## Electronic Supporting Information

# Controlled Drug Delivery of Antileishmanial Chalcones from Layer-by-Layer (LbL) Self Assembled PSS/PDADMAC Thin Films

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## Calibration curves of chalcones

The calibration curves were obtained from UV-Visible spectrophotometry for the quantitative analysis of drug released in the medium. For the experiment, we have prepared ten different concentrations of respective drugs with a concentration value ranging from 1 ppm to 10 ppm by dissolving the required amount of the drug into 50% aqueous ethanol. The absorbance was then recorded at their respective analytical wavelength ($\lambda_{max}$). For the drug 3-*m*B-4′-HC the $\lambda_{max}$ was 323 nm while for the other i.e., 3-DC-4′-HC it was 325 nm. The calibration curves were shown in the Fig. S1.

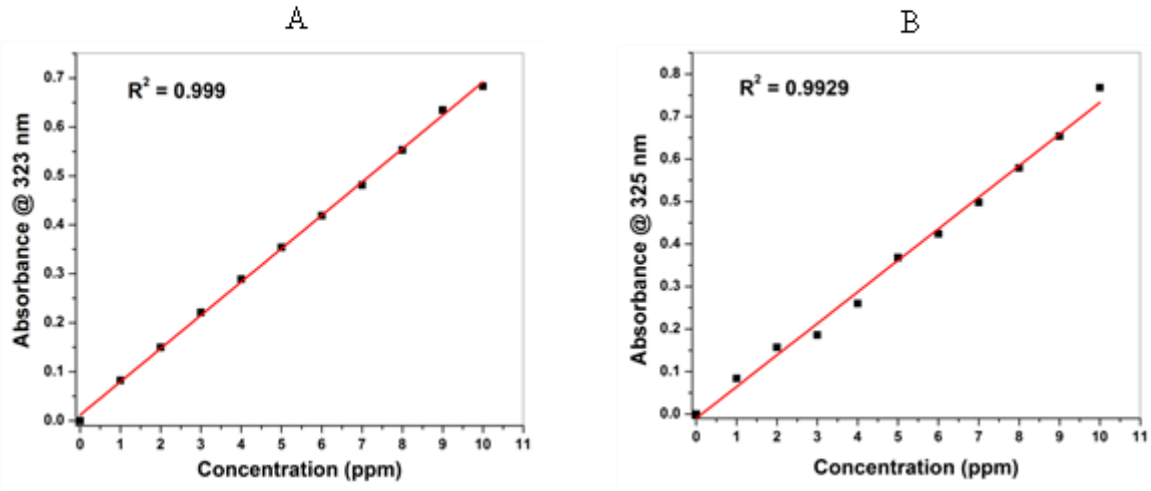


**Fig. S1** Calibration curve of (A) 3-*m*B-4'-HC and (B) 3-DC-4'-HC.

## Spectral data of chalcones

The synthesized chalcones were fully characterized by different spectroscopic methods including $^{1}$H-NMR, $^{13}$C-NMR, Fourier transformed infrared spectroscopy (FT-IR) and Mass spectrometer analysis. The spectroscopic data for chalcone 3-*m*B-4'-HC and 3-DC-4'-HC is given below.

**3-*m*B-4'-HC *i.e.* 3-(3-Bromo-phenyl)-1-(4-hydroxy-phenyl)-propenone**

$^{1}$H NMR: (400 MHz, DMSO- d6) δ/ppm 6.90 (2H, d, J=8 Hz, Ph- ring B), 7.4 (1H, t, J=8, 7.6 Hz Ph-ring A), 7.62 (2H, m, Ph- ring A & =C-H adjacent to C=O), 7.82 (1H, d, J=7.6 Hz, Ph- ring A), 7.98 (1H, d, J=15.6 Hz =C-H adjacent to ring A), 8.09 (2H, d, J=7.2 Hz, Ph- ring B), 8.18 (1H, s, Ph- ring A), 10.43 (1H, s, -OH Str.); $^{13}$C NMR (100 MHz, DMSO- d6) δ/ppm 115.35, 122.33, 123.65, 128.04, 128.92, 130.59, 130.85, 131.29, 132.68, 137.40, 140.88, 162.30, 186.93; FT-IR ($cm^{-1}$); 3260, 1651, 1598, 1564, 1342, 1226; ESI-MS (M, M+2): $C_{15}H_{11}BrO_2$, calcd.: 303, 305, found: 303.3882, 305.3832.

