

MICROWAVE-ASSISTED SYNTHESIS OF THE ANTICANCER DRUG CISPLATIN, *cis*-[Pt(NH₃)₂Cl₂]

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ELECTRONIC SUPPLEMENTARY INFORMATION

Table S1. HPLC predicted % yields of cisplatin in different ammonium salt:KCl ratios.

NH ₄ ⁺ :KCl	Acetate	Carbonate	Bicarbonate	Hydroxide
2/2	18	11	21	34
2/4	11	23	30	21
2/6	10	23	42	33
3/2	52	25	22	50
3/4	44	12	17	17
3/6	24	23	14	19
4/2	54	33	3	44
4/4	26	35	6	34
4/6	29	25	4	25

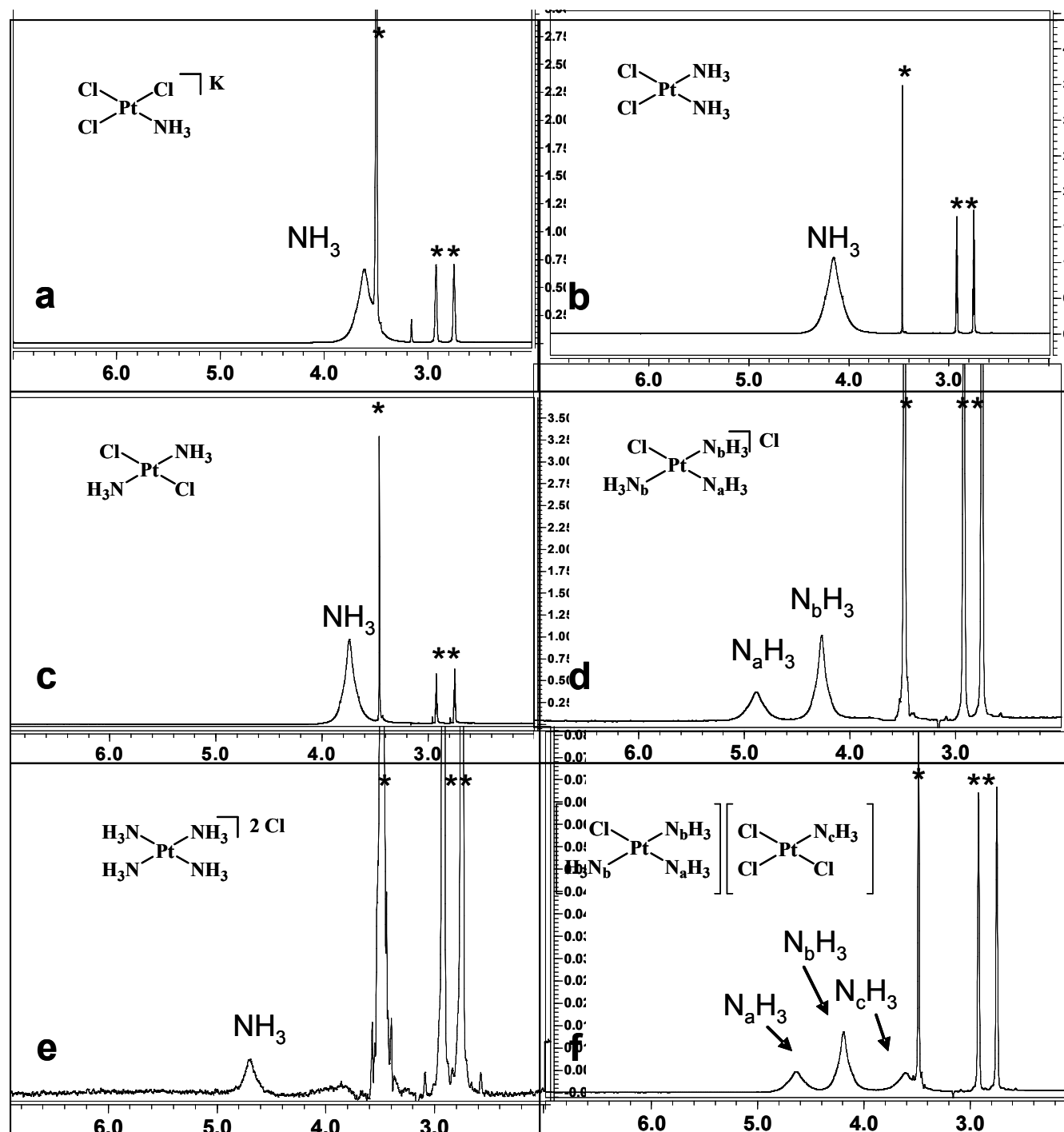


Figure S1. ^1H NMR spectra in $\text{DMF-}d_7$ and chemical sketches of: