Supplementary materials for:

Characterizations of the reaction products, kinetics and mechanism of oxidation of the drug captopril by platinum(IV) complexes

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Two supporting tables (**Tables S1 and S2**) and two supporting figures (**Figures S1 and S2**) are included in this supplementary material.

Table S1. The measured observed rate constants for the reduction of *trans*-$[PtCl_2(CN)_4]^{2-}$ by captopril at 25.0 °C and ionic strength of 1.0 M

pH	[Captopril]/mM	k_{obsd}/s^{-1}	k_c/s^{-1} [a]
3.22	1.00	(5.73 ± 0.06) x 10^{-2}	
3.69	0.20	4.94 x 10^{-2}	(8.8 ±0.9) x 10^{-3}
	0.30	7.08 x 10^{-2}	
	0.50	0.112	
	1.00	0.218	
	1.50	0.319	
	2.00	0.422	
4.28	0.20	0.176	0.028 ± 0.003
	0.30	0.248	
	0.50	0.399	
	1.00	0.759	
	1.50	1.13	
	2.00	1.50	
4.82	0.20	0.603	0.07 ± 0.02
	0.30	0.85	
	0.50	1.40	
	1.00	2.73	
	1.50	4.09	
	2.00	5.35	
5.32	0.20	1.33	0.08 ± 0.04
	0.30	2.00	
	0.50	3.33	
	1.00	6.49	
	1.50	9.57	
	2.00	12.9	
5.35	0.20	1.74	0.07 ± 0.02
	0.30	2.53	
	0.50	4.14	
	1.00	8.18	
	1.50	12.3	
	2.00	16.5	
5.97	0.20	8.20	0.6 ± 0.3
	0.30	12.2	
	0.50	19.5	
	1.00	38.3	

	1.50	56.6	
	2.00	76.8	
6.85	0.20	40.3	-0.07 ± 2.9
	0.30	58.4	
	0.50	92.4	
	1.00	184	
	1.50	278	
	2.00	381	
7.25	0.20	91.2	-0.03 ± 2.9
	0.30	136	
	0.50	216	
	1.00	437	
	1.50	664	
	2.00	885	
7.35	0.20	83.5 ± 2.5	
7.85	0.20	251 ± 8	

[a] Values of the intercepts k_c were obtained from the linear plots of k_{obsd} versus [Captopril].

Table S2. The measured observed rate constants for the reduction of *cis*-[Pt(NH_3)$_2$$Cl_4$] by captopril at 25.0 °C and ionic strength of 1.0 M [a]

pH	[Captopril]/mM	k_{obsd}/s^{-1}	k_c/s^{-1} [c]
3.69	1.50	3.18 x 10^{-3}	(1.2 ± 0.2) x10^{-3}
	2.00	3.85 x 10^{-3}	
4.21	0.20	1.67 x 10^{-3}	(0.5 ± 0.1) x10^{-3}
	0.30	2.28 x 10^{-3}	
	0.50	3.25 x 10^{-3}	
	1.00	5.87 x 10^{-3}	
	1.50	8.98 x 10^{-3}	
	2.00	1.19 x 10^{-2}	
4.82	0.20	4.76 x 10^{-3}	(0.7 ± 0.1) x10^{-3}
	0.30	6.58 x 10^{-3}	
	0.50	1.07 x 10^{-2}	
	1.00	2.07 x 10^{-2}	
	1.50	3.09 x 10^{-2}	
	2.00	4.04 x 10^{-2}	
5.35	0.20	1.89 x 10^{-2}	(0.6 ± 0.1) x10^{-3}
	0.30	2.54 x 10^{-2}	
	0.50	3.71 x 10^{-2}	
	1.00	6.93 x 10^{-2}	
	1.50	0.100	
	2.00	0.134	
6.09	0.20	6.55 x 10^{-2}	(5.8 ± 0.5) x10^{-3}
	0.30	9.14 x 10^{-2}	
	0.50	0.144	
	1.00	0.274	
	1.50	0.414	
	2.00	0.568	
6.85	0.20	0.296	0.06 ± 0.01
	0.30	0.424	
	0.50	0.675	
	1.00	1.31	
	1.50	1.90	
	2.00	2.50	

7.22	0.20	0.55	0.07 ± 0.04
	0.30	0.92	
	0.50	1.46	
	1.00	2.84	
	1.50	4.29	
	2.00	5.51	
7.35	0.20	0.68	0.11 ± 0.03
	0.30	1.03	
	0.50	1.64	
	1.00	3.09	
7.85	2.00	12.5 ± 0.3 [b]	
8.47	2.00	128 ± 4 [b]	
8.96	2.00	210 ± 8 [b]	
9.46	2.00	451 ± 15 [b]	

[a] Reaction followed at 240 nm; [b] Reaction followed at 280 nm. [c] Values of the intercepts k_c were obtained from the linear plots of k_{obsd} versus [Captopril].

