

## The Ability of Adipose Derived Mesenchymal Stem Cells for Diabetes Mellitus Type 2 Treatment

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**Abstract :** Diabetes mellitus type 2 (T2DM), also known as hyperglycemia, results from insulin resistance and relative insulin deficiency. Diabetes mellitus is the main cause of premature death, particularly among individuals under the age of 70 years old. Mesenchymal stem cells (MSCs) can release bioactive molecules that promote tissue repair and regeneration. Hence, in this research, we evaluated the potential of autologous adipose-derived mesenchymal stem cells (AD-MSCs) in 40 patients of phase I clinical trial in T2DM with various ages between 30-79 years. AD-MSCs are transferred through catheterization. MSCs were validated by measures of CD105+ and CD34- expression. The result showed that after AD-MSCs transplantation, blood glucose levels (fasting and 2-hour postprandial) and insulin levels were significantly decreasing. Besides that, the level of HbA1c significantly decreased after three months of AD-MSCs injection and increasing level of c-peptide after injection. Thus, we conclude that AD-MSCs injection has the potential for T2DM therapy.

**Keywords :** glucose, hyperglycemia, MSCs, T2DM

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