**3-DC-4'-HC *i.e.* 3-(2,4-Dichloro-phenyl)-1-(4-hydroxy-phenyl)-propenone**

$^{1}$H NMR: (400 MHz, DMSO- d6) δ/ppm 6.90 (2H, d, J=8.8 Hz, Ph- ring B), 7.54 (1H, dd, J=6.4, 2 Hz, Ph- ring A), 7.74 (1H, d, J=2 Hz, Ph- ring A), 7.90 (1H, d, J=15.6 Hz, =C-H adjacent to ring A), 8.00 (1H, d, J=15.6 Hz, =C-H adjacent to C=O), 8.08 (2H, d, J=8.8 Hz, Ph- ring B), 8.23 (1H, d, J=8.4 Hz, Ph- ring A), 10.49 (1H, s, -OH); $^{13}$C NMR (100 MHz, DMSO- d6) δ/ppm 115.42, 125.48, 127.85, 128.71, 129.39, 129.69, 131.35, 131.57, 136.03, 162.47, 186.69; FT-IR ($cm^{-1}$); 3131, 1602, 1553, 1226; ESI-MS (M+1): $C_{15}H_{10}Cl_2O_2$, calcd.: 293, found: 293.2704.

**Complete *in-vitro* controlled release data**

The *in-vitro* controlled release study of antileishmanial chalcones was performed by using UV-Visible spectrophotometer in phosphate buffer saline at pH 7.4. The details of the experiment were given in the manuscript under the Experimental section. All the measurements were performed thrice to minimize the error. The average values were used for plotting the release profiles of the drugs and the error was calculated as standard deviation. The complete data is given for both the drugs separately in Table-1 and Table-2 as shown below.

## Table S1 Release data for 3-*m*B-4'-HC

| S. No. | Time (min.) | Time interval (min.) | Absorbance at 323 nm | | | % Release (Eq. 5) | | | Average % Release |
|---|---|---|---|---|---|---|---|---|---|
| | | | Plate-1 | Plate-2 | Plate-3 | Plate-1 | Plate-2 | Plate-3 | |
| 1. | 0 | 0 | 0.1465 | 0.137 | 0.1786 | 0 | 0 | 0 | 0 |
| 2. | 2 | 2 | 0.107 | 0.1206 | 0.166 | 26.96 | 11.97 | 7.05 | 15.3266 |
| 3. | 5 | 3 | 0.0906 | 0.0986 | 0.1306 | 38.15 | 28.02 | 26.87 | 31.0133 |
| 4. | 8 | 3 | 0.0743 | 0.0776 | 0.1136 | 49.28 | 43.35 | 36.39 | 43.0066 |
| 5. | 11 | 3 | 0.0606 | 0.064 | 0.100 | 58.63 | 53.28 | 44.00 | 51.97 |
| 6. | 14 | 3 | 0.053 | 0.057 | 0.0706 | 63.82 | 58.39 | 60.47 | 60.8933 |
| 7. | 19 | 5 | 0.0456 | 0.0476 | 0.0603 | 68.87 | 65.25 | 66.23 | 66.7833 |
| 8. | 24 | 5 | 0.042 | 0.0403 | 0.0536 | 71.33 | 70.80 | 69.98 | 70.7033 |
| 9. | 29 | 5 | 0.038 | 0.0346 | 0.048 | 74.06 | 74.74 | 73.12 | 73.9733 |
| 10. | 34 | 5 | 0.0356 | 0.026 | 0.0316 | 75.70 | 81.02 | 82.30 | 79.6733 |
| 11. | 44 | 10 | 0.0316 | 0.026 | 0.0246 | 78.43 | 81.02 | 86.22 | 81.89 |
| 12. | 59 | 15 | 0.0293 | 0.023 | 0.0213 | 80.00 | 83.21 | 88.07 | 83.76 |
| 13. | 74 | 15 | 0.030 | 0.0193 | 0.0183 | 79.52 | 85.91 | 89.75 | 85.06 |
| 14. | 104 | 30 | 0.0263 | 0.0156 | 0.0163 | 82.04 | 88.61 | 90.87 | 87.1733 |
| 15. | 164 | 60 | 0.0273 | 0.014 | 0.012 | 81.36 | 89.78 | 93.28 | 88.14 |
| 16. | 224 | 60 | 0.0243 | 0.0113 | 0.011 | 83.41 | 91.75 | 93.84 | 89.6666 |
| 17. | 284 | 60 | 0.025 | 0.0113 | 0.0133 | 82.93 | 91.75 | 92.55 | 89.0766 |
| 18. | 344 | 60 | 0.026 | 0.0123 | 0.0106 | 82.25 | 91.02 | 94.06 | 89.11 |
| 19. | 584 | 240 | 0.0243 | 0.0096 | 0.0103 | 83.41 | 92.99 | 94.23 | 90.21 |