a) $\text{K}[\text{Pt}(\text{NH}_3)\text{Cl}_3]$; b) cisplatin; c) transplatin; d) $[\text{Pt}(\text{NH}_3)_3\text{Cl}]\text{Cl}$; e) $[\text{Pt}(\text{NH}_3)_4]_2\text{Cl}_2$; f) 1:1 Magnus-type salt. Asterisks indicate residual water and DMF peaks.

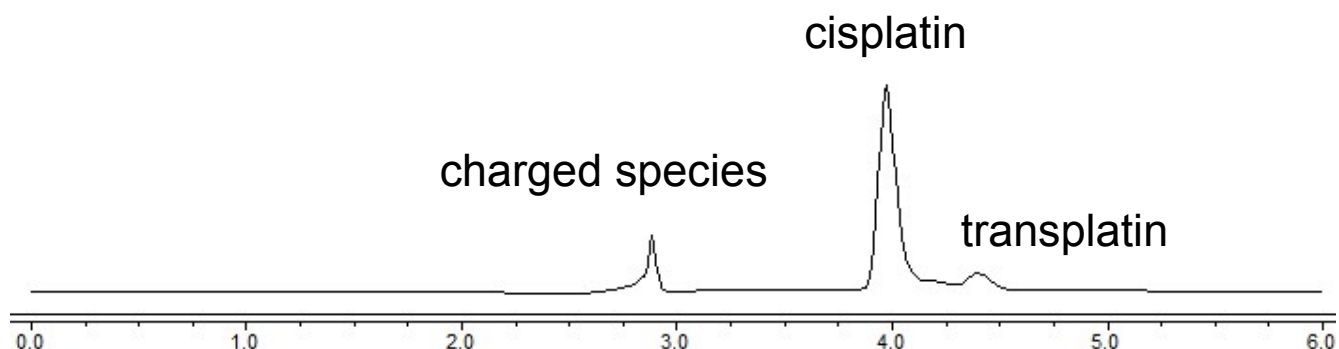


Figure S2. HPLC chromatogram showing a left-tailed peak close to the front (2.5 – 3.0 min), assigned to the charged chloroammineplatinum(II) species, a peak at 4.0 min, assigned to cisplatin after comparison with a standard of pure cisplatin, and a peak at 4.4 min, assigned to transplatin after comparison with a standard of pure transplatin.

