biomedicines

Co-Microencapsulation of Islets and MSC CellSaics, Mosaic-Like Aggregates of MSCs and Recombinant Peptide Pieces, and Therapeutic Effects of Their Subcutaneous Transplantation on Diabetes

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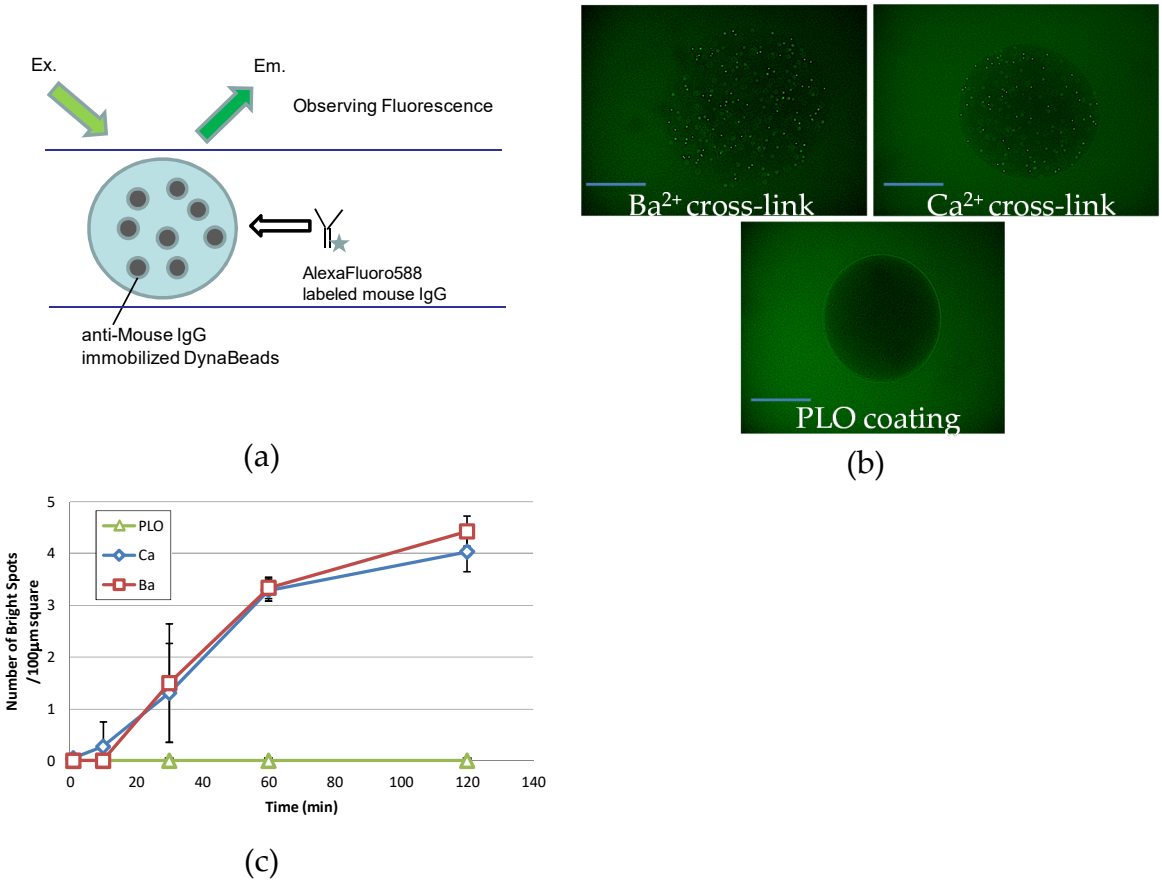


Figure S1. IgG blocking performance of alginate microcapsules with different cross-linking agents. (**a**) The method for measuring the IgG blocking performance of microcapsules. anti-mouse IgG-immobilized DynaBeads are encapsulated in microcapsules, and when AlexaFluoro588-modified mouse IgG enters from outside, it accumulates on DynaBeads and is observed fluorescently. (**b**) Fluorescence microscopy images after 120 min of injection of fluorescence-modified IgG (top left of photo) Ba^{2+} cross-linked microcapsules (top right) Ca^{2+} cross-linked microcapsules and (bottom) poly-L-ornithine cross-linked capsules. Scale bars indicate 300 μm. (**c**) The time course of the number of fluorescing magnetic particles per unit area. Each was conducted with $n = 3$, and each plot represents a mean value ± standard deviation.

