Electronic Supplementary Information (ESI)

Glucose triggered dissolution of phenylboronic acid functionalized cholesterol based niosomal self-assembly for tuneable drug release

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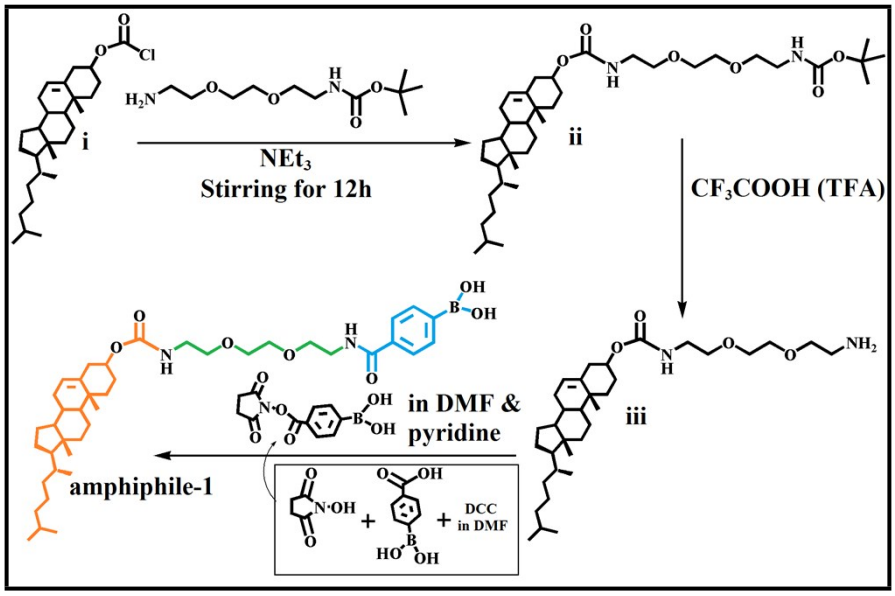

Scheme S1. Synthetic procedure for amphiphile-**1** and **2**.

^{1}H-NMR of amphiphile-1 (500 MHz, $CDCl_3$, 25 °C). δ /ppm = 0.84-1.83 (m, 39H, cholesteryl), 1.78-1.82 and 1.92-1.97 (m, 4H, allylic cholesteryl protons), 2.22-2.29 (broad, 2H, -$B(OH)_2$), 3.31-3.35 (m, 2H, Chol-CONH-C$\underline{H_2}$-CH_2-), 3.48-3.51 (m, 2H, PBA-CONH-C$\underline{H_2}$-CH_2-), 3.53-3.56 (m, 4H, O-C$\underline{H_2}$-C$\underline{H_2}$-O-), 3.66-3.72 (m, 4H, Chol-CONH-CH_2-C$\underline{H_2}$- and PBA-CONH-CH_2-C$\underline{H_2}$-), 4.30-4.45 (m, 1H, -C$\underline{H}$-O-(CO)- of cholesteryl proton), 5.32-5.34 (t, 1H, vinylic proton of cholesteryl group); 7.72-7.88 (m, 4H, phenyl ring of PBA); (Elemental analysis calculated (%) for $C_{41}H_{65}BN_2O_7$: C, 69.48; H, 9.24; N, 3.95; found: C, 69.52; H, 9.26; N, 3.93. MS (ESI): m/z calculated for $C_{41}H_{65}BN_2O_7$: 708.78; found: 731.76 [$M^+ + Na^+$].

