

Supplementary Materials

Encapsulation of Vitamin C by Glycerol-Derived Dendrimers, Their Interaction with Biomimetic Models of *Stratum corneum* and Their Cytotoxicity

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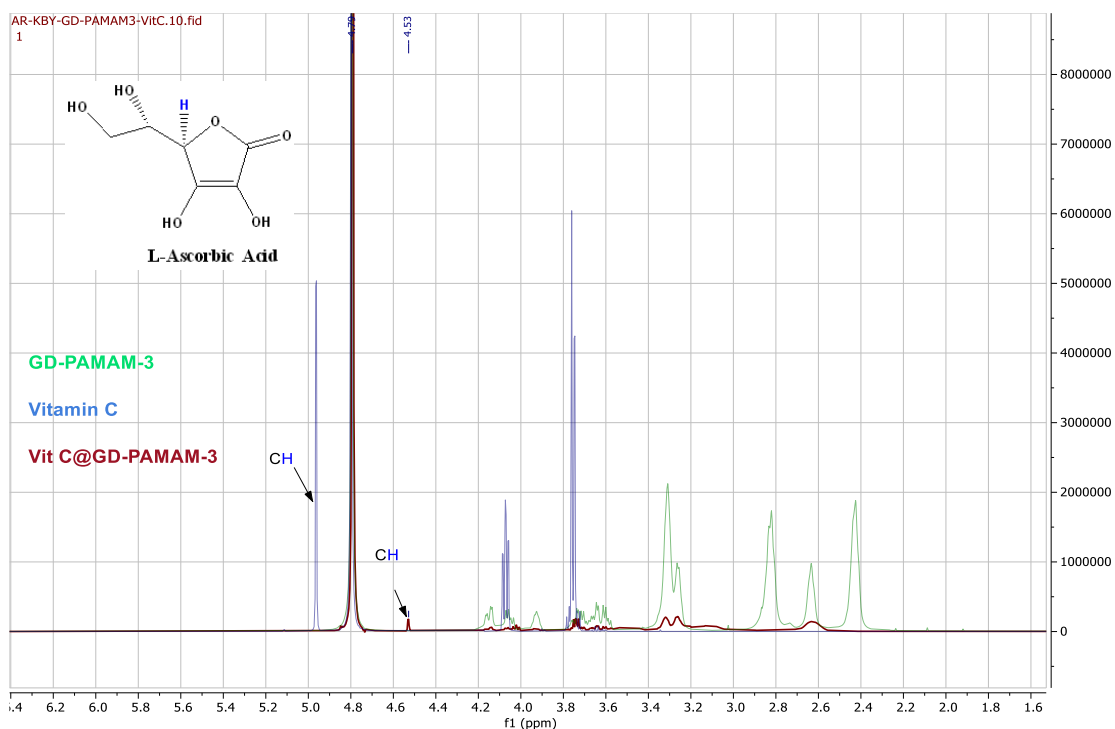


Figure S1. ¹H NMR of GD-PAMAM-3 (green), Vitamin C (blue) and Vit C@GD-PAMAM-3 (red) in D₂O.

