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Supplementary Information

Double Prodrugs: Transplatin Mediated Binding of Chemotherapeutic Agents to Vitamin B_{12}

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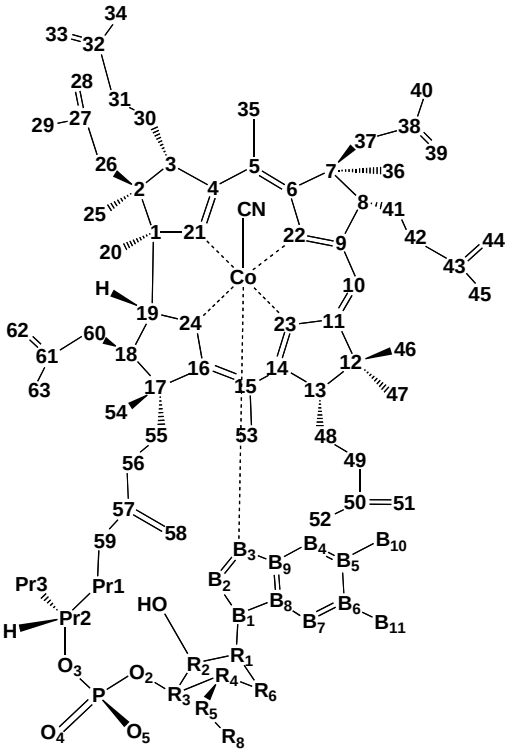
1. **HPLC conditions**: The following HPLC columns were used: column 1, Macherey Nagel Nucleosil C18 (5 µm, 100 Å, 250 mm x 3 mm); column 2, Agilent Zorbax GF-250 (4 µm, 250 mm x 9.4 mm). The following solvent systems were used: solvent system 1, 0.1% trifluoroacetic acid (solvent A), methanol (solvent B); solvent system 2, 130 mM NaCl, 20 mM Na_2HPO_4, pH 7 (solvent A). The following solvent gradients were used: gradient 1, 0-5min: 75% A, 5-30min: 0% A; gradient 2, 0-20 min: 100% A. Preparative HPLC purification was performed on a Varian Prostar system with two Prostar 215 pumps and a Prostar 320 UV/Vis detector, using Macherey Nagel Nucleosil C18 (7 µm, 100 Å, 250 mm x 40 mm).

2. **Numbering scheme for B_{12}**



3. **^{1}H NMR data of [{Co}-CN-{*trans*-Pt(NH_3)$_2$}-{Cyt}]$^{2+}$ 2.**

^{1}H NMR (500 MHz, MeOD, 300K) δ: 0.39 (s, 3H, C20), 1.26-1.38 [m, 14H, C41 (1H), C46 (3H), Pr3 (3H), C54 (3H), C36 (3H), C60 (1H)], 1.47 (s, 3H, C47), 1.76 (s, 3H, C25), 1.80-2.15 [m, 9H, C55 (1H), C42 (1H), C60 (1H), C48 (2H), C41 (1H), C30 (1H), C42 (1H), C37 (1H)], 2.3 (m, 6H, B10&B11), 2.39-2.54 [m, 6H, C26 (2H), C55 (1H), C56 (1H), C31 (2H)], 2.59-2.63 (m, 6H, C35&C53), 2.70-3.03 [m, 6H, C49 (2H), C56 (1H), C37 (1H), C18 (1H), Pr1 (1H)], 3.66-4.27 [m, 14H, C13 (1H), C8 (1H), Pr1 (1H), R'5 (1H), R5 (1H), C19 (1H), R4 (1H), C3 (1H), Pr2 (1H), Cyt (5H)], 4.35 (m, 1H, R2), 4.71 (m, 1H, R3), 5.94(d, J=7.5, 1H, Cyt), 6.02 (s, 1H, C10), 6.09 (d, J=4Hz, 1H, Cyt), 6.30 (d, J=3.5Hz, 1H, R1), 6.55 (s, 1H, B7), 7.09 (s, 1H, B2), 7.30 (s, 1H, B4), 7.95 (d, J=7.5Hz, 1H, Cyt).