## Table S2 Release data for 3-DC-4'-HC

| S. No. | Time (min.) | Time interval (min.) | Absorbance at 325 nm | | | % Release (Eq. 5) | | | Average % Release |
|---|---|---|---|---|---|---|---|---|---|
| | | | Plate-1 | Plate-2 | Plate-3 | Plate-1 | Plate-2 | Plate-3 | |
| 1. | 0 | 0 | 0.167 | 0.203 | 0.171 | 0 | 0 | 0 | 0 |
| 2. | 2 | 2 | 0.146 | 0.182 | 0.155 | 12.57 | 10.34 | 9.35 | 10.7533 |
| 3. | 5 | 3 | 0.123 | 0.159 | 0.127 | 26.34 | 21.67 | 25.73 | 24.58 |
| 4. | 8 | 3 | 0.107 | 0.146 | 0.116 | 35.92 | 28.07 | 32.16 | 32.05 |
| 5. | 11 | 3 | 0.097 | 0.131 | 0.104 | 41.91 | 35.46 | 39.18 | 38.85 |
| 6. | 14 | 3 | 0.087 | 0.115 | 0.095 | 47.90 | 43.34 | 44.44 | 45.2266 |
| 7. | 19 | 5 | 0.077 | 0.102 | 0.086 | 53.89 | 49.75 | 49.70 | 51.1133 |
| 8. | 24 | 5 | 0.069 | 0.097 | 0.079 | 58.68 | 52.21 | 53.80 | 54.8966 |
| 9. | 29 | 5 | 0.063 | 0.094 | 0.074 | 62.27 | 53.69 | 56.72 | 57.56 |
| 10. | 34 | 5 | 0.058 | 0.082 | 0.070 | 65.26 | 59.60 | 59.06 | 61.3066 |
| 11. | 44 | 10 | 0.052 | 0.078 | 0.066 | 68.86 | 61.57 | 61.40 | 63.9433 |
| 12. | 59 | 15 | 0.049 | 0.066 | 0.061 | 70.65 | 67.48 | 64.32 | 67.4833 |
| 13. | 74 | 15 | 0.041 | 0.061 | 0.054 | 75.44 | 69.95 | 68.42 | 71.27 |
| 14. | 104 | 30 | 0.040 | 0.055 | 0.049 | 76.04 | 72.90 | 71.34 | 73.4266 |
| 15. | 164 | 60 | 0.035 | 0.049 | 0.041 | 79.04 | 75.86 | 76.02 | 76.9733 |
| 16. | 224 | 60 | 0.040 | 0.044 | 0.040 | 76.04 | 78.32 | 76.60 | 76.9866 |
| 17. | 284 | 60 | 0.027 | 0.040 | 0.040 | 83.83 | 80.29 | 76.60 | 80.24 |
| 18. | 344 | 60 | 0.026 | 0.034 | 0.029 | 84.43 | 83.25 | 83.04 | 83.5733 |
| 19. | 464 | 120 | 0.024 | 0.029 | 0.018 | 85.63 | 85.71 | 89.47 | 86.9366 |
| 20. | 584 | 120 | 0.016 | 0.028 | 0.017 | 90.41 | 86.20 | 90.05 | 88.8866 |
| 21. | 704 | 120 | 0.018 | 0.024 | 0.012 | 89.22 | 88.17 | 92.98 | 90.1233 |
| 22. | 824 | 120 | 0.019 | 0.023 | 0.011 | 88.62 | 88.66 | 93.56 | 90.28 |
| 23. | 944 | 120 | 0.019 | 0.022 | 0.012 | 88.62 | 89.16 | 92.98 | 90.2533 |