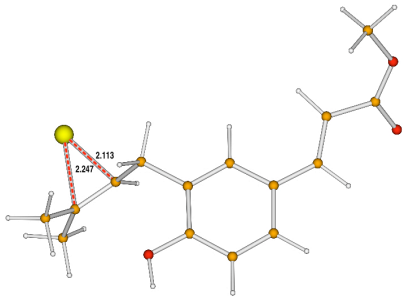
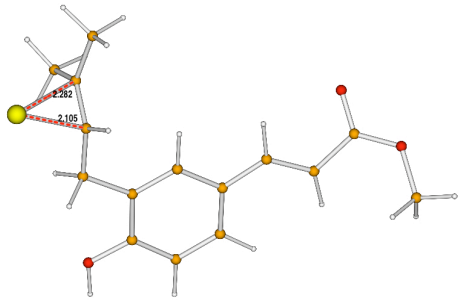
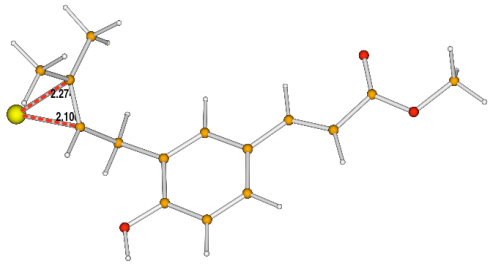
12_E		-1003.65737433	-808.06350296	-808.07634954	8.0614	323.3741
Z1a_E		-1003.64343400	-808.04987056	-808.06098697	6.9757	324.2666
8_PO		-1003.64928958	-808.05621681	-808.07765330	13.4516	317.4827
14_PO		-1003.64592257	-808.05343499	-808.07606009	14.1975	316.3696
11_E		-1003.65487606	-808.06305313	-808.07647682	8.4235	321.7265

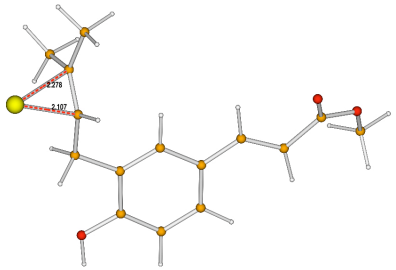
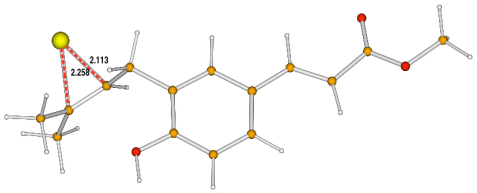
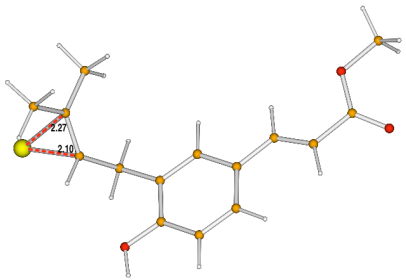
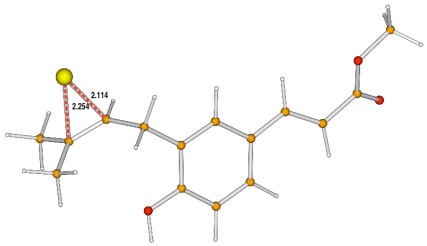
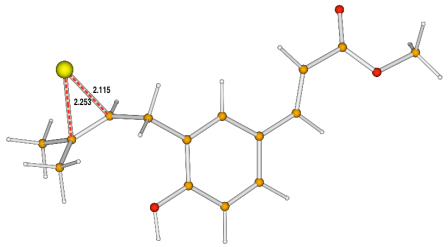
6_E		-1003.65586173	-808.06417656	-808.07797177	8.6566	321.4070
11_EA		-1003.65361357	-808.06253950	-808.07648819	8.7529	320.9272
Z2a_B		-1003.62755482	-808.03654429	-808.06199860	15.9728	313.6674
4_E		-1003.65711724	-808.06630246	-808.07996772	8.5751	320.9423

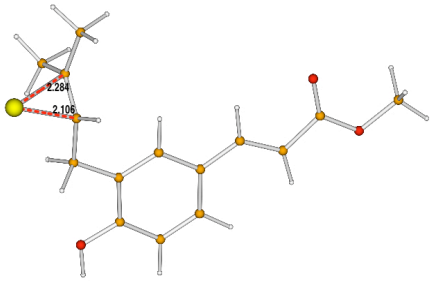
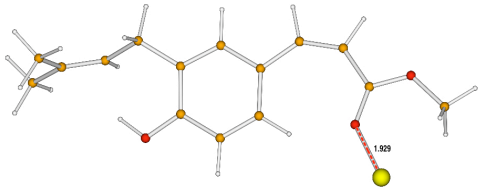
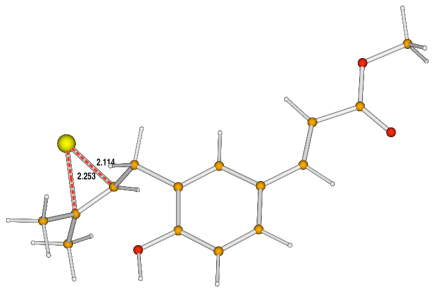
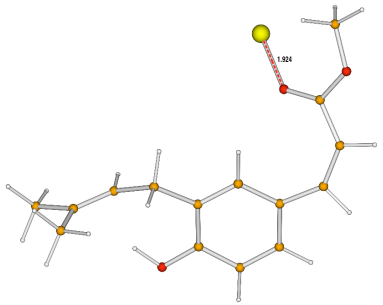
5_E		-1003.65536264	-808.06474683	-808.07816630	8.4209	320.9717
8S_PO		-1003.64141161	-808.05094519	-808.07756187	16.7022	312.5966
Z2a_E		-1003.63945610	-808.04929966	-808.06201654	7.9800	321.1243
Z2_B		-1003.63987510	-808.04980956	-808.07574153	16.2726	312.7747