Electronic Supplementary Material (ESI) for RSC Advances

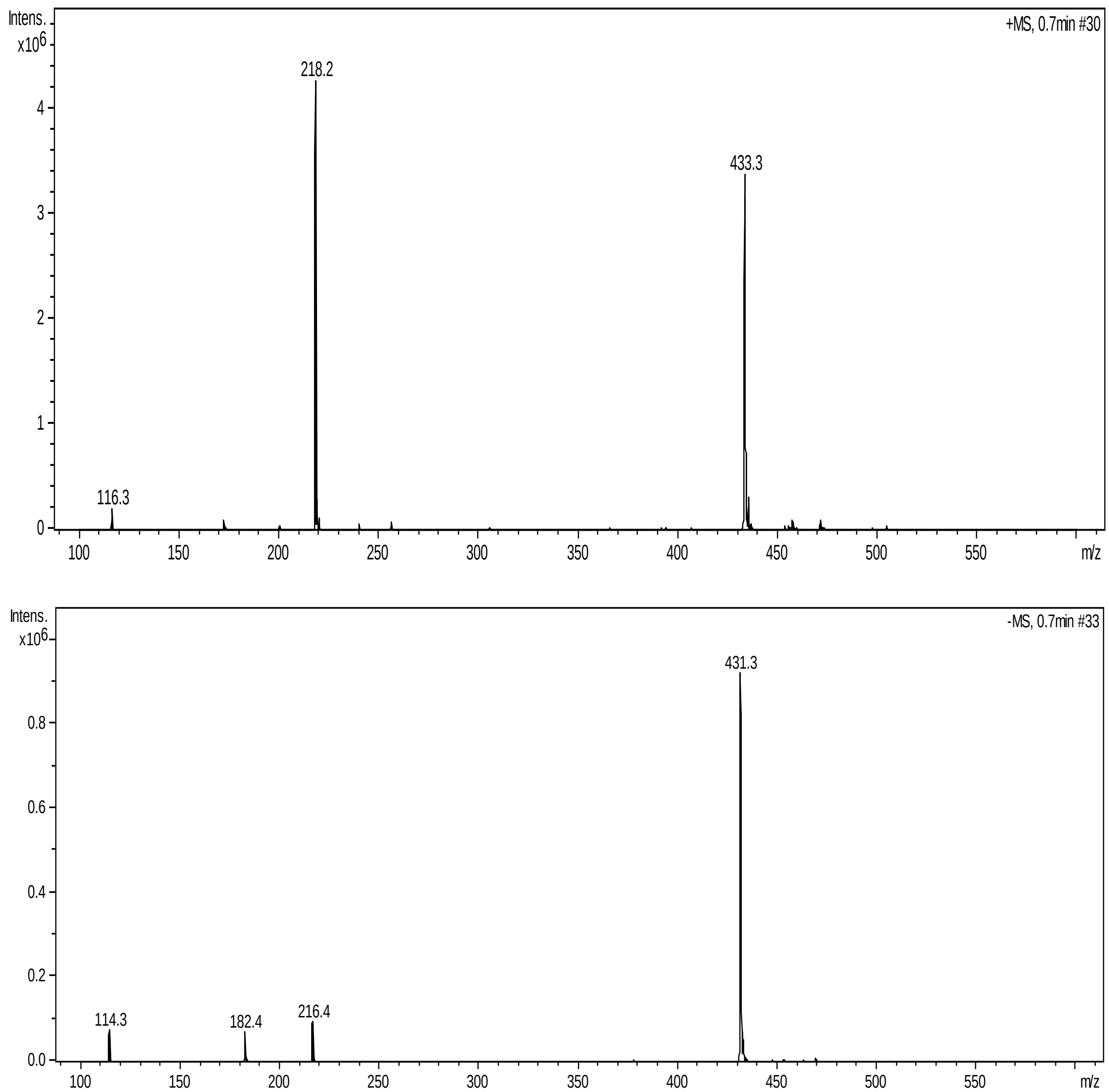


Figure S1. ESI mass spectra for the reaction mixture of 1 mM *trans*-$[PtCl_2(CN)_4]^{2-}$ with 8 mM captopril in 20 mM HCl. (Top): positive mode of ionization. (Bottom): negative mode of ionization

