

Supporting Information

Detection of Anticancer Drug Induced Cardiotoxicity using VCAM1 Targeted Nanoprobe

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The chemical conjugation of PLGA, VCAM1 and RhB were investigated through NMR analysis. Initially, all the lyophilized samples were dissolved in DMSO-d₆ solvent and taken in the NMR tube. The ¹H-NMR experiment was performed by using the Bruker Spect NMR instrument. The ¹H-NMR peaks were analyzed by using the Mestrenova software (14.2.3). The value of chemical shift (δ) obtained for different proton contents in each of the samples are listed below:

1. **PLGA:** 1H NMR (400 MHz, DMSO) δ 5.21 (s, 1H), 4.92 (s, 1H), 3.42 – 3.37 (m, 2H), 1.47 (q, J = 8.3 Hz, 2H).
2. **VCAM1:** 1H NMR (400 MHz, DMSO) δ 8.90 (s, 2H), 8.80 (d, J = 7.4 Hz, 1H), 8.42 (s, 1H), 8.27 (s, 5H), 8.20 (t, J = 8.7 Hz, 3H), 8.07 (d, J = 7.6 Hz, 1H), 7.97 (d, J = 8.1 Hz, 2H), 7.81 (s, 2H), 7.71 (s, 3H), 7.64 (s, 1H), 7.43 (d, J = 13.2 Hz, 2H), 7.34 (d, J = 17.0 Hz, 2H), 7.25 (s, 1H), 6.91 (s, 1H), 4.83 (s, 1H), 4.61 (d, J = 7.3 Hz, 1H), 4.37 (d, J = 7.6 Hz, 2H), 4.37 – 4.29 (m, 1H), 4.30 (s, 2H), 4.21 (q, J = 7.4 Hz, 3H), 3.83 (d, J = 6.0 Hz, 1H), 3.78 (dd, J = 9.9, 6.1 Hz, 4H), 3.65 – 3.53 (m, 2H), 3.07 (d, J = 15.9 Hz, 5H), 2.98 (s, 4H), 2.86 – 2.68 (m, 6H), 2.28 (t, J = 8.4 Hz, 1H), 2.11 (s, 3H), 2.11 – 1.99 (m, 1H), 1.86 (s, 5H), 1.71 (s, 3H), 1.53 (s, 10H), 0.90 (t, J = 7.5 Hz, 6H).
3. **PLGA-VCAM1:** 1H NMR (400 MHz, DMSO) δ 5.22 (ddt, J = 25.0, 10.4, 5.2 Hz, 1H), 4.90 (d, J = 18.9 Hz, 2H), 1.53 – 1.42 (m, 3H).
4. **PLGA-RhB-VCAM1:** 1H NMR (400 MHz, DMSO) δ 5.21 (s, 1H), 4.92 (s, 2H), 4.68 (s, 1H), 4.47 (s, 2H), 4.22 (s, 1H), 3.83 (s, 4H), 3.32 (s, 1H), 1.96 (s, 3H), 1.76 (s, 1H), 1.47 (q, J = 7.9 Hz, 6H), 1.38 (s, 3H), 1.33 (s, 2H).
5. **PLGA-RhB:** 1H NMR (400 MHz, DMSO) δ 5.31 – 5.17 (m, 4H), 4.92 (s, 5H), 4.93 – 4.81 (m, 1H), 3.31 (d, J = 10.2 Hz, 1H), 1.48 (t, J = 8.0 Hz, 11H).