3_E		-1003.65573660	-808.06575916	-808.07999360	8.9323	320.0597
1_E		-1003.65595389	-808.06745569	-808.08171040	8.9450	319.1188
2_E		-1003.65538882	-808.06711061	-808.08155270	9.0626	318.8631
Z4_E		-1003.64512576	-808.05722951	-808.06950157	7.7008	319.9852

Z3_EA		-1003.64259636	-808.05639952	-808.06953158	8.2405	318.3791
8a_P		-1003.62604770	-808.04139443	-808.06387282	14.1054	311.5456
8a_P(UP)		-1003.62543266	-808.04112646	-808.06402063	14.3663	311.0669
9_E		-1003.64891272	-808.06501598	-808.07702792	7.5376	317.6387
8a_P		-1003.62534090	-808.04194117	-808.06391431	13.7884	311.0760

10_E		-1003.64830496	-808.06548324	-808.07686106	7.1397	317.3620
7a_P(UP)		-1003.62251786	-808.03993086	-808.06427206	15.2743	309.0801
6a_P		-1003.62394841	-808.04320919	-808.06438672	13.2891	309.9058
8_P		-1003.64195113	-808.06173655	-808.07753367	9.9129	312.9528

6a_P		-1003.62373371	-808.04363768	-808.06435001	12.9972	309.7941
8_P(UP)		-1003.64127764	-808.06184385	-808.08174424	12.4877	309.8880
12_P		-1003.63766741	-808.05852021	-808.07588437	10.8962	311.2997
4_P(UP)		-1003.63722464	-808.05840477	-808.07604863	11.0717	310.9188
13_P(UP)		-1003.63691358	-808.05861398	-808.07608030	10.9603	310.7037

6_P		-1003.64058348	-808.06232110	-808.07795471	9.8102	311.8304
Z1_E		-1003.63858736	-808.06147808	-808.07499871	8.4843	312.4327
7_P(UP)		-1003.63919286	-808.06211954	-808.07783879	9.8640	311.0305
Z2_E		-1003.63402199	-808.05734868	-808.07574153	11.5417	309.1018

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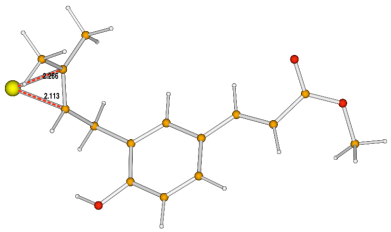
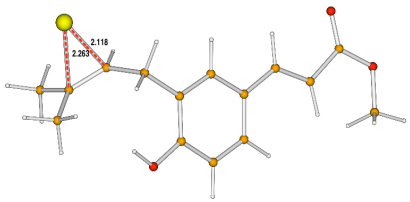
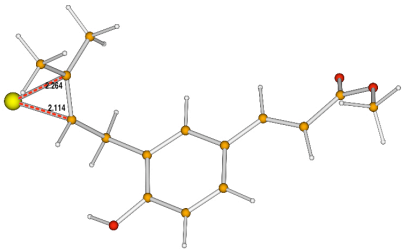
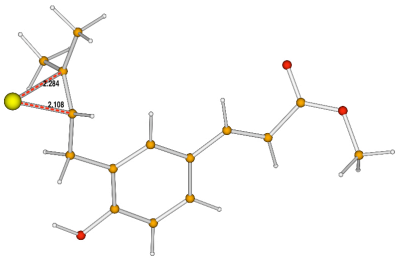
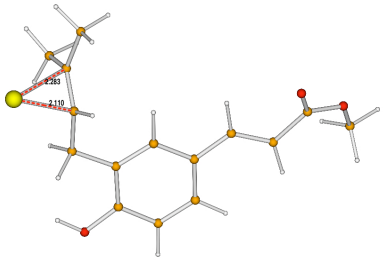
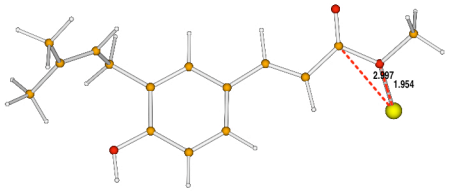
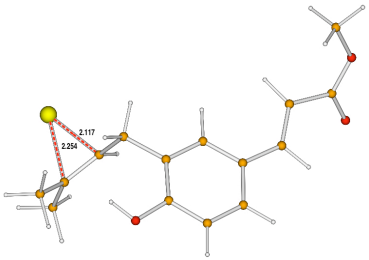
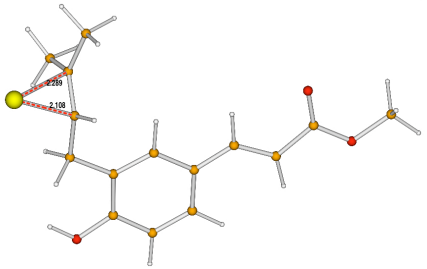
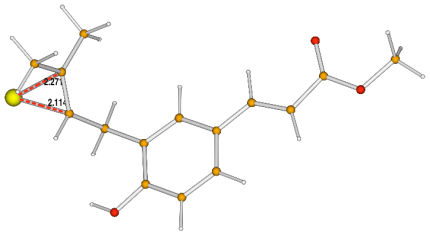
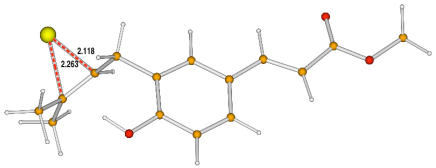
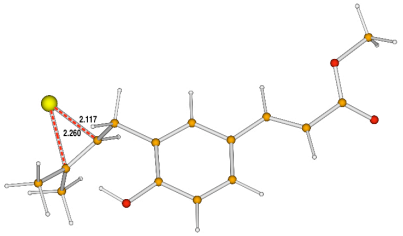
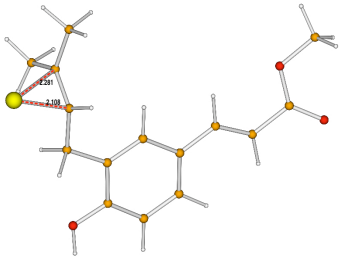
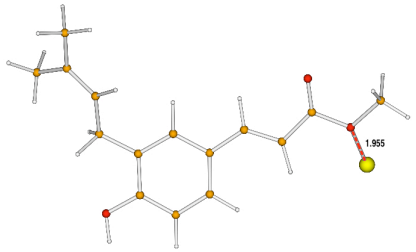
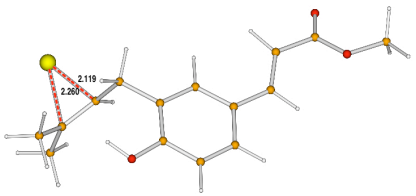
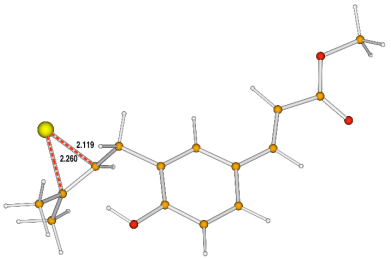
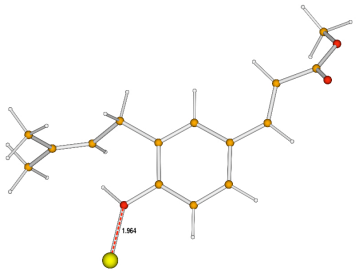
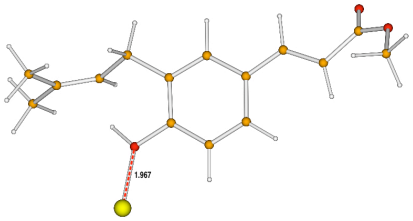
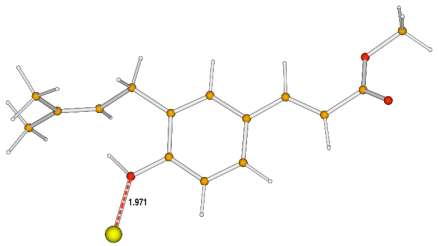
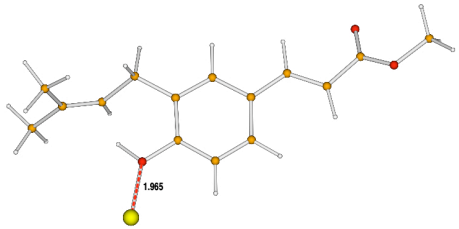
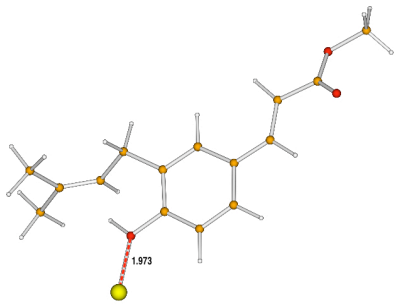
9a_P		-1003.61418891	-808.04000836	-808.06324695	14.5824	304.4968
1a_P(UP)		-1003.61443567	-808.04120006	-808.06833362	17.0266	301.4597
3a_P		-1003.61327928	-808.04078296	-808.06326358	14.1068	303.9156
9a_P		-1003.61440009	-808.04234440	-808.06362748	13.3553	304.3906