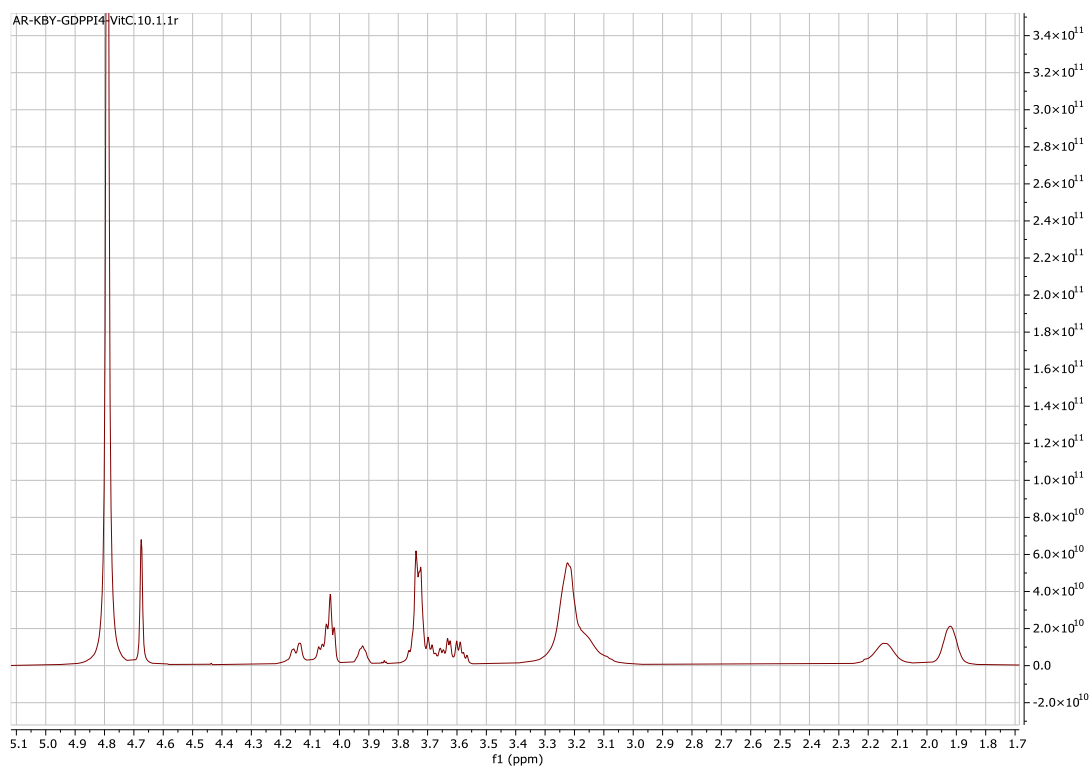


Figure S2. ^1H NMR of Vit C@GD-PPI-4 in D_2O .

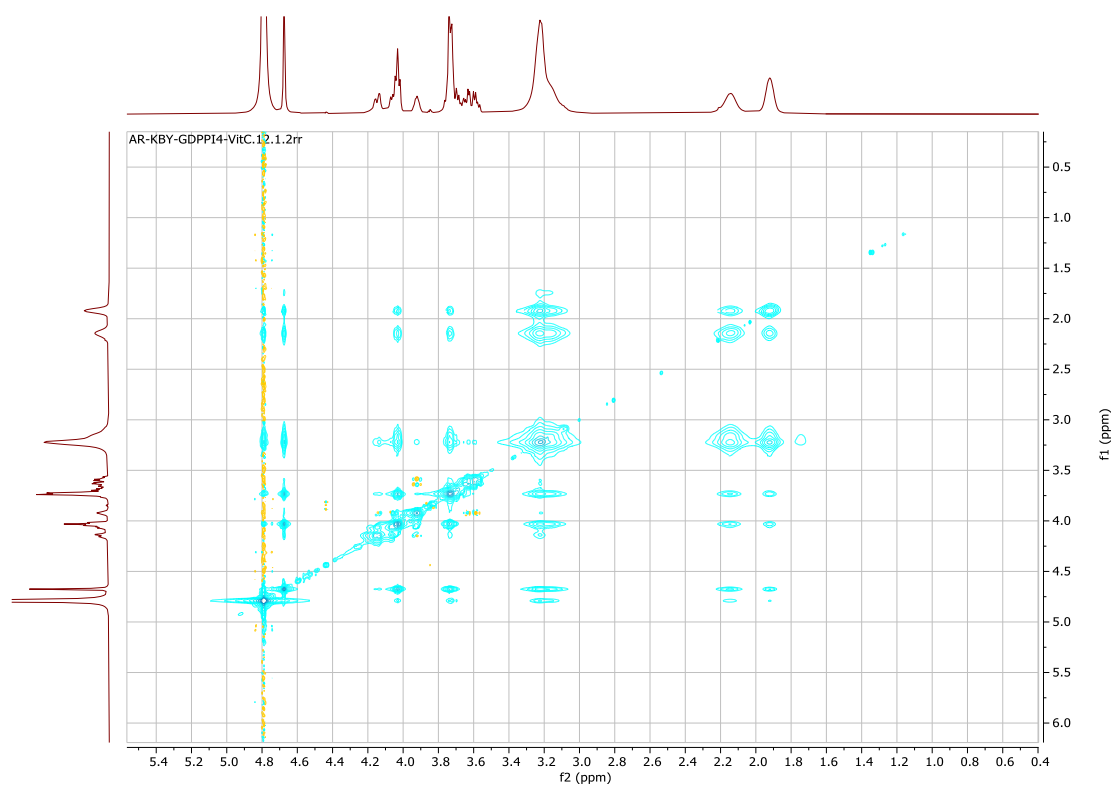


Figure S3. Vit C@GD-PPI-4 NOESY NMR shows NOE interactions between the protons of vitamin C (3.73, 4.03 and 4.64 ppm) with those of the GD-PPI-4 (1.92, 2.14 and 3.22 ppm) in D_2O .