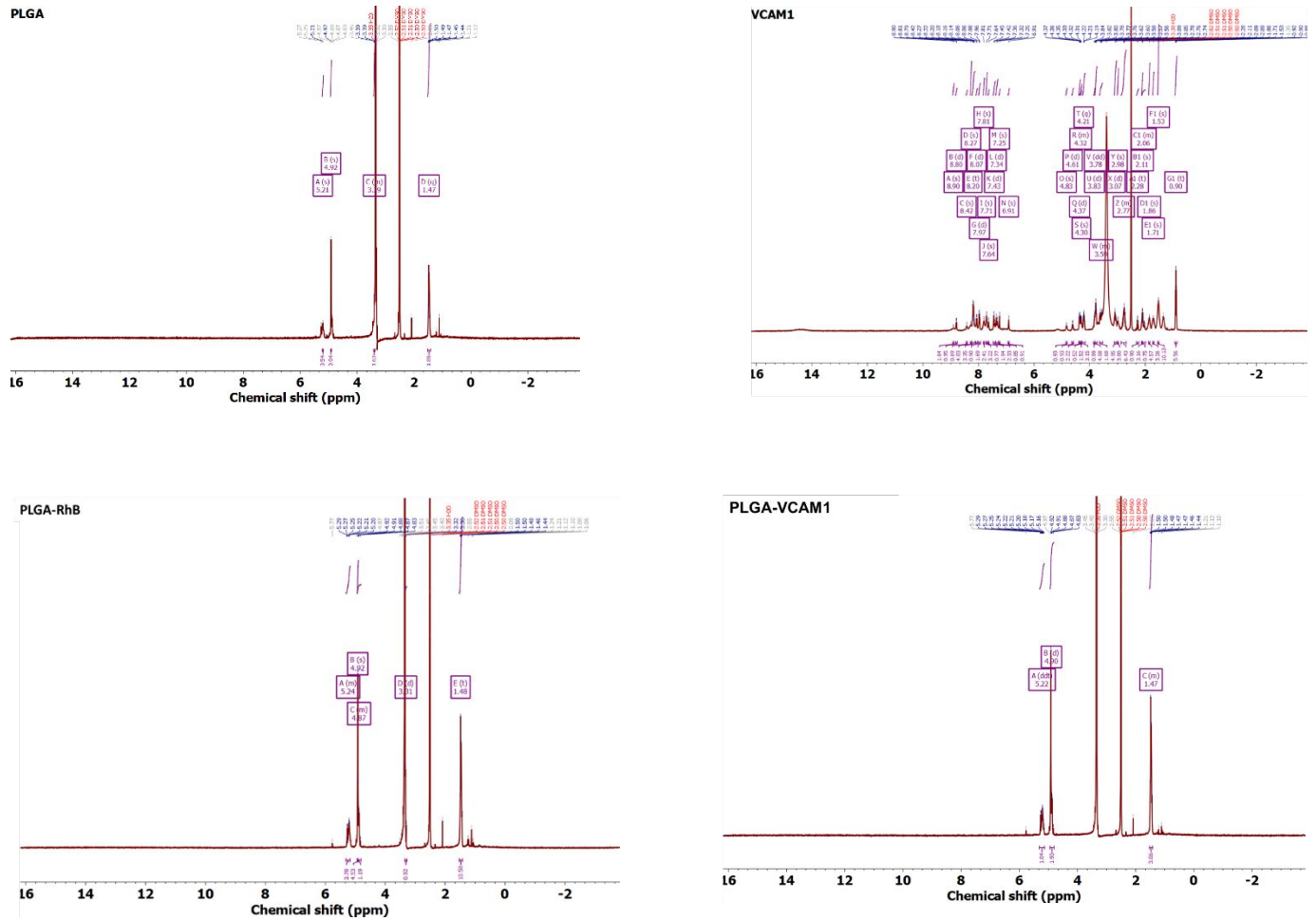


Figure S1: ^1H -NMR spectra of PLGA, VCAM1, PLGA-RhB and PLGA-VCAM1. Shifting of the ^1H -NMR peaks confirms the conjugation of the particle.

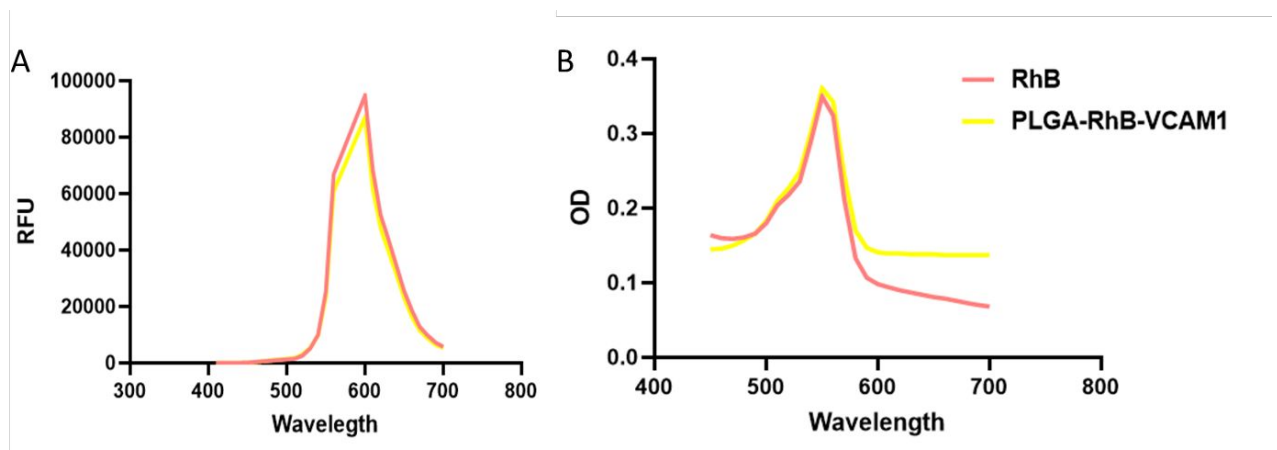


Figure S2: A) and B) shows PLGA-RhB-VCAM1 fluorescent spectrum in RFU and OD.