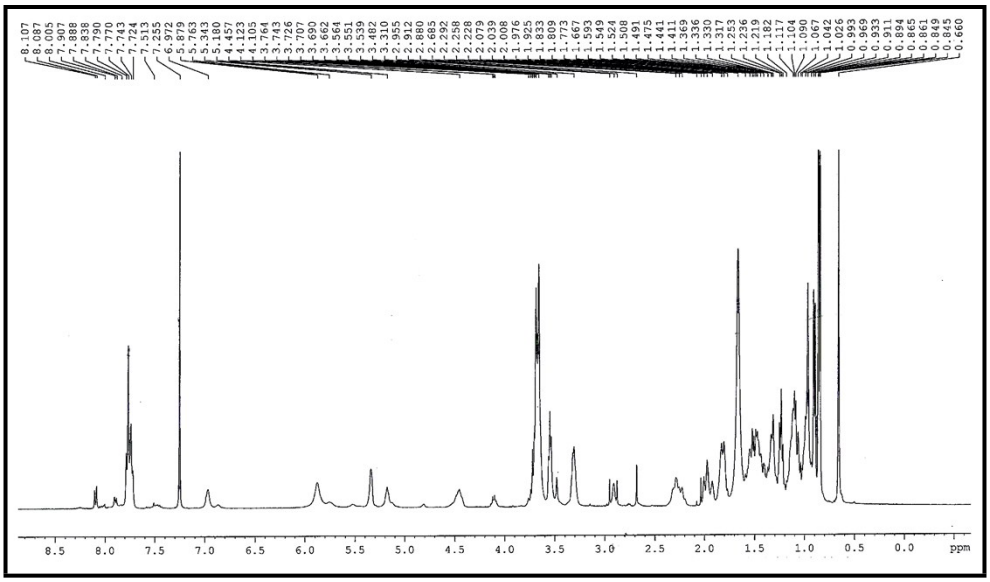

Fig. S1. ^{1}H-NMR spectra of amphiphile-**1** in $CDCl_3$

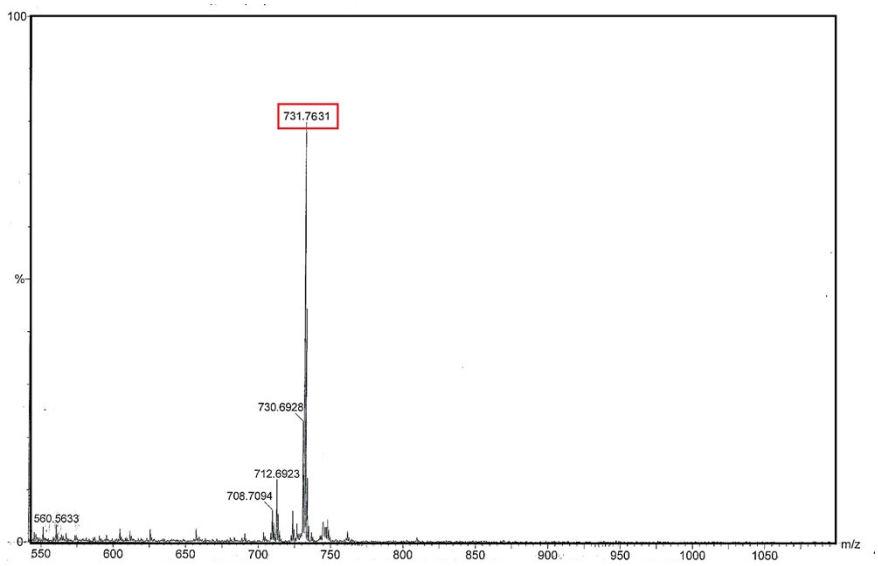

Fig. S2. HRMS spectra of amphiphile-**1**.

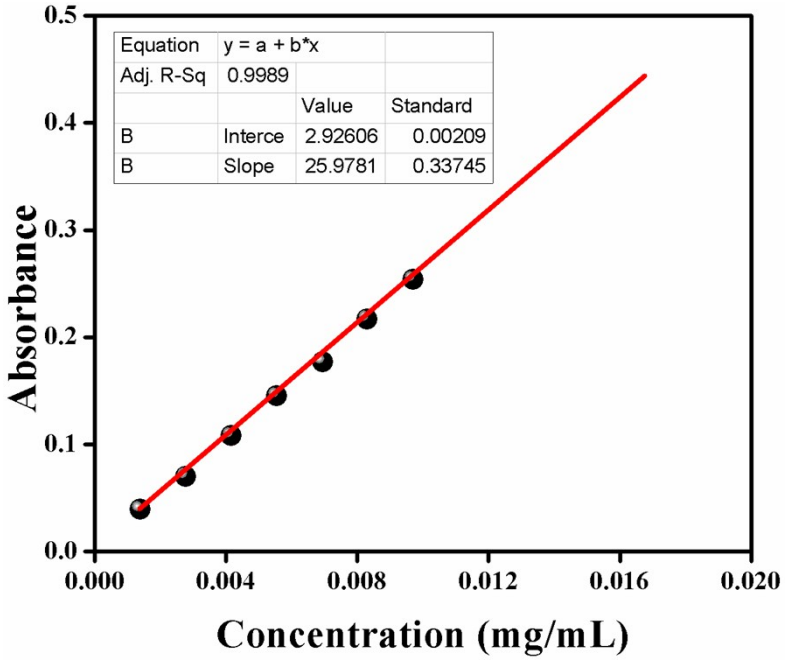

Fig. S3. Absorbance vs concentration calibration curve of insulin taken in aqueous PBS buffer of pH=7.4.