9a_P		-1003.61413303	-808.04262868	-808.06359525	13.1567	304.2432
8_O		-1003.63140043	-808.06003571	-808.07766076	11.0599	306.2524
2a_P(UP)		-1003.61064970	-808.03944102	-808.06793404	17.8797	299.3347
9_P		-1003.63092920	-808.06087402	-808.07703454	10.1409	306.3497
1/9_P		-1003.62996759	-808.05998183	-808.07668970	10.4844	305.9626

4_P		-1003.62530455	-808.05675623	-808.07492209	11.3993	304.1457
1_P(UP)		-1003.63020615	-808.06184385	-808.08174424	12.4877	302.9406
4_P(UP)		-1003.62584372	-808.05797329	-808.07994423	13.7870	301.3326
15_P		-1003.62551509	-808.05829453	-808.07523392	10.6296	304.0822
6_O		-1003.62882717	-808.06177592	-808.07797177	10.1631	304.4425

3_P(UP)		-1003.62542478	-808.05842705	-808.07999760	13.5357	301.0362
2_P(UP)		-1003.62749171	-808.06142142	-808.08157961	12.6495	301.3405
2a_OH		-1003.59903555	-808.04109425	-808.06792940	16.8393	292.0497
1a_OH		-1003.59927161	-808.04141083	-808.06834269	16.9000	291.9384
1a_OH		-1003.59933499	-808.04149448	-808.06835437	16.8549	291.9709

4_OH		-1003.61105160	-808.05832208	-808.07994899	13.5711	292.0474
3_OH		-1003.61082315	-808.05823866	-808.08001283	13.6635	291.8640
1_OH		-1003.61395709	-808.06144328	-808.08173681	12.7344	292.7488
2_OH		-1003.61370009	-808.06130108	-808.08155974	12.7125	292.6986