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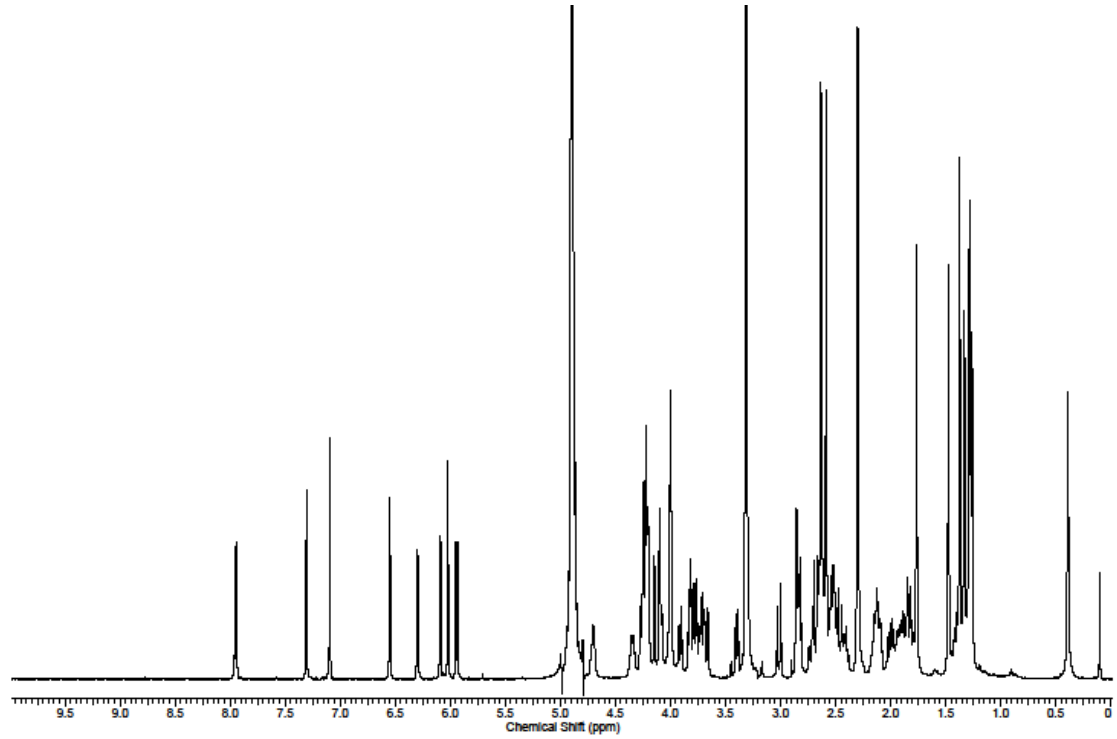
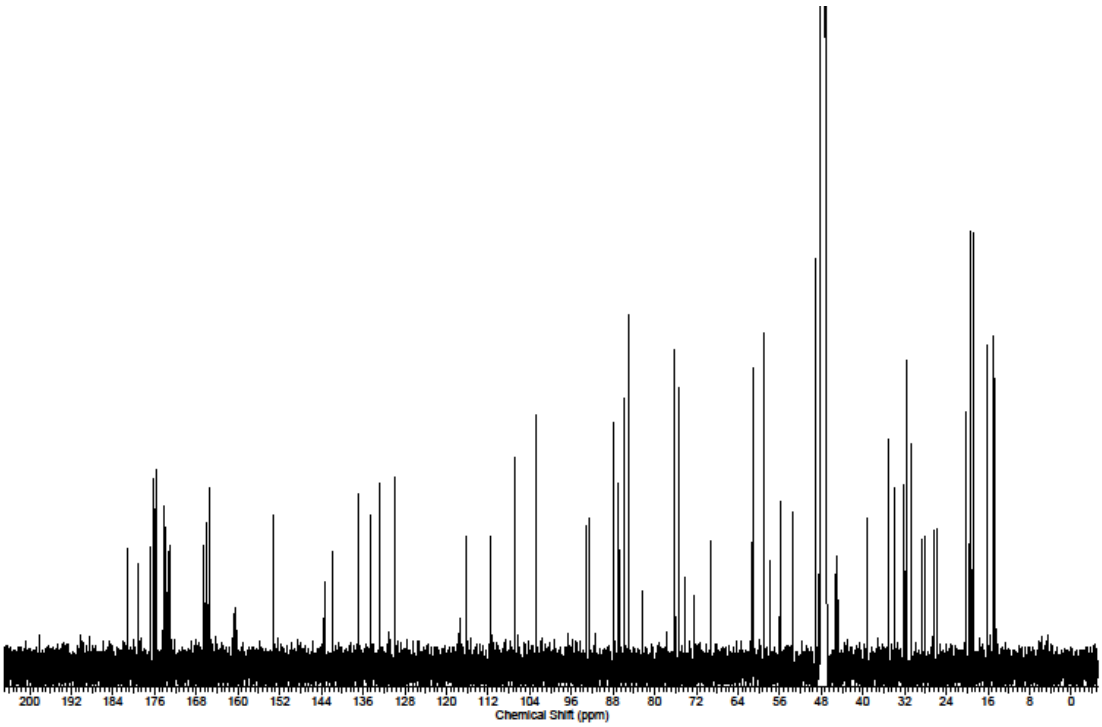
^{1}H and ^{13}C NMR spectra of 2