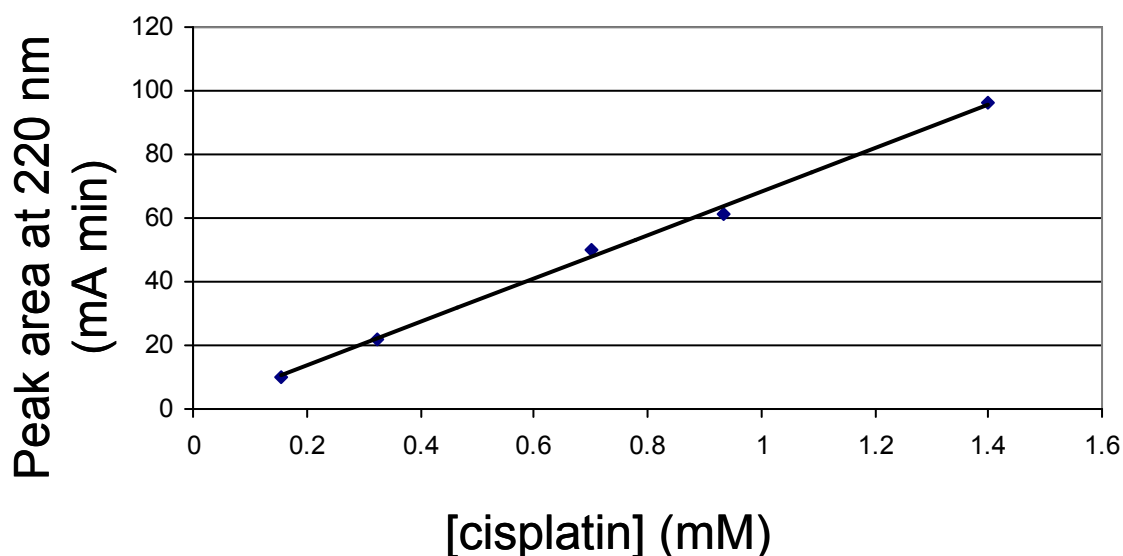


Figure S3. Calibration curve for quantitative determination of cisplatin by HPLC analysis. The integrated peak areas of pure cisplatin at known concentrations in 0.1 M HCl samples were plotted against concentrations, obtaining a linear correlation. The slope follows the correlation: $y = 68.757x - 0.318$ ($r = 0.9987$), where y is the integrated peak area (mA min) and x the concentration of cisplatin samples (mM).