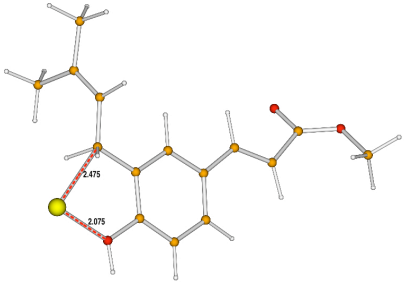
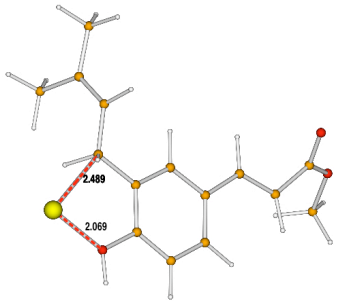
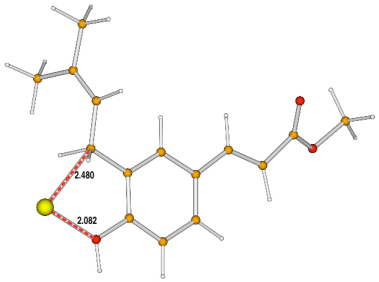
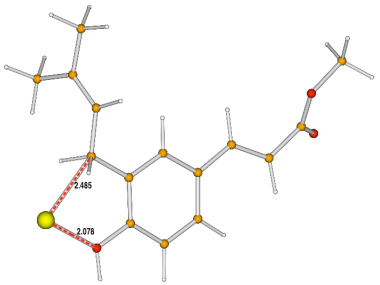
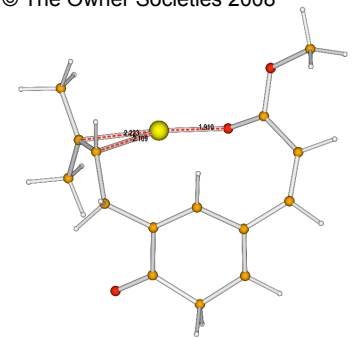
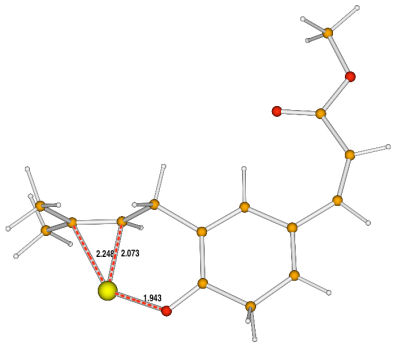
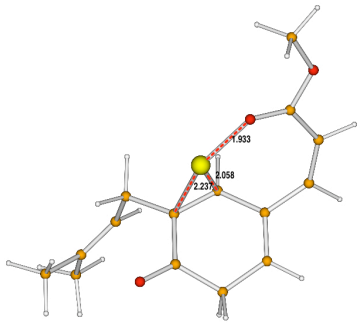
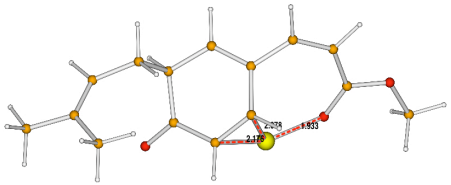
6a_OP		-1003.58961829	-808.04124421	-808.06436393	14.5079	288.3776
6a_OP		-1003.58946818	-808.04142519	-808.06435433	14.3883	288.2894
6_OP		-1003.60340120	-808.06190761	-808.07796437	10.0758	288.4921
12_OP		-1003.60009768	-808.05870603	-808.07633993	11.0654	287.4385

Table S4 Labels, B3LYP/6-31G*/LANL2DZ structures, absolute energies (E_h) for a few stable complexes of keto tautomers of Z plicatin B with Cu^+, together with the deformation energy, E_{def} (kcal/mol), and the metal ion affinity, MIA (kcal/mol).

All the complexes are listed in descending order of MIA.

Comments: The keto tautomer absolute energies (E_h) in each complex (*SP*) and after optimization starting from it (*Opt*) are reported to allow the calculation of the deformation energy, E_{def}, defined as *SP* – *Opt*, and the metal ion affinity, MIA, which is assumed to be the negative of the enthalpy change ($-\Delta H$) for the process leading to the $Plic_{(i)}\cdots Cu^{+}{}_{(i)}$ complex (where *i* is the complex label), evaluated using the plicatin B geometry optimized in that complex (*SP*). $H_{(Cu^+)} = -195.829202\ E_h + PV$.

ID	Structure	E (a.u.)	E (Plicatin SP)	E (Plicatin Opt)	Edef (kcal/mol)	MIA (kcal/mol)
K5a_b		-1004.02738724	-808.01762174	-808.03336994	9.8821	113.3053
K2_po		-1004.03055836	-808.03459334	-808.04782599	8.3036	104.6454
K2_b		-1004.01048670	-808.03085421	-808.04782599	10.6500	94.3966
K1_b		-1004.00357699	-808.02417414	-808.04043214	10.2021	94.2525

