

## Supplementary data

### Preparation and Characterization of Magnetic Nanoparticles and their Impact on Anticancer Drug Binding and Release Processes Moderated Through 1<sup>st</sup> Tier Dendrimer

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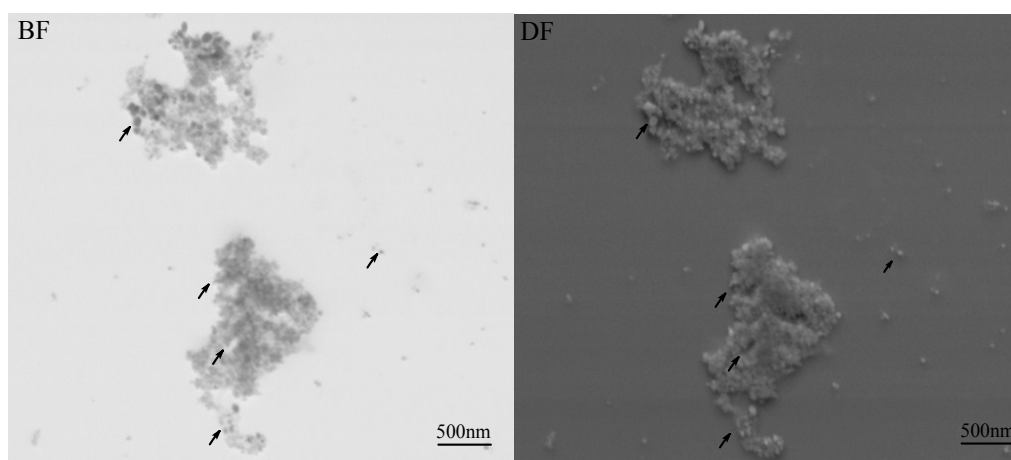


Fig. S1. Comparison of bright field (BF) and dark field (DF) image of MAD using HR-TEM

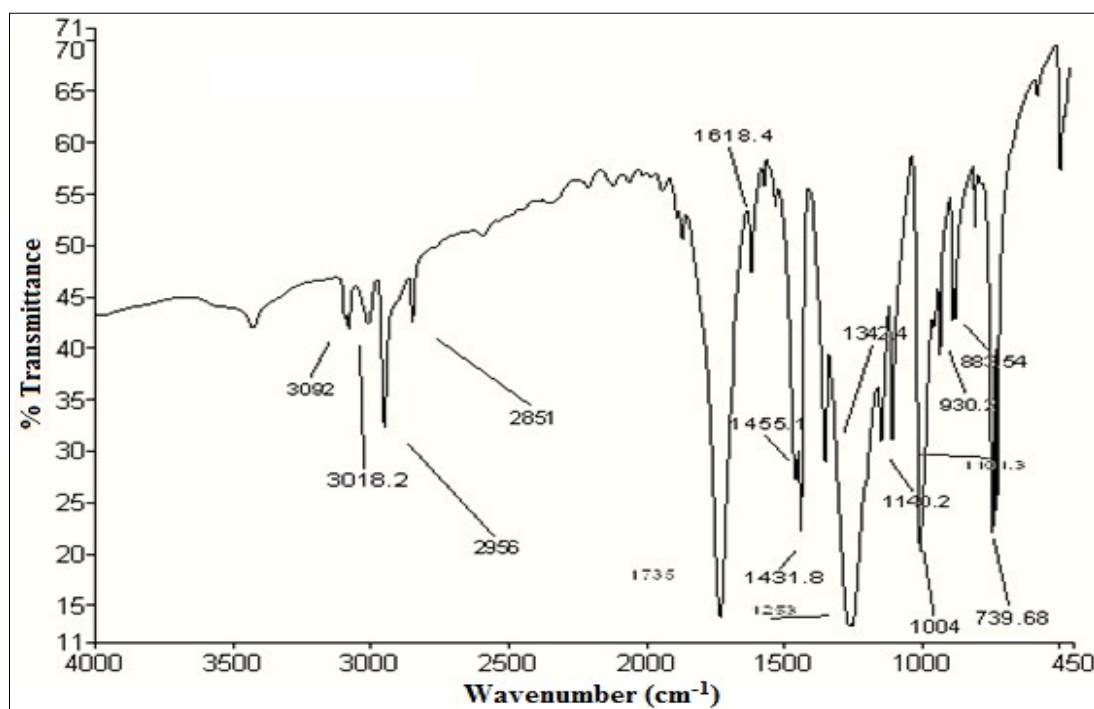


Fig. S2. FTIR spectra of TTDMM [33]