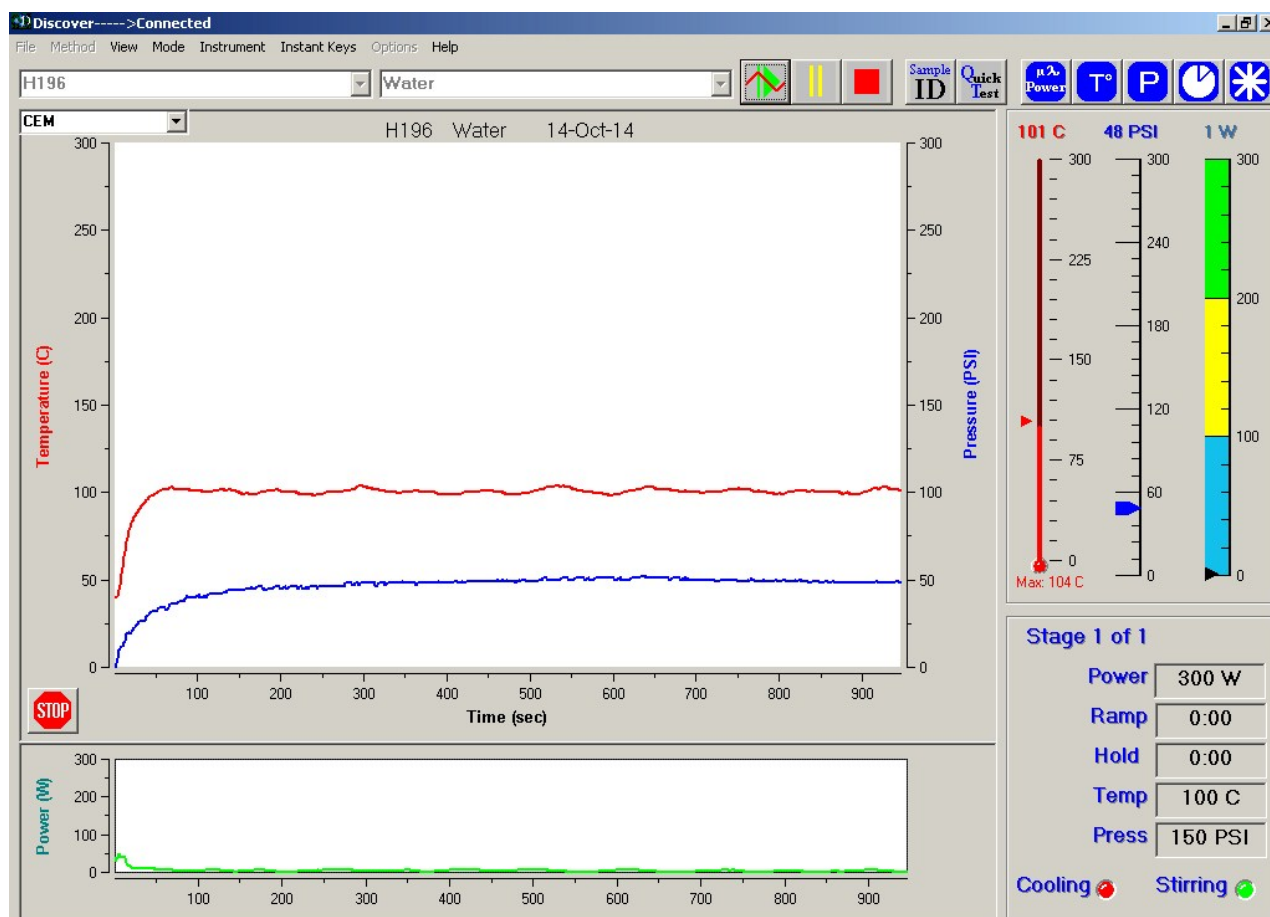


Figure S4. Typical reaction profile, displayed on the Microwave Unit Monitor, that continuously tracks the temperature (°C), pressure (psi) and power (Watts).

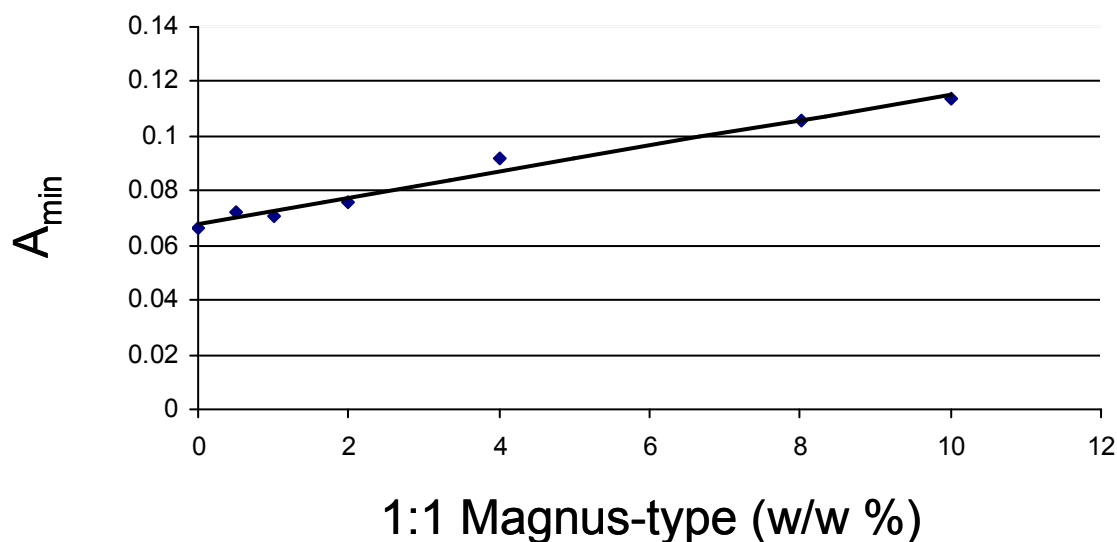


Figure S5. Plots of the amount (w/w %) of 1:1 Magnus-type salt in cisplatin samples vs $A_{\min}$. The slope follows the correlation: $y = 0.0048x + 0.0679$ ($r = 0.9910$), where y is $A_{\min}$ and x the concentration of 1:1 Magnus-type salt in cisplatin sample (% w/w).