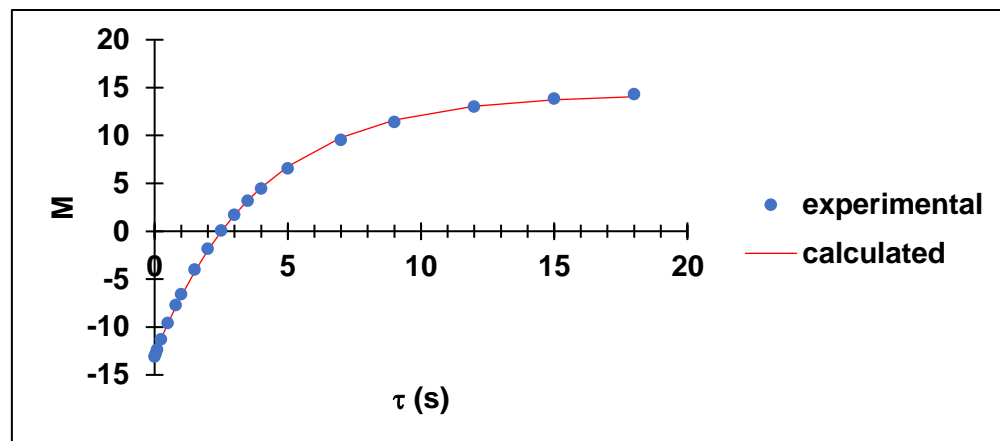


Figure S4. T₁ measurements of free Vitamin C: Experimental (blue dot) and calculated (red line) determination of T₁ for the ¹H (at 4.95 ppm which have the biggest value of T₁) of free Vitamin C by inversion-recovery pulse sequence. We fit the curve by $M = M_0 \left(1 - k \exp\left(\frac{-\tau}{T_1}\right) \right)$ where M is the magnetization, M_0 is the magnetization at $\tau = 0$ s, τ is the delay between the 180° and 90° pulses, and k is the efficiency of 180° pulse (if we have 180° pulse, we must have $k = 2$). We find $M_0 = 14.3$, $k = 1.9$ and $T_1 = 3.9$ s by this NMR sequence with 30 s of recycle delay (delay $> 5 \times T_1$).