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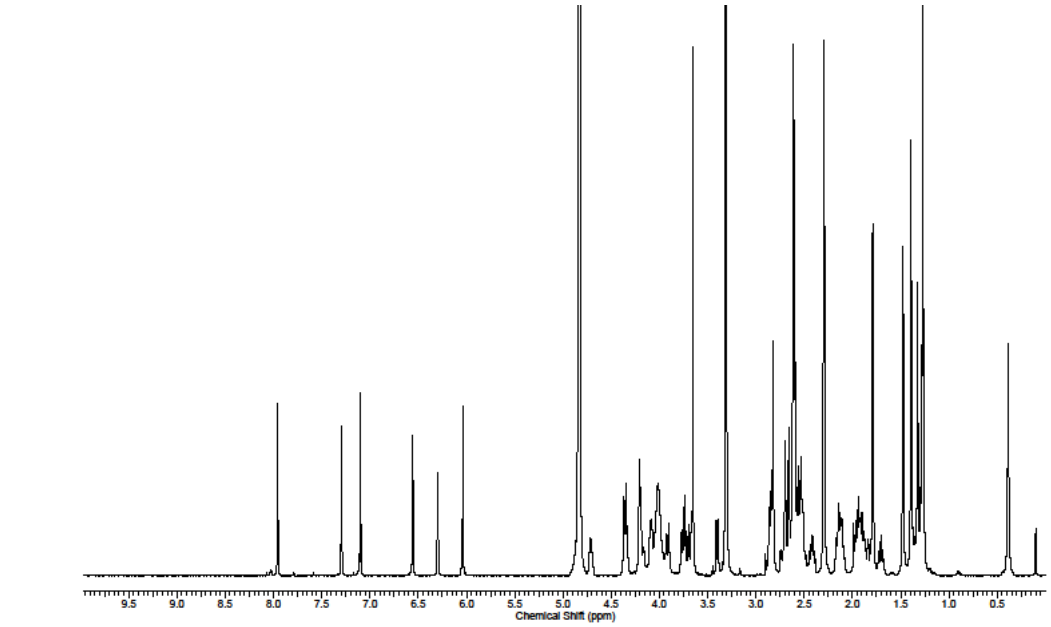
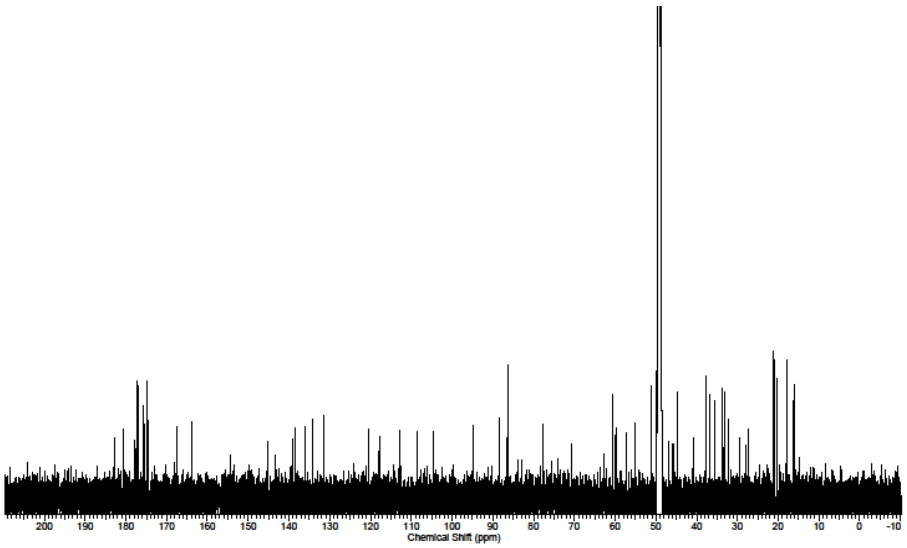
4. ^{1}H NMR data of [{Co}-CN-{trans-Pt(NH_3)$_2$}-{Dac}]$^{2+}$ 3.