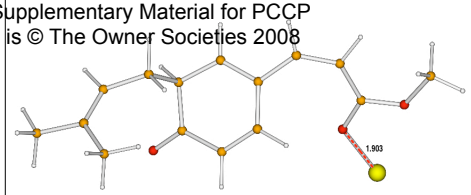
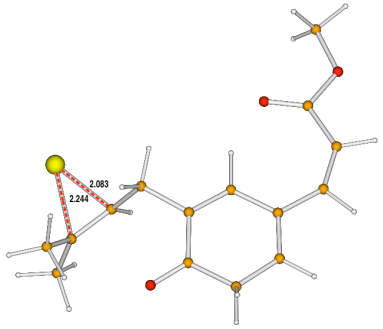
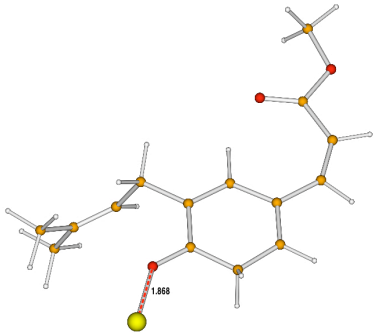
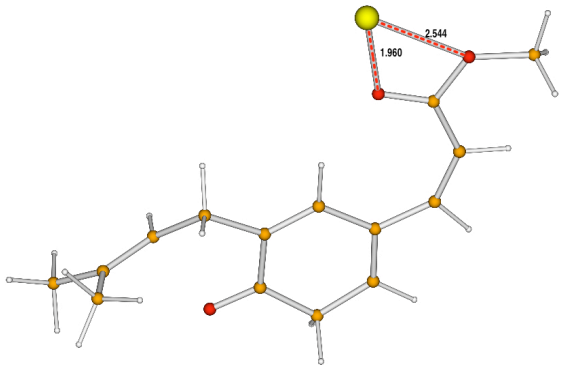
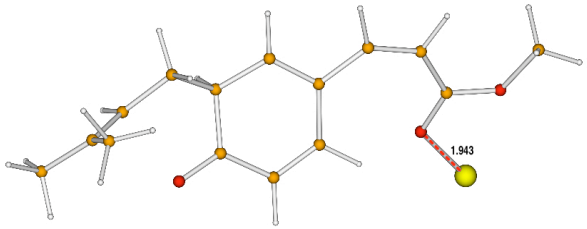
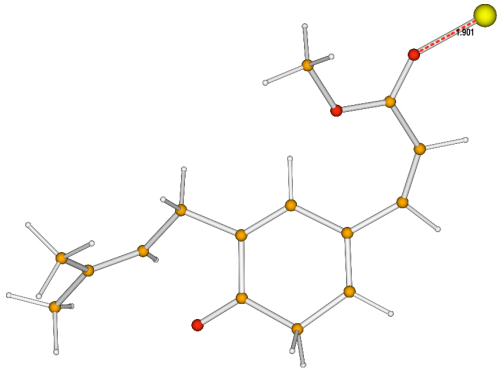
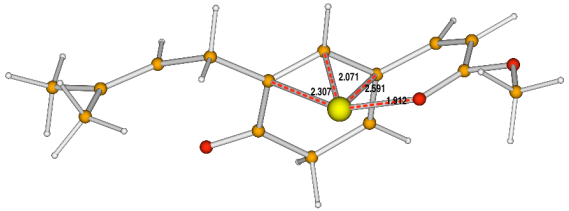
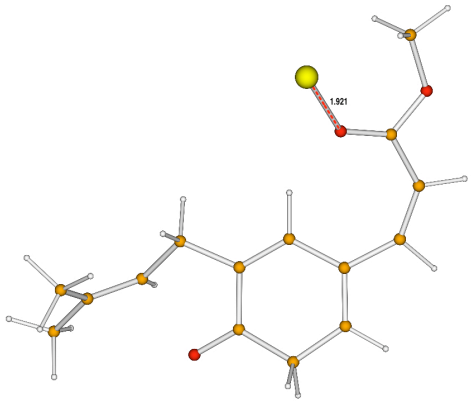
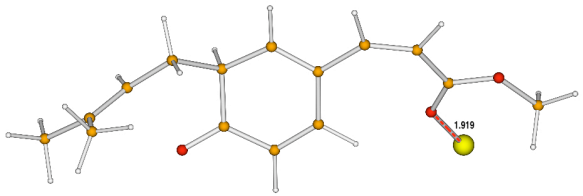
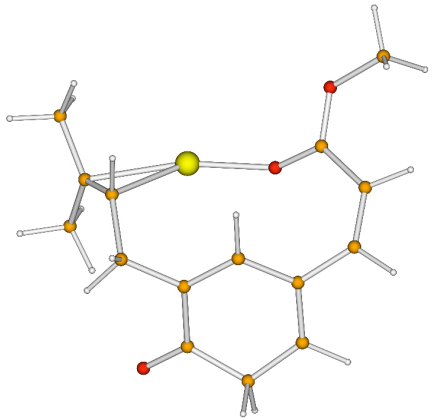
K1a_e		-1003.96865170	-808.01850861	-808.02578931	4.5687	75.8917
K2_p		-1003.98309972	-808.03482852	-808.04782599	8.1560	74.7170
K2_o		-1003.98616961	-808.04158848	-808.04782599	3.9141	72.4015
K3_ea		-1003.97316602	-808.03604463	-808.04349173	4.6731	67.7204

Table S5 Labels, B3LYP/6-31G*/LANL2DZ structures, absolute energies (E_h) for a few stable complexes of keto tautomers of Z plicatin B with Cu^{2++}, together with the deformation energy, E_{def} (kcal/mol), and the metal ion affinity, MIA (kcal/mol).

All the complexes are listed in descending order of MIA.

Comments: The keto tautomer absolute energies (E_h) in each complex (*SP*) and after optimization starting from it (*Opt*) are reported to allow the calculation of the deformation energy, E_{def}, defined as *SP* – *Opt*, and the metal ion affinity, MIA, which is assumed to be the negative of the enthalpy change ($-\Delta H$) for the process leading to the $Plic_{(i)}\cdots Cu^{2+}{}_{(i)}$ complex (where *i* is the complex label), evaluated using the plicatin B geometry optimized in that complex (*SP*). $H_{(Cu^{2+})} = -195.065696\ E_h + PV$.

ID	Structure	E (a.u.)	E (Plicatin SP)	E (Plicatin Opt)	Edef (kcal/mol)	MIA (kcal/mol)
K2a_E		-1003.62744609	-807.99271393	-808.03336994	25.5121	357.0760
K1a_E		-1003.62377958	-807.99176323	-808.02578931	21.3517	355.3718
K3_EA		-1003.62899245	-808.00378569	-808.04349173	24.9159	351.0987
K2_B		-1003.62561377	-808.00117419	-808.04780920	29.2639	350.6173

K2_E		-1003.61888719	-808.00536611	-808.04782599	26.6440	343.7658
K1_E		-1003.61752712	-808.00512482	-808.04043214	22.1557	343.0638
K5a_B		-1003.61935304	-808.00918677	-808.03347747	15.2427	341.6607