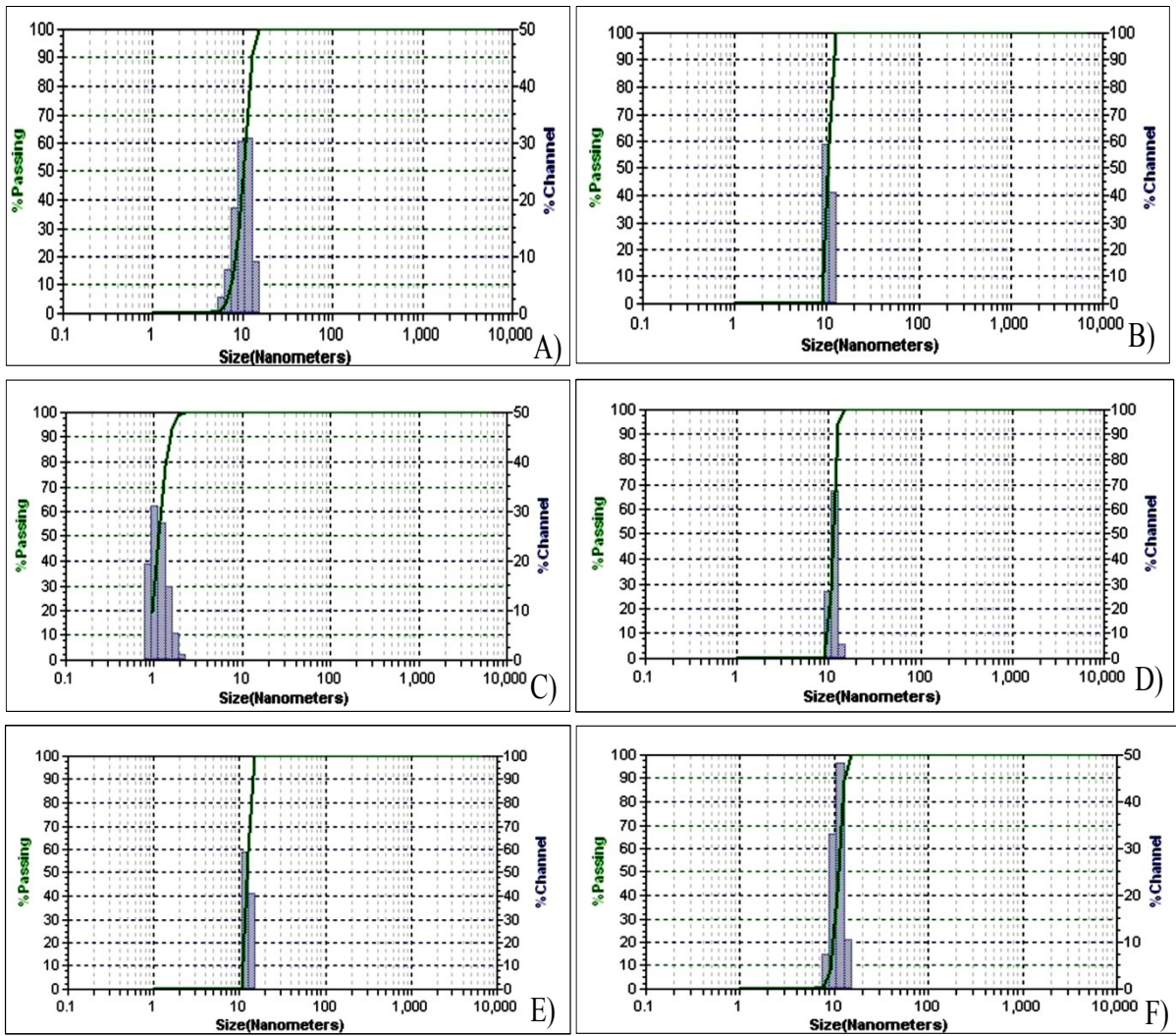


Fig. S3. Size distribution of A) MNPs, B) MAD, C) SB, D) SB-MAD, E) MTX and F) MTX-MAD using DLS