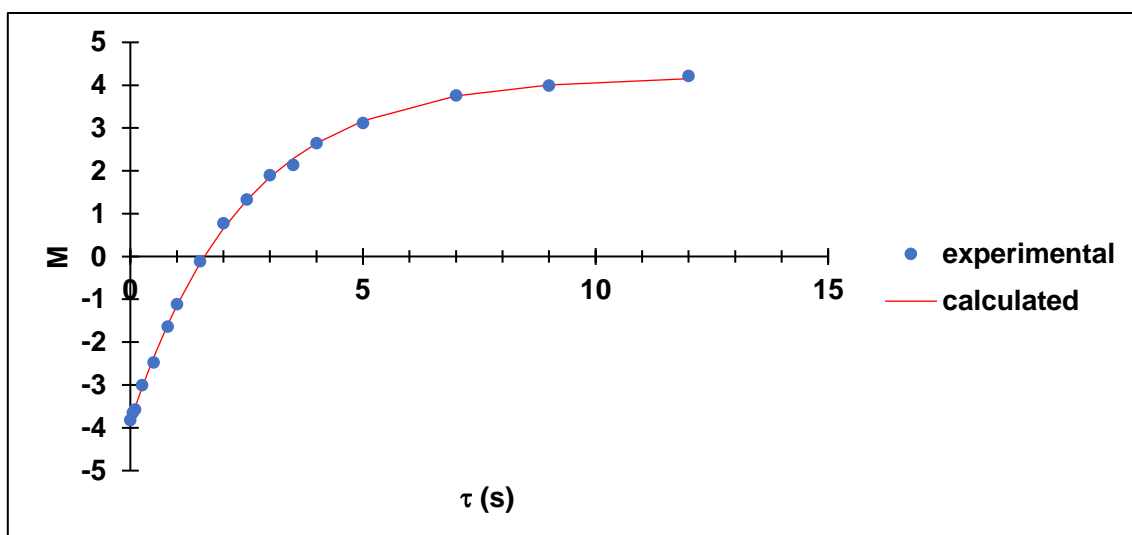


Figure S5. T₁ measurements of Vitamin C with GD-PAMAM3: Experimental (blue dot) and calculated (red line) determination of T₁ for the ¹H (at 4.53 ppm which have the biggest value of T₁) of Vitamin-C with GD-PAMAM3 by inversion-recovery pulse sequence. We find $M_0 = 4.2$, $k = 1.91$ and $T_1 = 2.45$ s by this NMR sequence with 40 s of recycle delay (delay $> 5 \times T_1$).

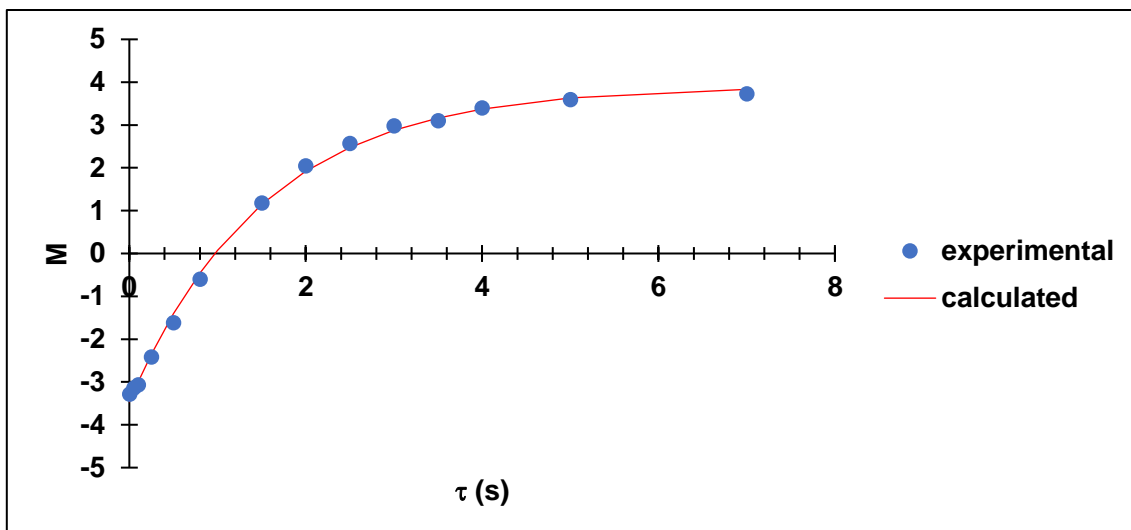


Figure S6. T₁ measurements of Vitamin C with GD-PPI4: Experimental (blue dot) and calculated (red line) determination of T₁ for the ¹H (at 4.68 ppm which have the biggest value of T₁) of Vitamin C with GD-PPI4 by inversion-recovery pulse sequence. We find $M_0 = 3.9$, $k = 1.89$ and $T_1 = 1.5$ s by this NMR sequence with 40 s of recycle delay (delay $> 5 \times T_1$).