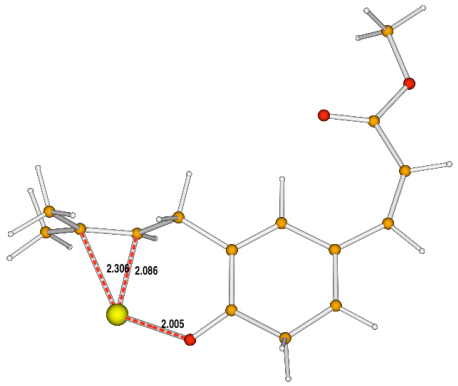
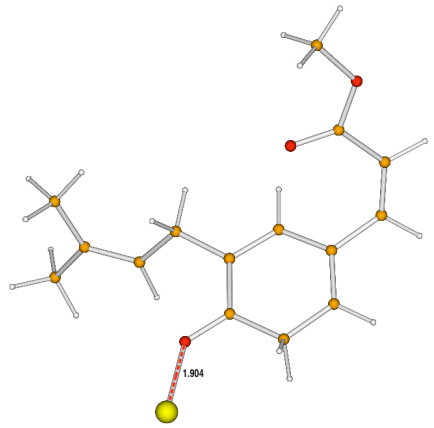
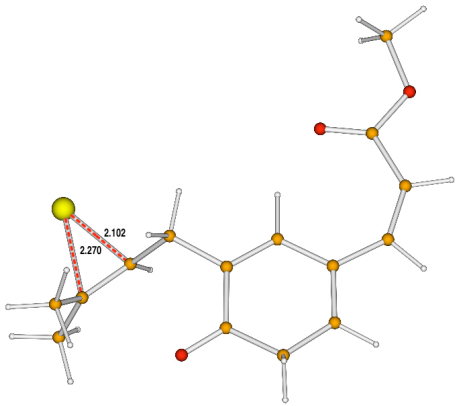
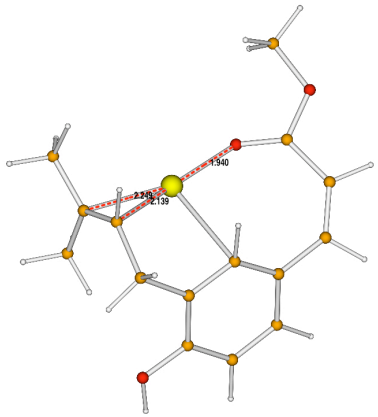
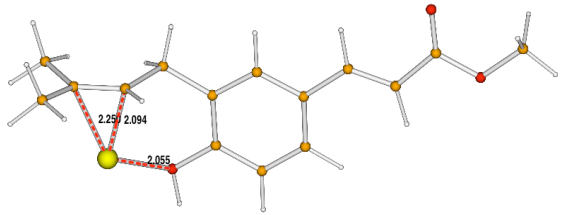
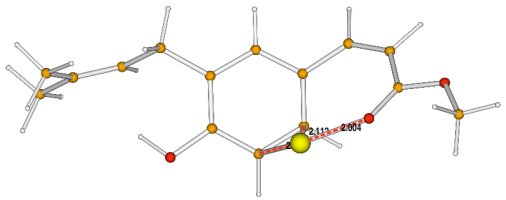
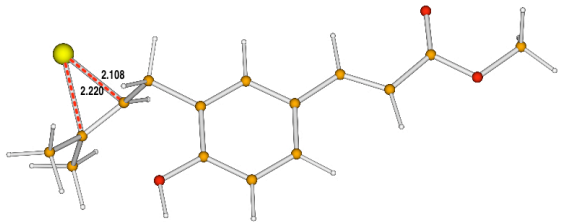
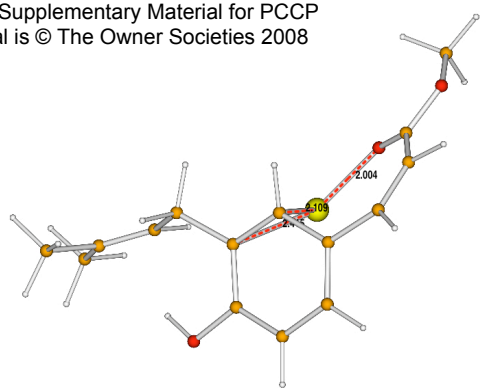
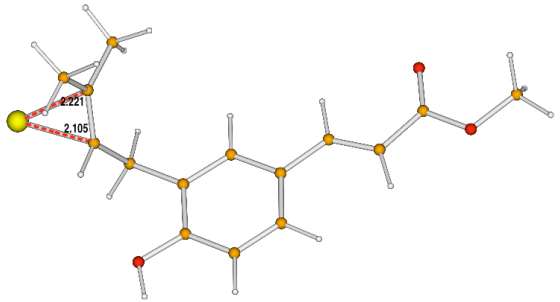
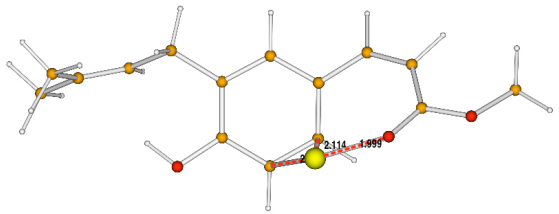
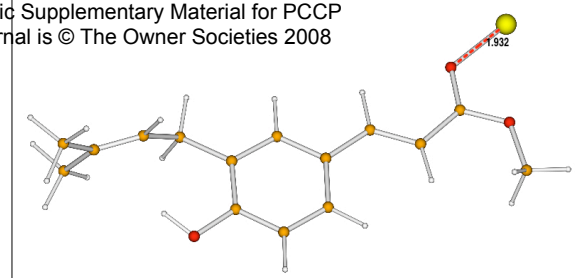
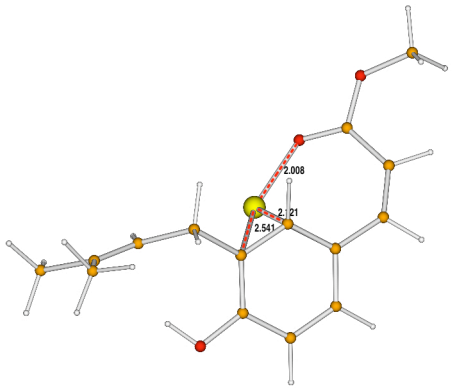
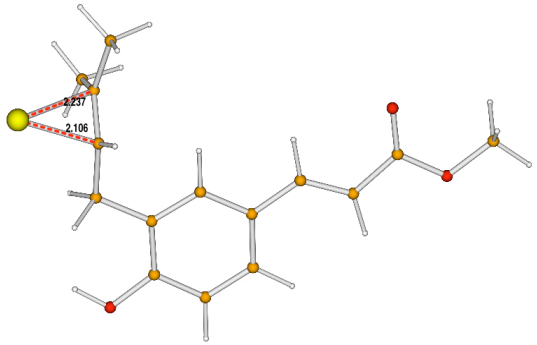
K2_PO		-1003.62598643	-808.02980725	-808.04780744	11.2953	332.8836
K2_O		-1003.60135857	-808.02408023	-808.04781417	14.8933	321.0232
K2_P		-1003.60015221	-808.03020235	-808.04780581	11.0463	316.4245

Table S6 Labels, IEF-PCM/B3LYP/6-31G*/LANL2DZ structures, absolute electrostatic (G_{el}) and total (G_{tot}) free energies (E_h) for a number of stable complexes of E and Z plicatin B with Cu^+ in aqueous solution. The gas phase absolute energies (E_h) of each plicatin B···Cu^+ complex optimized in vacuo (E_{gg}) and in solution (E_{gs}) are also reported, together with the total solvent effect (ΔG_{sol}).