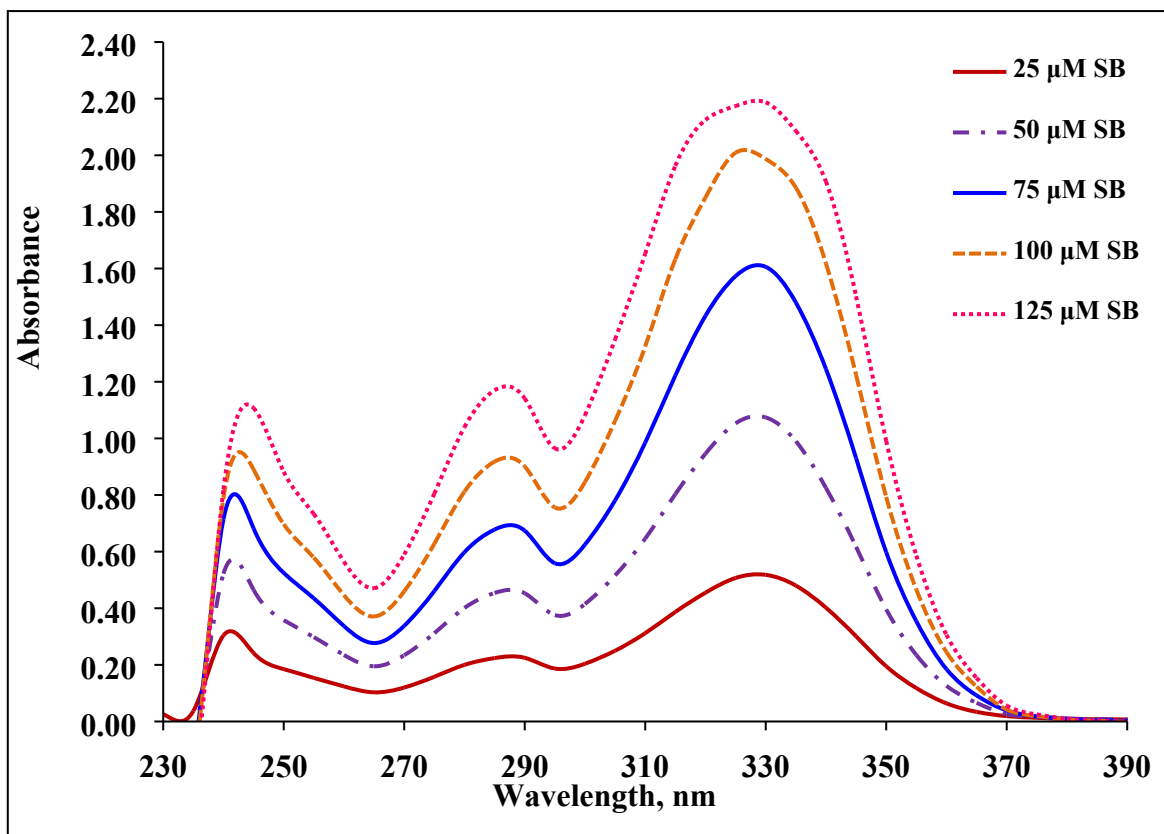


Fig. S4. UV-Vis absorbance spectra of SB

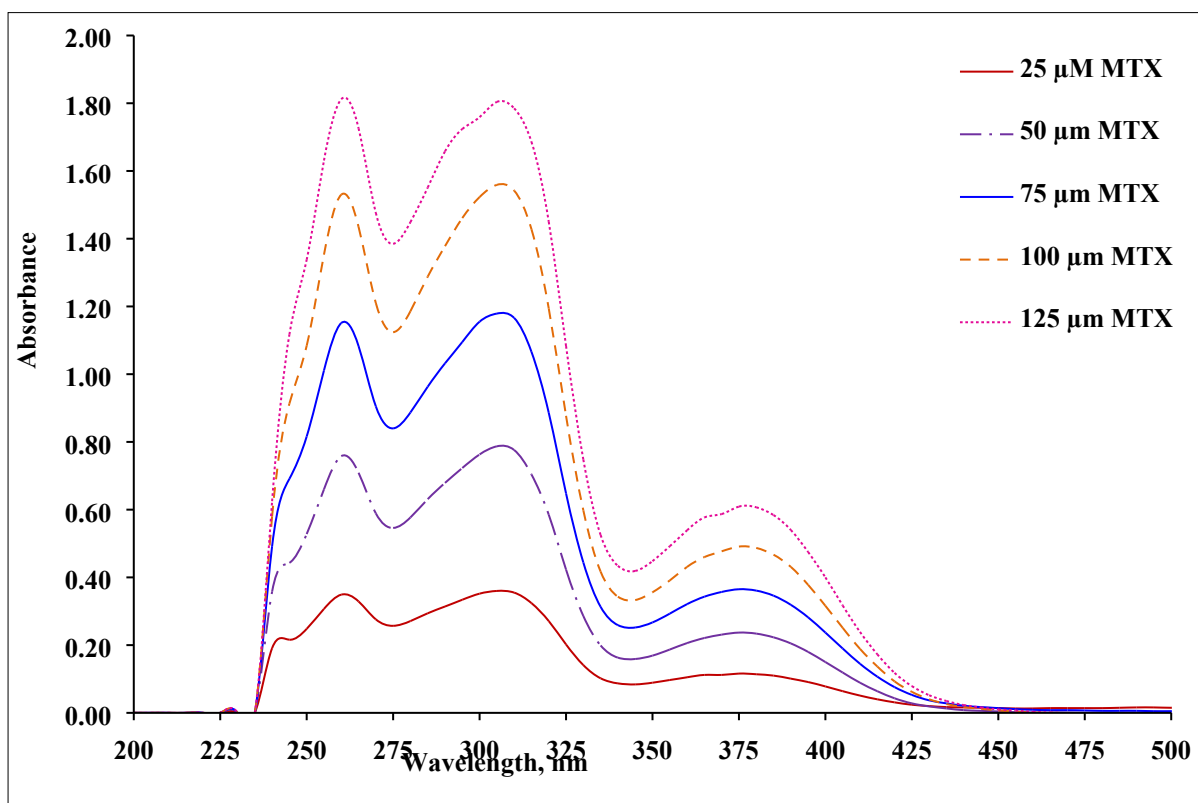


Fig. S5. UV-Vis absorbance spectra of MTX

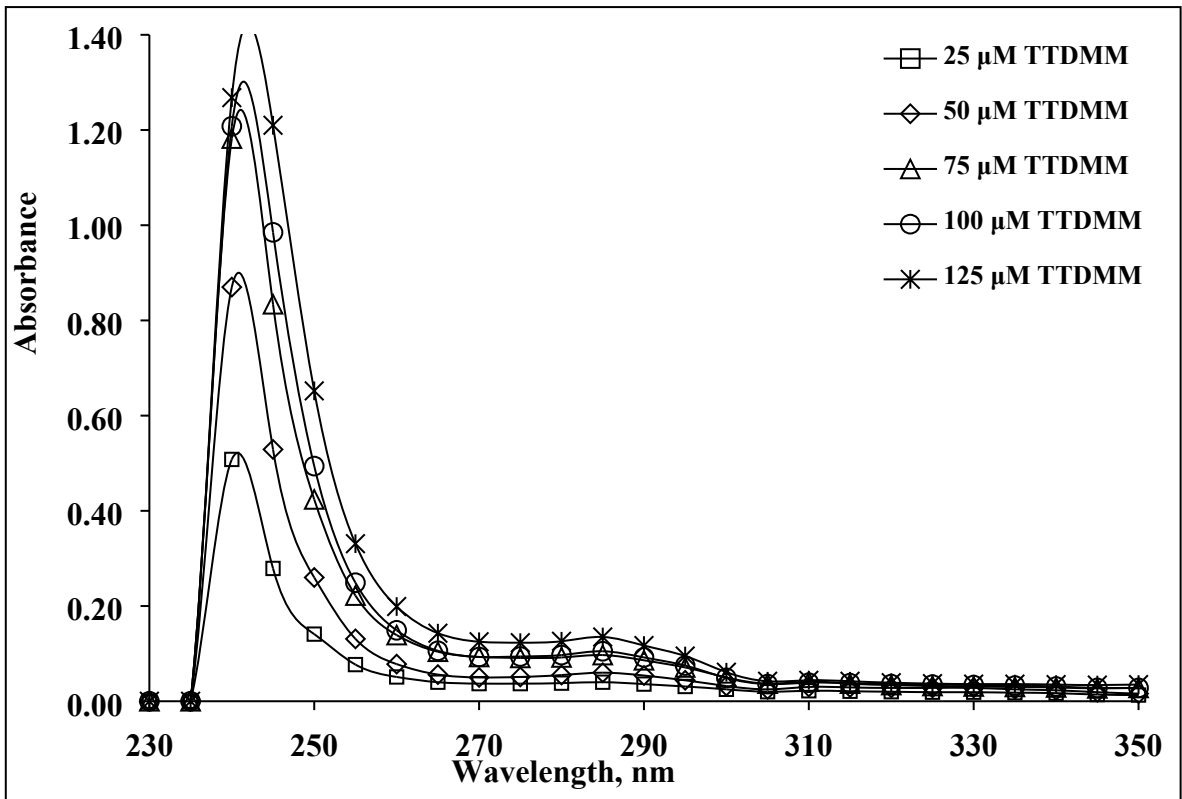


Fig. S6. UV-Vis absorbance spectra of TTDMM

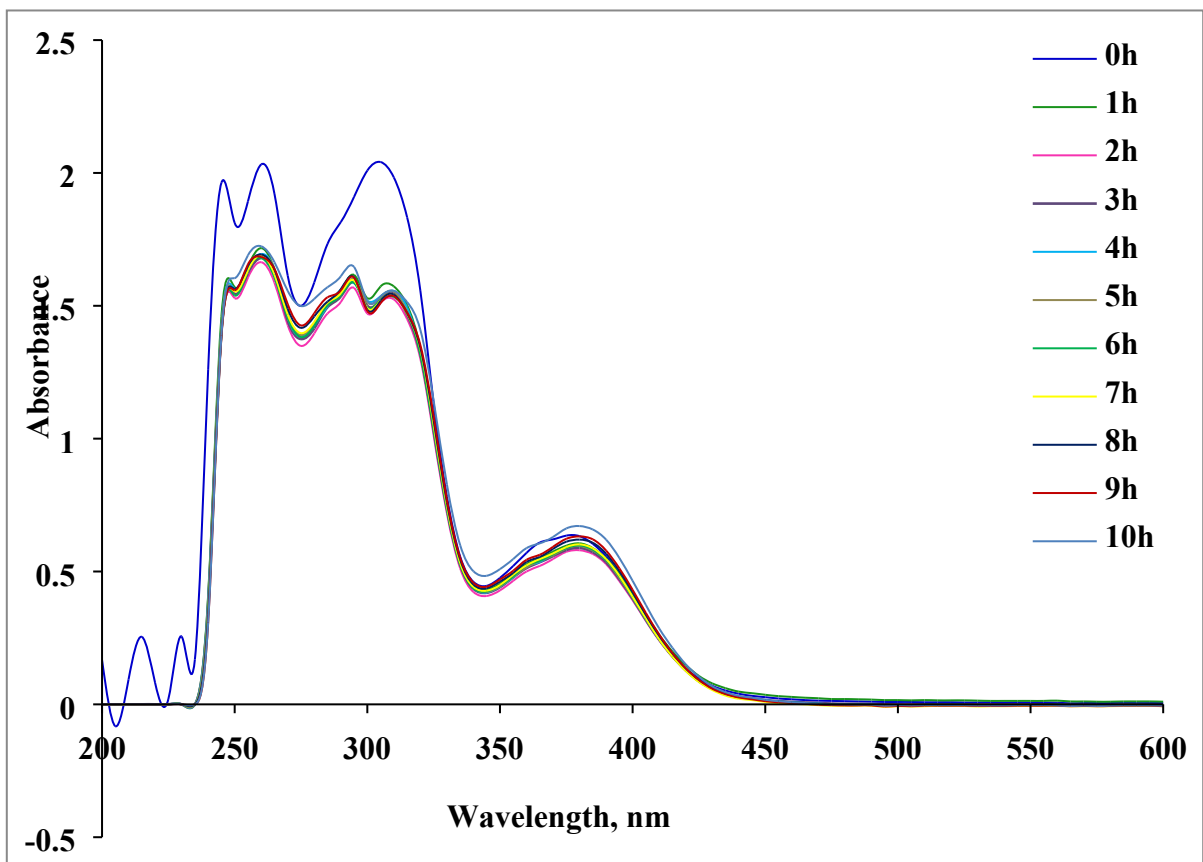


Fig. S7. UV-Vis absorbance spectra of MTX-TTDMM

**Table S1.** Absorbance for SB and MTX released at 0 to 10h at characteristic  $\lambda_{\max}$  from SB-MAD and MTX-MAD.

| Time<br>(h) | SB-MAD |       |       | MTX-MAD |       |       |
|-------------|--------|-------|-------|---------|-------|-------|