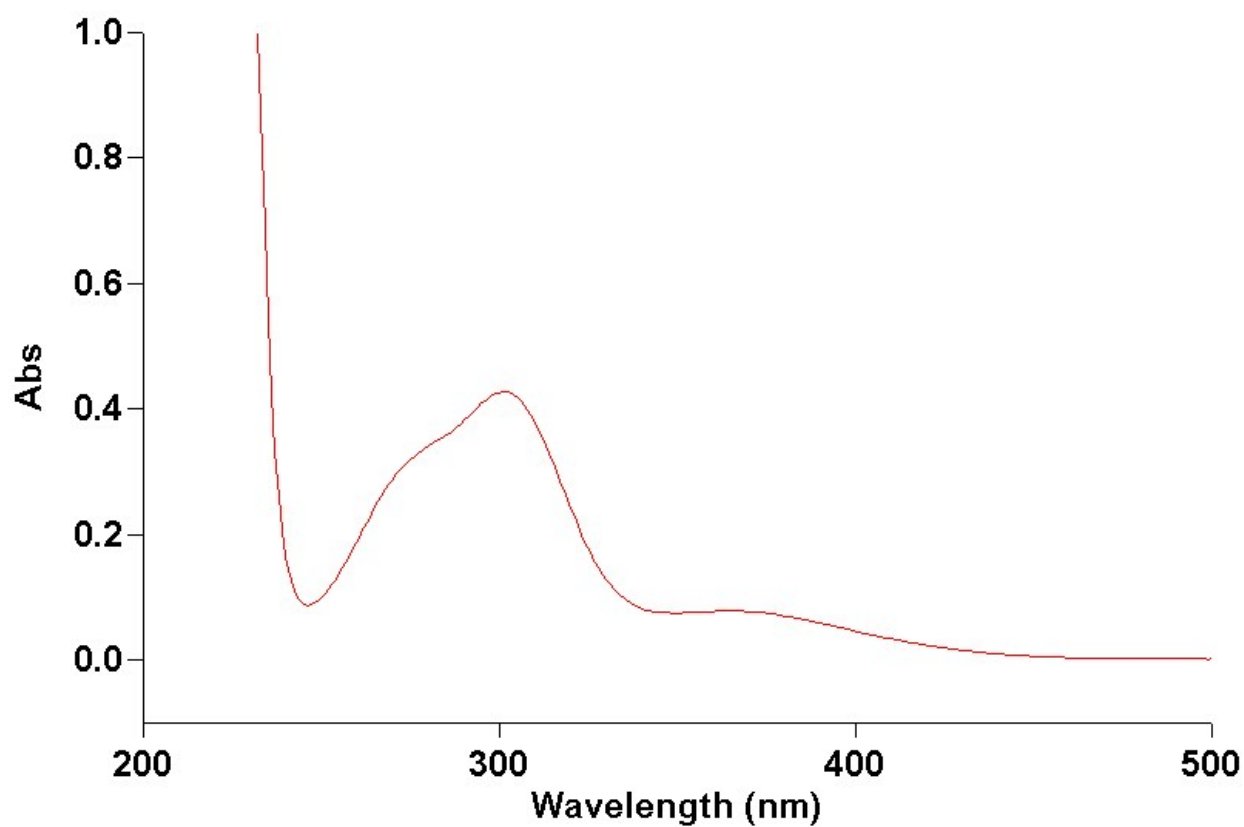


Figure S6. UV-Vis spectrum of a sample of pure cisplatin, showing a maximum at 301 nm, and a minimum at 247 nm, with a $A_{\text{max}}/A_{\text{min}}$ ratio ≥ 4.5 .

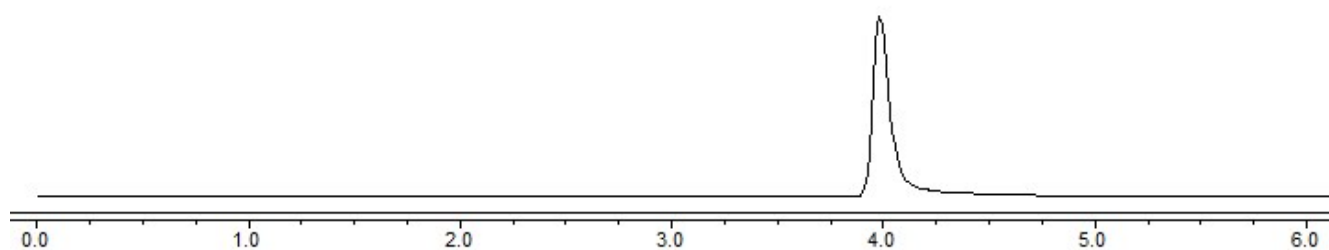


Figure S7. HPLC chromatogram of final product, showing the peak of cisplatin at 4.0 min.