The complexes are listed in descending order of stability in solution, based on the total free energy.

ID	Structure	Egg (a.u.)	Egs (a.u.)	Gel (a.u.)	Gtot (a.u.)	dGsol	Edef
Z5_b		-1004.064262	-1004.063465	-1004.138358	-1004.111652	-30.24	0.50
8_po		-1004.034421	-1004.031826	-1004.135329	-1004.107611	-47.56	1.63
Z1_b		-1004.045071	-1004.043480	-1004.119288	-1004.090636	-29.59	1.00
8_p(up)		-1004.004187	-1004.002588	-1004.118232	-1004.089197	-54.35	1.00

Z2_b		-1004.042697	-1004.040928	-1004.117200	-1004.088218	-29.68	1.11
8_p		-1004.004951	-1004.003424	-1004.118060	-1004.087737	-52.91	0.96
8a_e		-1004.019777	-1004.018442	-1004.114924	-1004.083710	-40.96	0.84
Z1a_b		-1004.033208	-1004.031962	-1004.110227	-1004.081760	-31.25	0.78

1a_e		-1004.026225	-1004.024815	-1004.111417	-1004.079589	-34.37	0.88
Z2a_b		-1004.031018	-1004.028888	-1004.108493	-1004.079526	-31.78	1.34
9_p		----	-1003.989056	-1004.109953	-1004.079478	-56.74	----

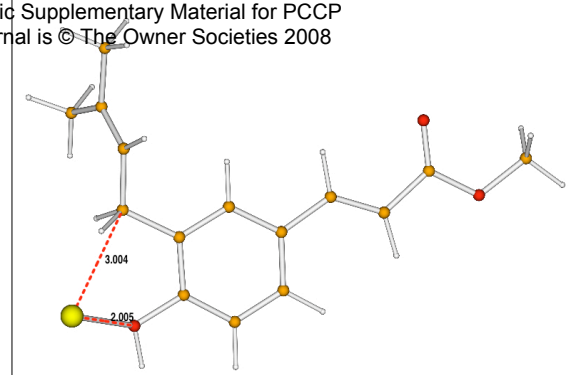
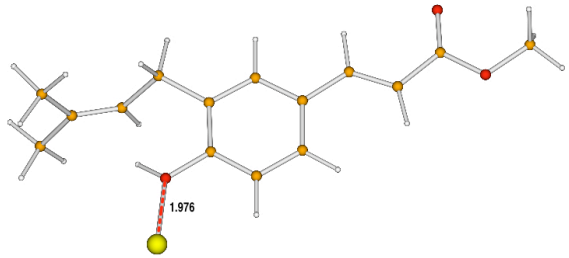
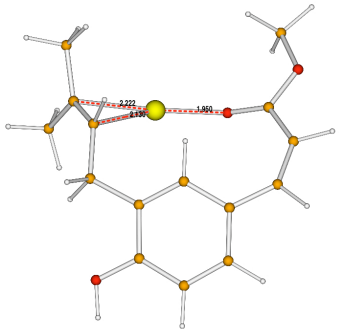
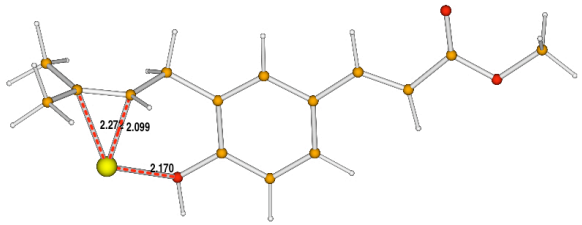
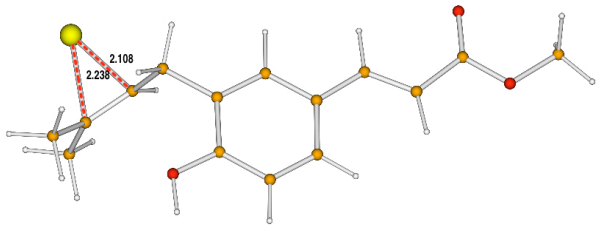
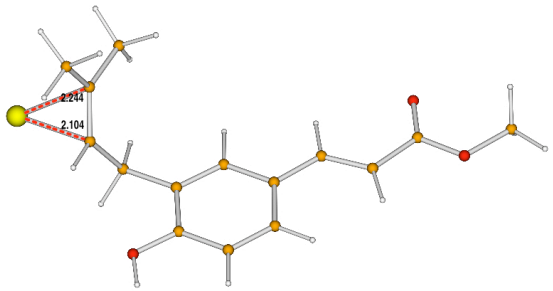
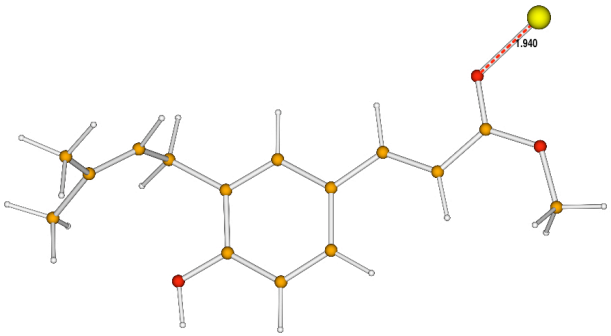
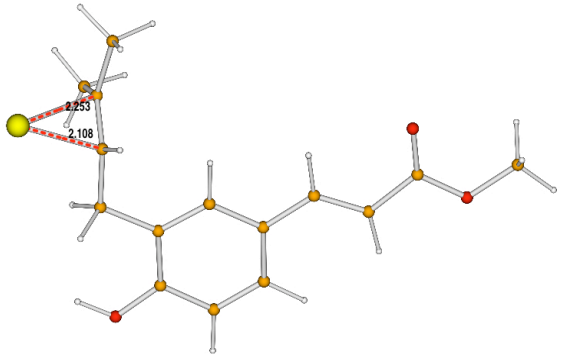
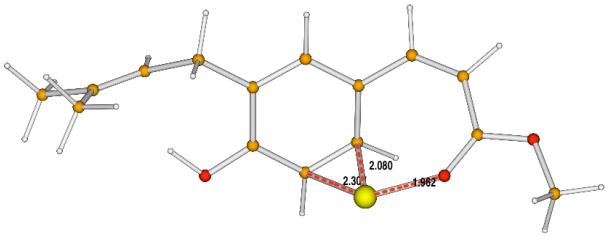
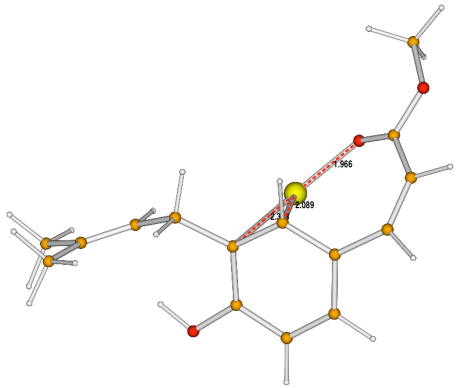
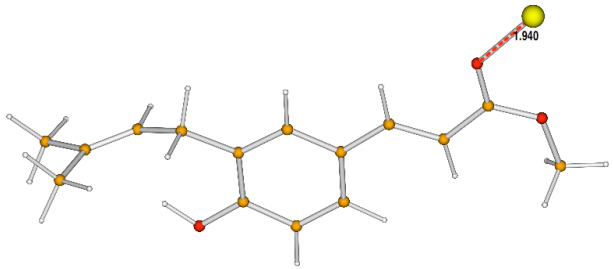
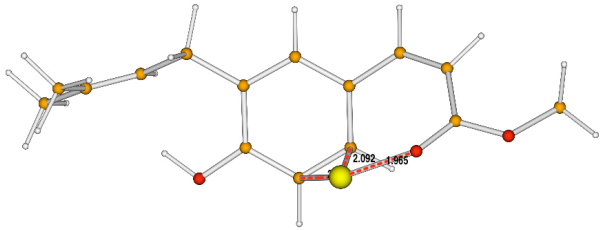
6_op		-1003.989974	-1003.984267	-1004.106121	-1004.075022	-56.95	3.58
1_oh		-1003.994585	-1003.992538	-1004.103272	-1004.071543	-49.58	1.28