|             | 245    | 285   | 330   | 260     | 305   | 380   |
| 0           | 0.119  | 0.176 | 0.140 | 1.790   | 1.742 | 0.509 |
| 1           | 0.247  | 0.380 | 0.451 | 1.772   | 1.695 | 0.486 |
| 2           | 0.257  | 0.453 | 0.590 | 1.752   | 1.668 | 0.486 |
| 3           | 0.271  | 0.490 | 0.637 | 1.752   | 1.662 | 0.483 |
| 4           | 0.279  | 0.586 | 0.786 | 1.726   | 1.638 | 0.479 |
| 5           | 0.319  | 0.657 | 0.892 | 1.747   | 1.652 | 0.483 |
| 6           | 0.341  | 0.715 | 0.921 | 1.712   | 1.627 | 0.482 |
| 7           | 0.326  | 0.679 | 0.995 | 1.730   | 1.642 | 0.489 |
| 8           | 0.382  | 0.774 | 1.039 | 1.719   | 1.635 | 0.483 |
| 9           | 0.396  | 0.795 | 1.157 | 1.717   | 1.633 | 0.491 |
| 10          | 0.429  | 0.830 | 1.190 | 1.703   | 1.623 | 0.489 |

**Table S2.** The SB ( $\lambda_{\max}$  330 nm) and MTX ( $\lambda_{\max}$  260 nm) release (%) at 0 to 10 h from the TTDMM<sup>[33]</sup>, SB-MAD and MTX-MAD in PBS buffer at 37 °C

| Time<br>(h) | SB % release |       | MTX % release |       |
|-------------|--------------|-------|---------------|-------|
|             | TTDMM*       | MAD   | TTDMM         | MAD   |
| 0           | 03.95        | 0.58  | 63.60         | 56.03 |
| 1           | 38.93        | 12.37 | 53.74         | 55.46 |
| 2           | 45.38        | 16.19 | 52.08         | 54.99 |
| 3           | 44.94        | 17.48 | 52.58         | 54.84 |
| 4           | 46.04        | 21.56 | 53.05         | 54.02 |
| 5           | 44.86        | 24.47 | 52.77         | 54.68 |
| 6           | 46.86        | 25.27 | 52.58         | 53.58 |
| 7           | 50.21        | 27.30 | 52.90         | 54.15 |
| 8           | 49.11        | 28.50 | 52.99         | 53.80 |
| 9           | 52.89        | 31.74 | 52.71         | 53.74 |
| 10          | 52.51        | 32.65 | 53.96         | 53.30 |

\*Reported in reference [33]