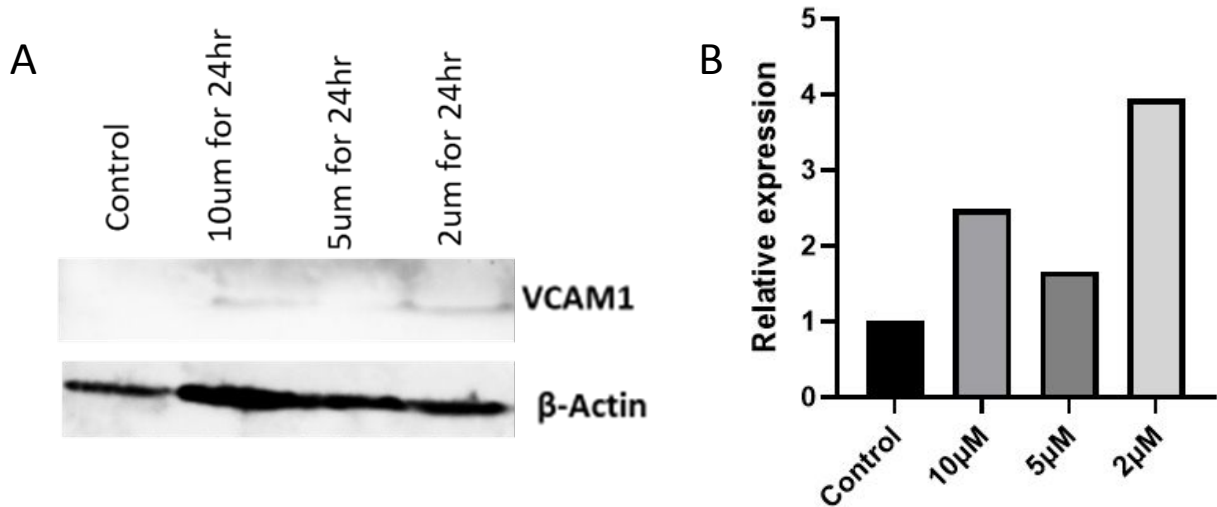


Figure S3: WB data of VCAM1 protein expression shows no significant difference in protein expression with the same period. However, 2 μ M shows highest expression of VCAM1.

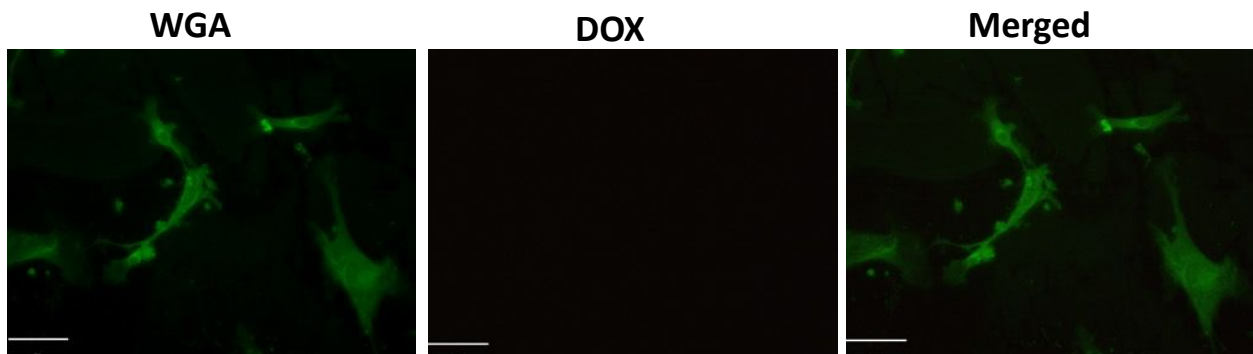


Figure S4: Image was taken after treating the cell with 0.5 μ M DOX for 72 hrs. It did not show any fluorescent signal. Scale bars represent 100 μ m.

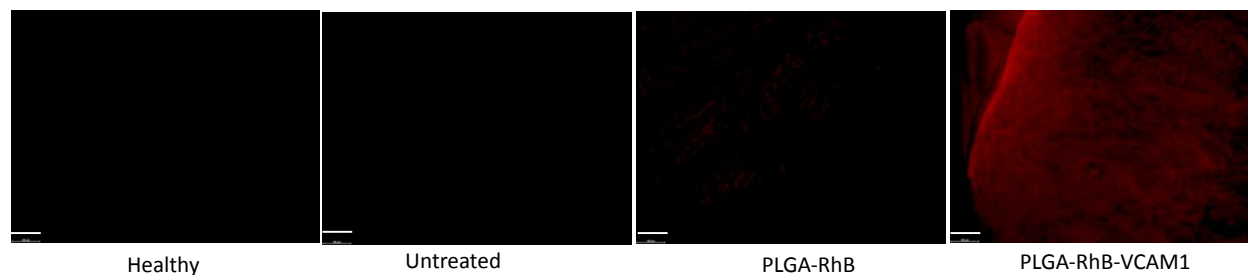


Figure S5: Image of the sectioned heart shows fluorescent signal with PLGA-RhB-VCAM1 particle. Heart of mice treated with DOX but not injected any fluorescent nanoparticle were also taken to examine the fluorescent signal of DOX (Untreated). No fluorescent signal was observed in healthy control, untreated and PLGA-RhB treated heart section. Scale bar represents 100 μm .