^{1}H NMR (500MHz, MeOD, 300K) δ: 0.38 (s, 3H, C20), 1.26-1.29 [m, 7H, C41 (1H), C46 (3H), Pr3 (3H)], 1.32-1.39 [m, 7H, C60 (1H), C54 & C36 (6H)], 1.47 (s, 3H, C47), 1.71 (m, 1H, C42), 1.79 (s, 3H, C25), 1.84-2.16 [m, 8H, C55 (1H), C48 (2H), C60 (1H), C41' (1H), C30 (1H), C42' (1H), C37 (1H)], 2.29 (m, 6H, B10 & B11), 2.39-2.75 [m, 16H, C26 (2H), C56 (1H), C55' (1H), C37' (1H), C56' (1H), C49 (2H), C31 (2H)], 2.82-2.86 [m, 2H, Pr1(1H), C18 (1H)], 3.40 (m, 1H, C13), 3.65-4.01 [m, 10H, C8 (1H), Pr1 (1H), R'5 (1H), R5 (1H), Dac (6H)], 4.07-4.21 [m, 4H, R4 (1H), C19 (1H), C3(1H), R2 (1H)], 4.35 (m, 1H, Pr2), 4.71 (m, 1H, R3), 6.04 (s, 1H, C10), 6.30 (d, J=3Hz, 1H, R1), 6.56 (s, 1H, B7), 7.08 (s, 1H, B2), 7.29 (s, 1H, B4), 7.96 (s, 1H, Dac).

^{1}H and ^{13}C NMR spectra of 3





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5. ^{1}H NMR data of [{Co}-CN-{*trans*-Pt(NH_3)$_2$}-{Ana}]$^{2+}$ 4.

^{1}H NMR (500MHz, MeOD, 298K) δ: 0.41 (s, 3H, C20), 1.25-1.28 [m, 7H, C41 (1H), Pr3 (3H), C46 (3H)], 1.31-1.36 (m, 7H, C60 (1H), C54 (3H), C36 (3H)], 1.48 (s, 3H, C47), 1.71-1.80 [m, 20H, C55 (1H), C42 (1H), Ana (12H), C25 (3H), C60' (1H), C48 (2H)], 1.84-2.16 [m, 4H, C41' (1H), C30 (1H), C42' (1H), C37 (1H)], 2.29 [m, 6H, B10 (3H), B11 (3H)], 2.38-2.56 [m, 4H, C26 (2H), C56' (1H), C55' (1H)], 2.60 [m, 6H, C55 (3H), C35 (3H)], 2.62-2.71 [m, 6H, C37' (1H), C56 (1H), C49 (2H), C31 (2H)], 2.81-2.85 [m, 2H, C18 (1H), Pr'1 (1H)], 3.61 (m, 1H, C8), 3.65 (m, 1H, Pr1), 3.75 (m, 1H, R'5), 3.91 (m, 1H, R5), 4.08 (m, 1H, R4), 4.20 [m, 2H, C19 (1H), C3 (1H)], 4.34 (m, 1H, R2), 4.39 (m, 1H, Pr2), 4.69 (m, 1H, R3), 5.58 (s, 2H, Ana), 6.04 (s, 1H, C10), 6.29 (d, J=3Hz, 1H, R1), 6.55 (s, 1H, B7), 7.10 (s, 1H, B2), 7.30 (s, 1H, B4), 7.58 (d, J=2Hz, 2H, Ana), 7.65 (t, J=2Hz, 1H, Ana), 8.25 (s, 1H, Ana), 9.23 (s, 1H, Ana).

^{1}H and ^{13}C NMR spectra of 4