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CELL SURFACE GLYCO-ENGINEERING TECHNIQUE FOR TARGET CELL DELIVERY

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SUMMARY

Numerous promising results are evolving in clinical trials specifically on stem cell-based therapy. However, the engraftment and low homing of the injected cells to specific damage tissue continues to be a problem. Optimizing cellular glyco-engineering can address this limitation, which enable the targeting of stem cells to specific damage tissues. Studies were performed to assess the effect of temperature, time, lipid concentration on the cell surface intercalation of PPG onto MSCs. Differentiation status or proliferative ability of these cells also were evaluated. Mesenchymal stem cell (MSC) from consented patients were cultured and intercalate the cell membranes with palmitated protein G (PPG; 20 - 200 µg/ml) followed by incubation with FITC-conjugated human IgG (antibody) solution. Studies were performed to assess the effect of temperature and incubation time for intercalation of PPG and antibody onto MSC (PPG-MSC). Stem cell properties, proliferation ability and attachment of MSC were evaluated after the intercalation process. Results demonstrate that the number of intercalation of PPG onto the MSC surface at 37^0C was significantly high compared to the room temperature (RT) and PPG concentration at 150µg/ml was the optimum concentration shown. Incubation time of PPG on the MSC surface was further evaluated and data has shown that 2 hours of incubation time was optimum condition for intercalation process. Furthermore, this process does not affect the growth kinetics of the cells and retained the MSC properties as well. These preliminary results suggested that intercalation of PPG and antibody onto MSC is a viable method for target cell delivery without affecting the properties of the cells.

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