Assignments for major peaks, (Top): *m/z* = 218.2 for $[\text{captopril}+H^+]^+$; *m/z* = 433.3 for $[\text{captopril-disulfide}+H^+]^+$; **(Bottom):** *m/z* = 216.4 for $[\text{captopril}-H^+]^-$; *m/z* = 431.3 for $[\text{captopril-disulfide}-H^+]^-$.

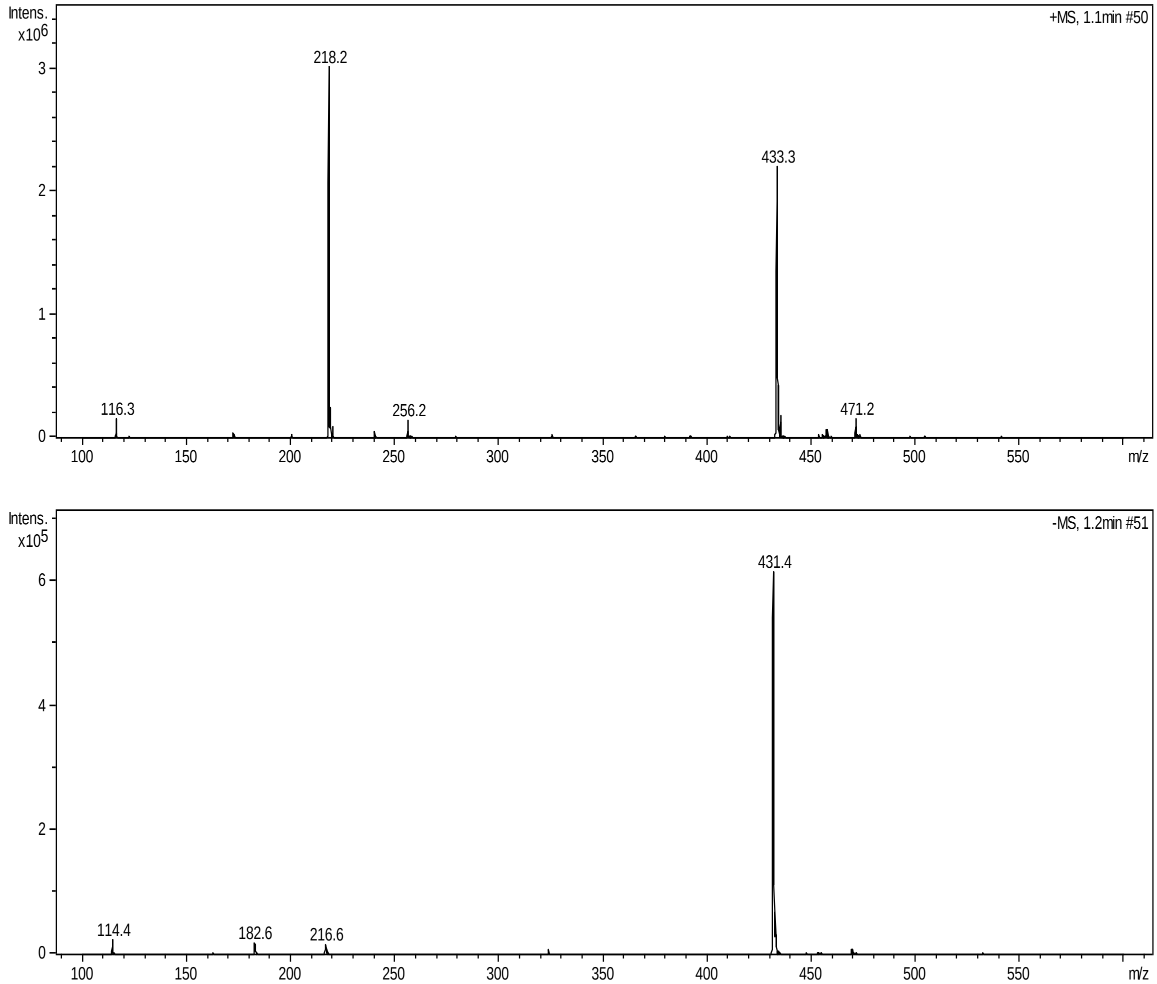
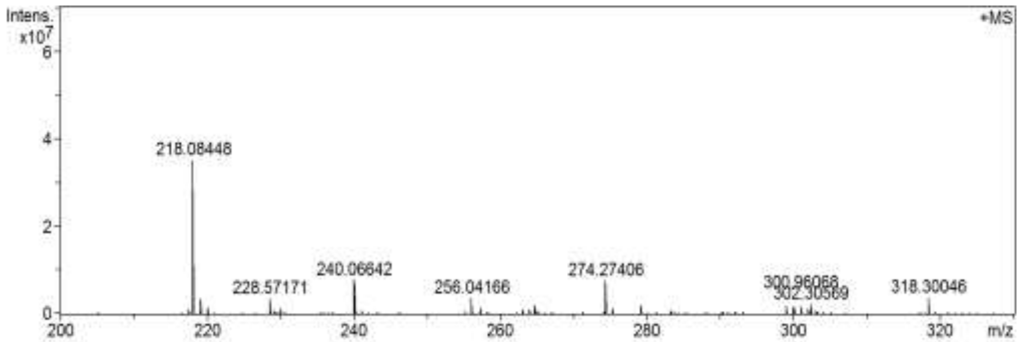


