Supplementary Information

A Novel Injectable pH-Temperature Sensitive Hydrogel Contained Chitosan-Insulin Electrosprayed Nanospheres Composites As Insulin Delivery System In Type I Diabetes Treatment

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Figure S1. $^1$H NMR spectra of (A) SSA, (B) PLA-PEG-PLA, and (C) PeCo1 copolymers.
Figure S2. SEM images of electrosprayed CINs and the CINs size distribution

\[ C_{\text{Chitosan}} = 3.25\% \; \; U = 12\, \text{kV} \; \; Q = 0.2\, \text{ml/h} \; \; L = 12.5\, \text{cm} \; \; \text{Insulin} = 20\% \, \text{wt.} \]
Figure S3. SEM images of electrosprayed CINs incubated in PBS pH 7.4 (0.5 wt% tween 20) at 37 °C for 24h, 4d, 8d, 12d, 16d.

Figure S4. Size distribution of pentablock copolymer micelles in PBS pH 7.4
Figure S5. Schematic concept of hydrogels-CINs composite injection and the release of insulin in molecular scale (A) Copolymer solution containing CINs. (B) Hydrogel-CINs composite matrix. (C) Degradation of matrix and the release of CINs. (D) The release of insulin
Figure S6. GPC results of (A) Triblock copolymer PLA-PEG-PLA (PEG/PLA=1/2) (B) Triblock copolymer PLA-PEG-PLA (PEG/PLA=1/2.4) (C) Pentablock copolymer PeCo1 (D) Pentablock copolymer PeCo2 (E) Pentablock copolymer PeCo3