Authors' response

We thank Deepa Bhartiya[1] for her interest in our article and the opportunity to clarify a number of points from our work[2].

The Figure of mesenchymal stem cells (Fig. 1A)[2], which we presented in our article was obtained at the time of adherence (P0) during the procedure of isolation/culturing of the mesenchymal stem cell. It is expected that some non-MSCs may also be present as these are derived from bone marrow. These cells were not characterized at P0 stage, as it has been previously reported that the expression of stemness marker and homogeneity of MSCs enhances with increasing passage number[3]. Therefore, the cultured cells were characterized after three passages for the expression of rat MSCs surface markers, and found high positivity of CD29 and CD54 (>99%) and absence of CD45 and CD34, indicating the negligible presence of non-MSCs cells. This shows that with prolonged culturing of MSCs, the numbers of non-specific cells are progressively reduced. Further, the isolated MSCs were shown to have high expression of CD29, which was absent in very small life embryonic (VSEL) stem cells[4], substantiating that the cells used for transplantation were preferentially MSCs. We scrolled the images, which obtained at different days of MSCs culturing, but failed to find VSEL type cells as pointed out by the author[1].

The mechanisms involved in improvement of glycaemic control after stem cells transplantation remains elusive. Existing data support the role of MSCs in regenerating the islet cells as well as facilitating the islet cell proliferation[5]. The role of VSELs in regeneration of β-cells as a part of procedure of MSCs culturing was unlikely in our study as we administered preferentially cell population of MSCs, though the possibility of STZ-induced mobilization of endogenous VSELs into the islets cannot be excluded[6]. Further, it was difficult to conclude in our study whether trans-differentiation or fusion of labelled stem cells with β-cells resulted in improved glycaemia due to experimental limitations.

Your suggestion of transplantation of stem cells directly into the pancreas rather than though rat-tail vein is impressive. This may be because direct transplantation of stem cells into the pancreas may be more effective to control hyperglycaemia than through peripheral route[7,8].

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