Figure S2. ESI mass spectra for the reaction mixture of 1 mM *cis*-[Pt(NH_3)$_2$$Cl_4$] with 8 mM captopril in 10 mM HCl. (Top): positive mode of ionization. (Bottom): negative mode of ionization.

Assignments for major peaks, (Top): *m/z* = 218.2 for [captopril+H^+]$^+$; *m/z* = 256.2 for [captopril+K^+]$^+$; *m/z* = 433.3 for [captopril-disulfide+H^+]$^+$; *m/z* = 471.2 for [captopril-disulfide+K^+]$^+$; **(Bottom):** *m/z* = 216.6 for [captopril−H^+]$^-$; *m/z* = 431.4 for [captopril-disulfide−H^+]$^-$.



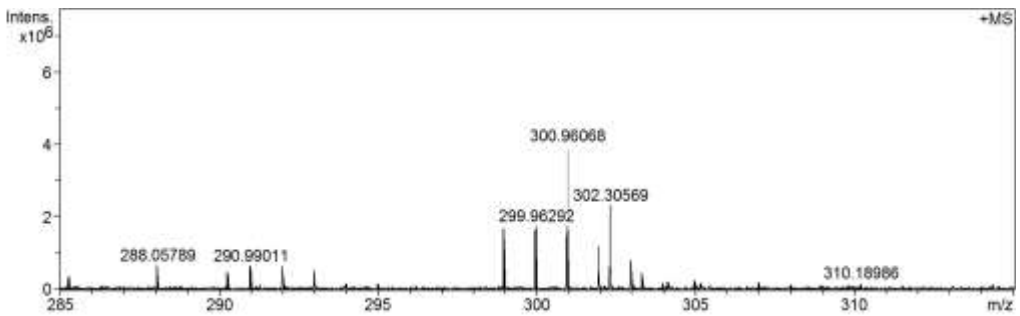


Figure S3. (**Top**): ESI mass spectrum for a very fresh sample containing 1 mM captopril and 1 mM cisplatin (the reduced product from *cis*-[Pt(NH_3)$_2$$Cl_4$]) in 20 mM HCl. Peak assignments: *m/z* = 218.08 for [captopril+H^+]$^+$; *m/z* = 240.06 for [captopril+Na^+]$^+$; *m/z* = 256.04 for [captopril+K^+]$^+$. Peaks from [cisplatin+H^+]$^+$ around *m/z* = 301 are very weak.

(**Bottom**): Enlargement about 10 times for the spectral part between 285 < *m/z* < 315. Peaks of *m/z* = 299, 300, 301, and 302 are all from the isotopic peaks of [cisplatin+H^+]$^+$, which are consistent with the theoretically isotopic pattern of [cisplatin+H^+]$^+$.