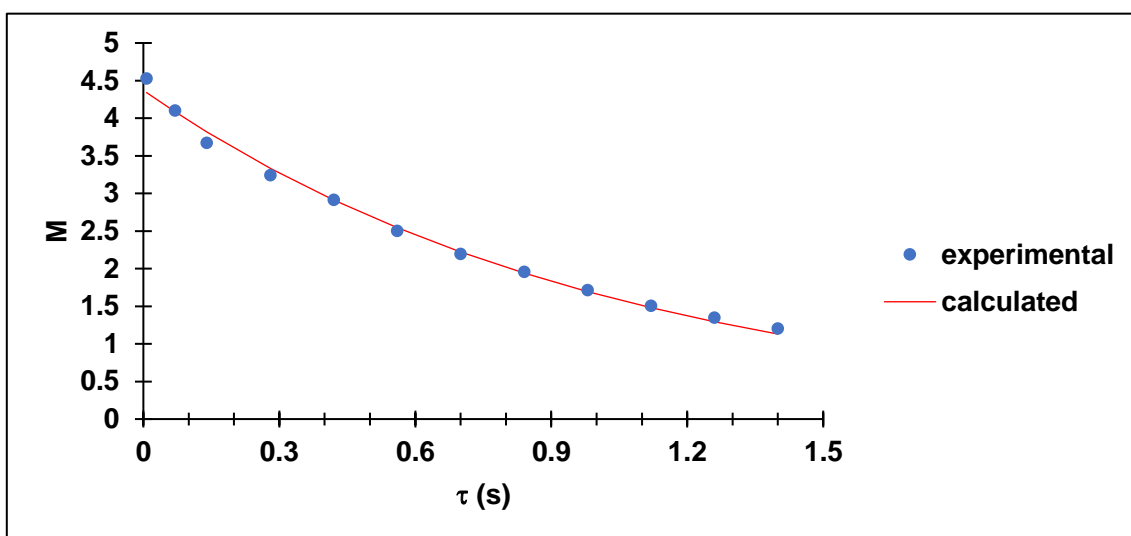


Figure S7. T₂ measurements of free Vitamin C: Experimental (blue dot) and calculated (red line) determination of T₁ for the ¹H (at 4.08 ppm) of free Vitamin C by CPMG pulse sequence. We fit the curve by $M = M_0 \exp\left(\frac{-\tau}{T_2}\right)$ where M is the magnetization, M_0 is the magnetization at $\tau = 0$ s, and τ is the delay between the 90° pulse and the beginning of signal acquisition. We find $M_0 = 4.37$ and $T_2 = 1.0$ s by this NMR sequence with 40 s of recycle delay

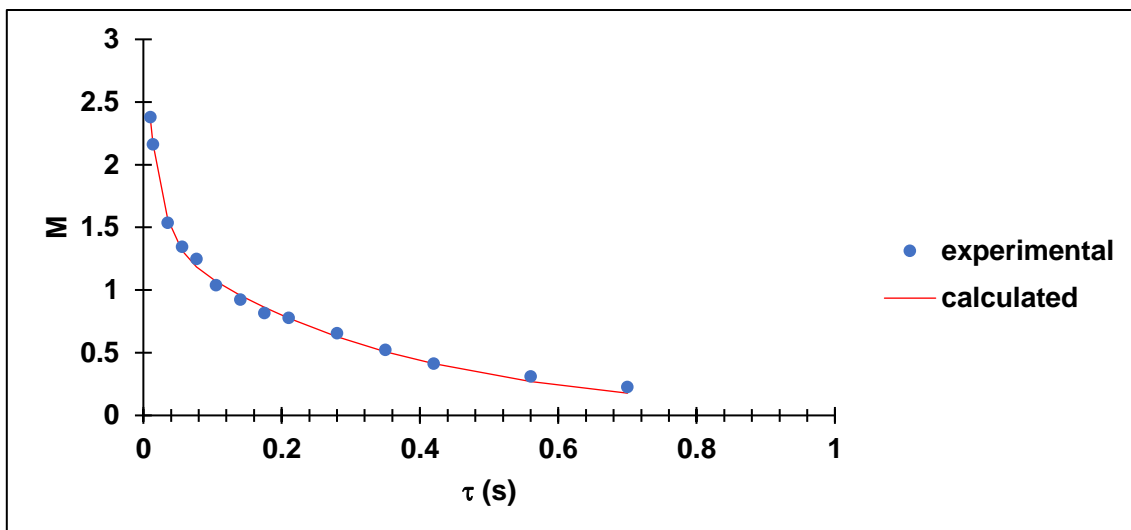


Figure S8. T₂ measurements of Vitamin C with GD-PAMAM3: Experimental (blue dot) and calculated (red line) determination of T₂ for the ¹H (at 4.05 ppm) of Vitamin C with GD-PAMAM3 by CPMG pulse sequence. There are two kind of signal (dendrimer and Vitamin-C) so we fit the curve by $M = k_d \times M_{0d} \times \exp\left(\frac{-\tau}{T_{2d}}\right) + k_v \times M_{0v} \times \exp\left(\frac{-\tau}{T_{2v}}\right)$ where subscripts *d* and *v* designate dendrimer and vitamin-C respectively. Finally, we find $k_v \times M_{0v} = 1.45$, and $T_2 = 0.33$ s by this NMR sequence with 40 s of recycle delay.