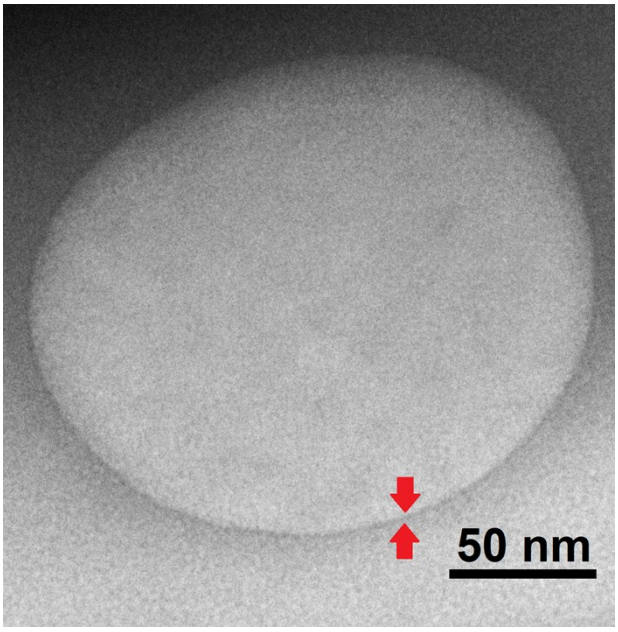

Fig. S4. Magnified HR-TEM image of vesicle showing ~2-3 nm thickness of the vesicular wall.

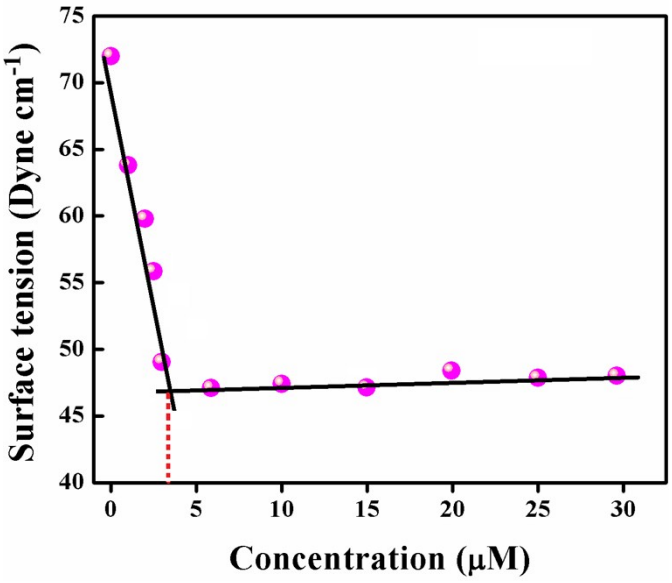

Fig. S5. Measurement of Critical aggregation concentration (CAC) of vesicular solution of **1** from surface tension vs concentration plot.