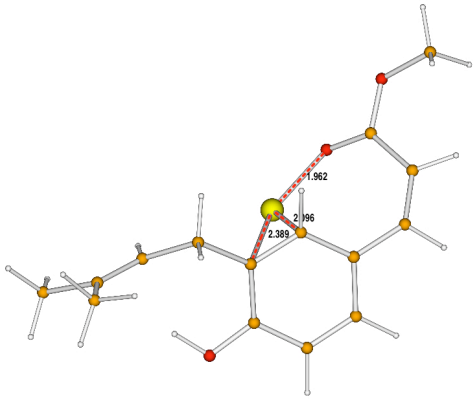
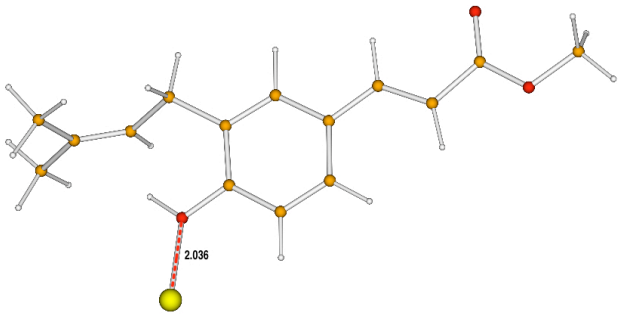
Table S7 Labels, IEF-PCM/B3LYP/6-31G*/LANL2DZ structures, absolute electrostatic (G_{el}) and total (G_{tot}) free energies (E_h) for a number of stable complexes of E and Z plicatin B with Cu^{2+} in aqueous solution. The gas phase absolute energies (E_h) of each plicatin B···Cu^{2+} complex optimized in vacuo (E_{gg}) and in solution (E_{gs}) are also reported, together with the total solvent effect (ΔG_{sol}).

The complexes are listed in descending order of stability in solution, based on the total free energy.

ID	Structure	Egg (a.u.)	Egs	G (el)	G (tot)	dGsol (tot)	Edef
Z5_B		-1003.670616	-1003.668396	-1003.920427	-1003.893164	-141.04	1.39
8_PO		-1003.649290	-1003.643895	-1003.916698	-1003.888888	-153.74	3.39
8_P(UP)		-1003.641278	-1003.638288	-1003.911231	-1003.882223	-153.07	1.88
8_P		-1003.641951	-1003.638959	-1003.910684	-1003.880541	-151.59	1.88

8a_E		-1003.662082	-1003.657218	-1003.903519	-1003.872397	-135.03	3.05
9_P		-1003.630206	-1003.628268	-1003.902063	-1003.871574	-152.68	1.22
Z1_B		-1003.647083	-1003.644209	-1003.899863	-1003.871415	-142.57	1.80

Z2_B		-1003.639875	-1003.637848	-1003.895927	-1003.867065	-143.84	1.27
1a_E		-1003.657079	-1003.656052	-1003.896285	-1003.864475	-130.79	0.6445
Z1a_B		-1003.634821	-1003.631687	-1003.889975	-1003.861677	-144.32	1.97

6_OP		-1003.603401	-1003.595614	-1003.888110	-1003.857268	-164.19	4.89
Z2a_B		-1003.627555	-1003.625606	-1003.885799	-1003.857170	-145.31	1.22
1_OH		-1003.613957	-1003.609457	-1003.882938	-1003.851109	-151.64	2.82