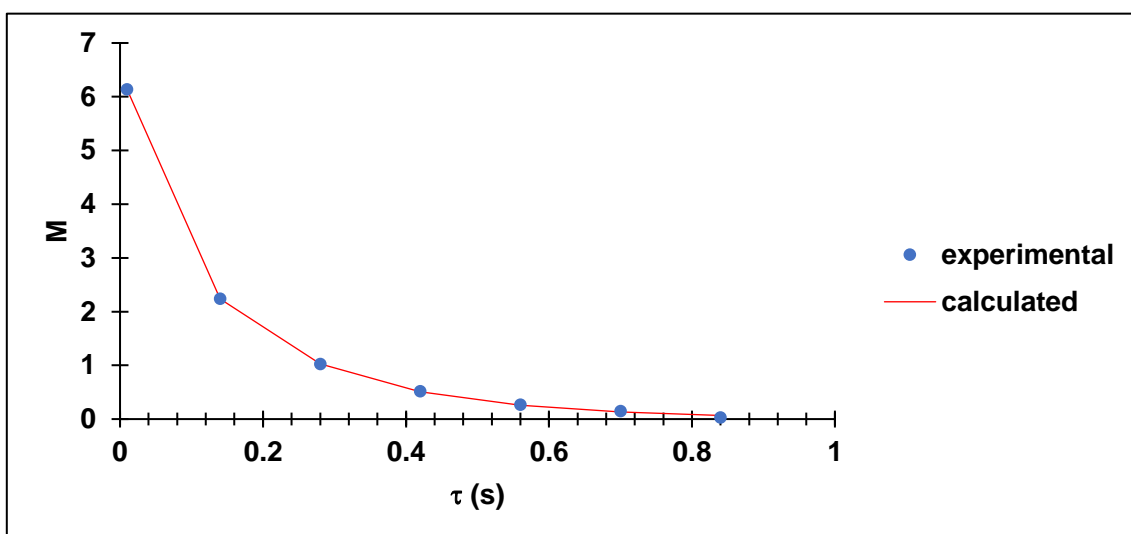


Figure S9. T₂ measurements of Vitamin C with GD-PPI4: Experimental (blue dot) and calculated (red line) determination of T₂ for the ¹H (at 4.15 ppm) of Vitamin-C with GD-PPI4 by CPMG pulse sequence. There are two kinds of signal (dendrimer and Vitamin-C). Finally, we find $k_v \times M_{0v} = 3.87$, and $T_2 = 0.20$ s by this NMR sequence with 10 s of recycle delay.

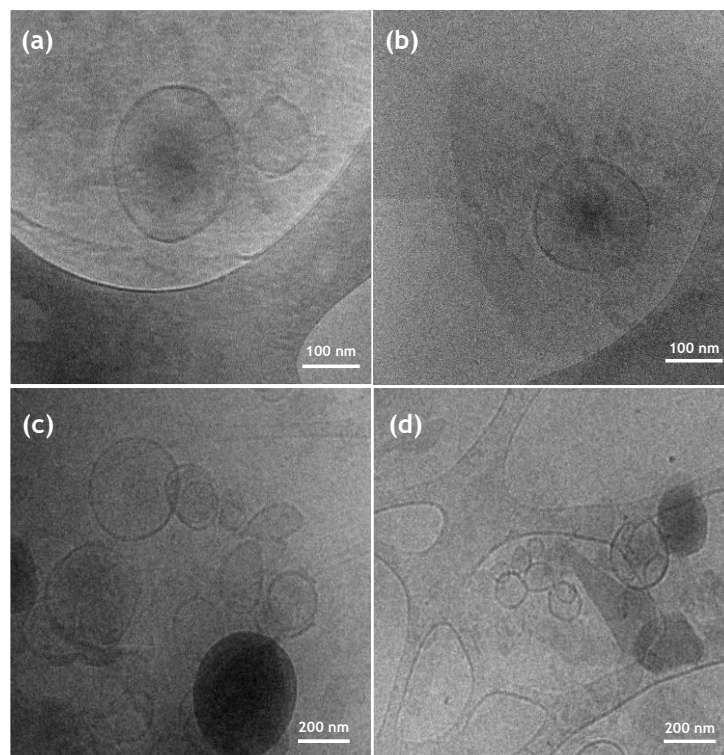


Figure S10. Cryo-TEM images of liposomes at 1.2 mM: (a) and (b) in absence of GD-PAMAM-3 showing few and isolated Large unilamellar vesicles (LUVs), (c) and (d) in presence of GD-PAMAM-3 at 0.48 μ M showing some liposome aggregation.