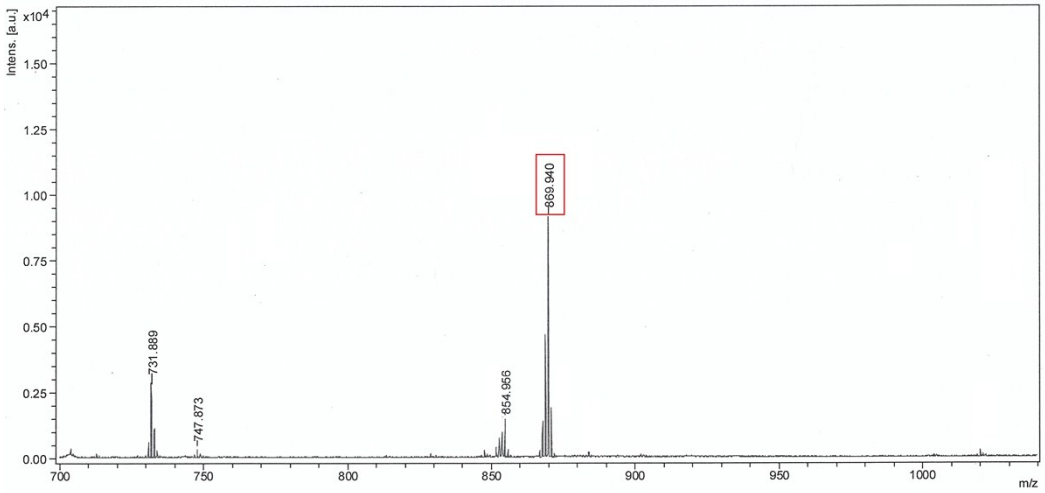

Fig. S6. MALDI of amphiphile-**1**+glucose

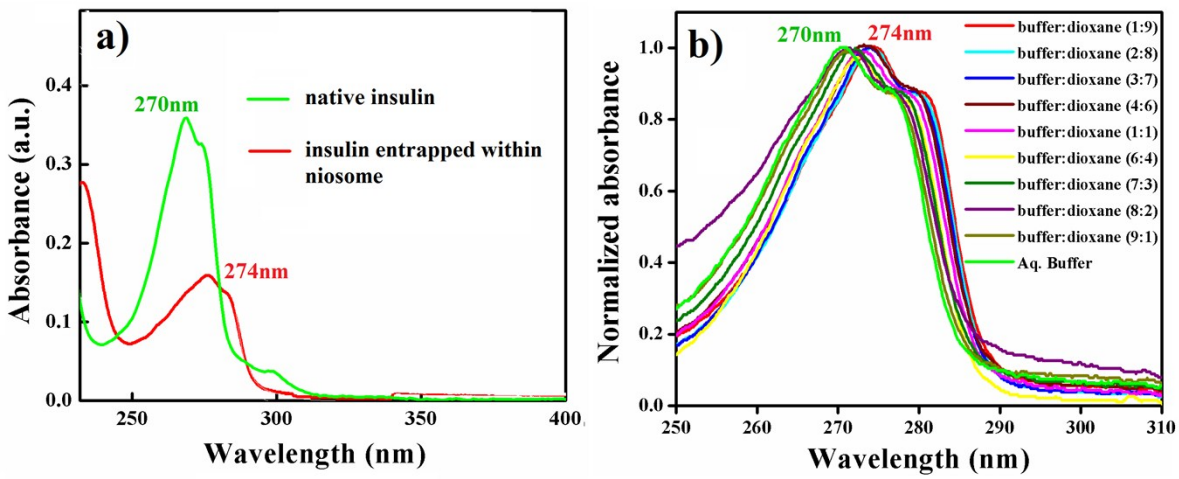

Fig. S7. (a) UV absorbance spectra of native insulin taken in aqueous PBS buffer (pH=7.4) and insulin entrapped within the niosome **N1**; (b) Normalized UV absorbance spectra of insulin taken in aqueous PBS buffer (pH=7.4) and 1,4-dioxane binary solvent mixture at different composition (with varied polarity).

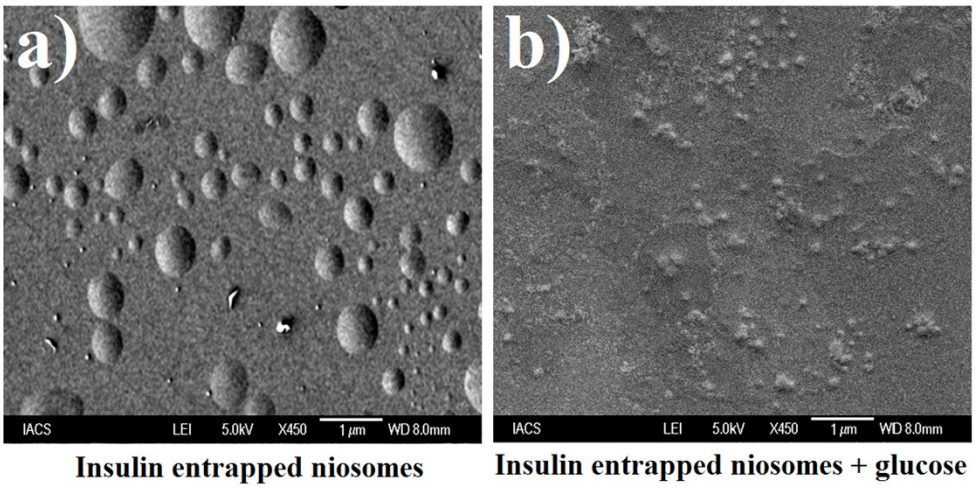

Fig. S8. FESEM images of insulin loaded niosomal self-assembly **N1** (a) in absence and (b) in presence of glucose.

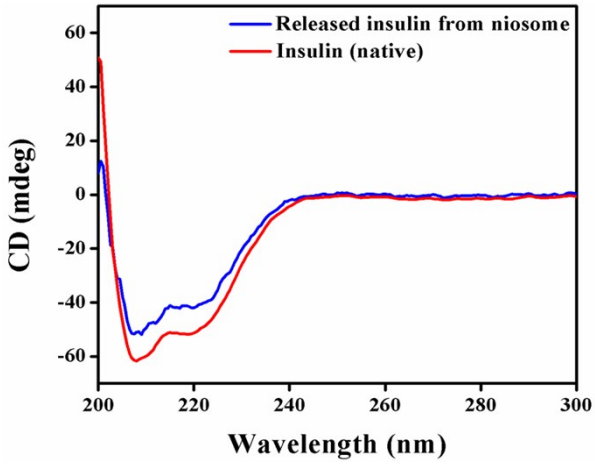

Fig. S9. CD spectra of free insulin and released insulin after glucose treatment of the niosome-insulin conjugate.