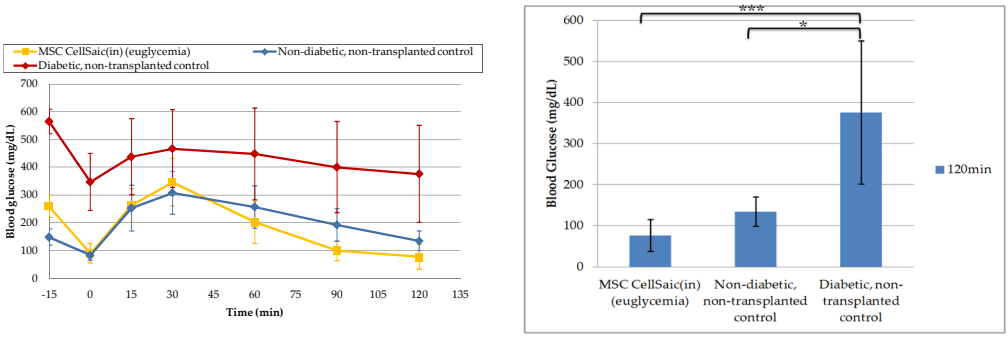


Figure S2. IGPTT of MSC CellSaic(in) (euglycemia). IPGTT were conducted on euglycemic 3 mice 28 days after subcutaneous transplantation of MSC CellSaic(in). Mice were fasted overnight prior to receiving an intraperitoneal glucose solution (2g/kg). (**a**) Blood glucose levels were evaluated before injection (-15 min), at baseline (time 0 min), 15, 30, 60, 90 and 120 min post-injection. Non-deabetic, non-transplanted control (n = 20), Diabetic, non-transplanted control (n = 7), (**b**) 120 minutes after glucose injection, blood glucose level from 'Cell Saic(in)(euglymemia)' and 'non-diabetic, non-transplanted control' had a significant difference in that from 'diabetic, non-transplanted control'.

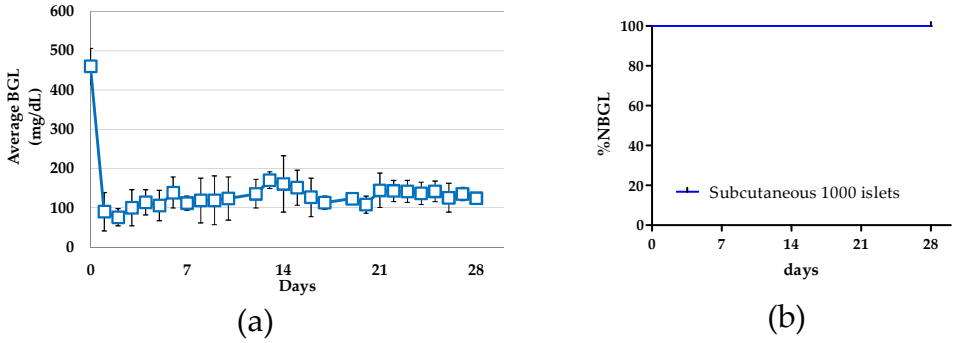
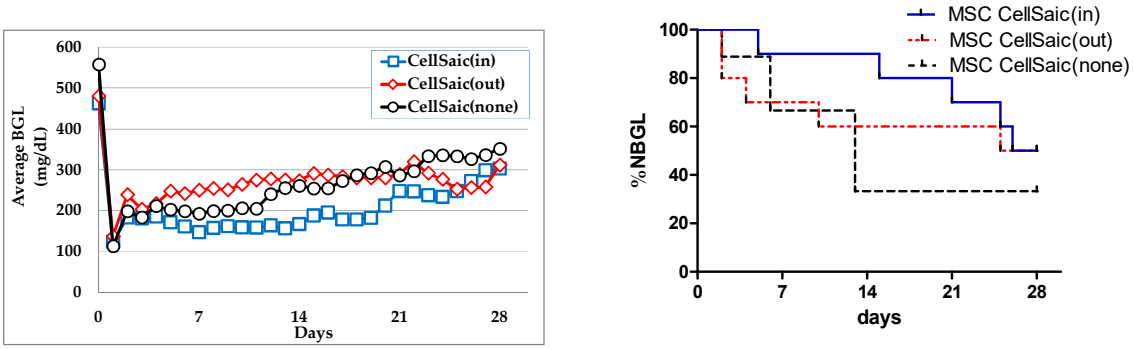


Figure S3. Blood glucose levels in subcutaneous transplantation of CellSaic(in) in a diabetic NOD/SCID mouse models CellSaic(in) containing 1000 islets were transplanted (n = 4). (**a**) Average BGL. (**b**) %NGBL.



(a) (b)

Figure S4. Intraperitoneal transplantations of MSC CellSaic(-), MSC CellSaic(out), and MSC CellSaic(in) microcapsules into diabetic balb/c mice and following monitoring. (**a**) Average BGL of 500 islets transplantation(MSC CellSaic(-)○: n = 9, MSC CellSaic(out): ◇:n = 10, MSC CellSaic(in): □:n = 10). (**b**) %NBGL of 500 islets transplantation (MSC CellSaic(-): dashed line, MSC CellSaic(out): dotted line, MSC CellSaic(in): solid line).