

Adult Mesenchymal Stem Cells in

DIABETES



NATURAL
TISSUE
REGENERATION

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MESENCCELL BIOTECH INTERNATIONAL

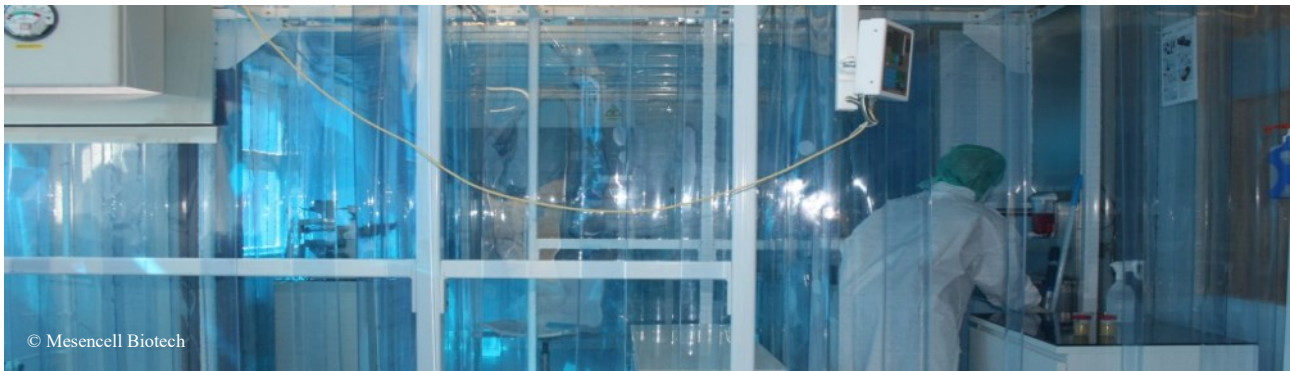
SAFETY

OF ADIPOSE-DERIVED MESENCHYMAL STEM CELLS

Safety of autologous and allogenic adipose-derived mesenchymal stem cells has been shown in numerous human clinical studies. ^{Ref.1,2}

Absence of toxicity of human adipose-derived mesenchymal stem cells was proven at a dose of 2.5×10^8 cells/kg body weight in mice. ^{Ref.1}

Absence of tumorigenicity of adipose-derived mesenchymal stem cells was proven. ^{Ref.1}



VARIOUS DIABETIC CONDITIONS

TREATED WITH MESENCHYMAL STEM CELLS

Mesenchymal Stem Cell Treatment of the Complications of Diabetes Mellitus:

Diabetic atherosclerosis (coronary and peripheral artery disease, stroke) ^{Ref. 4}

Diabetic retinopathy ^{Ref. 4}

Diabetic nephropathy ^{Ref.3,4}

Diabetic polyneuropathy ^{Ref. 3,4}

Diabetic wounds ^{Ref. 3}

Diabetic cardiomyopathy ^{Ref. 3}



INSULIN PRODUCING CELLS

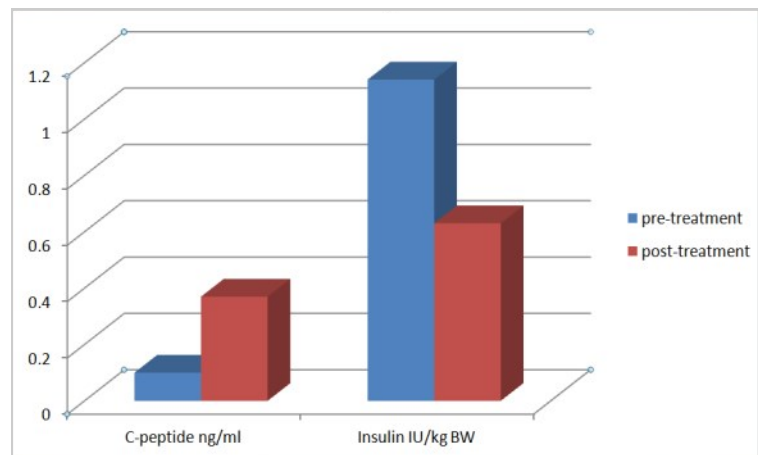
FROM MESENCHYMAL STEM CELLS

Transplantation of adipose-tissue derived insulin secreting mesenchymal stem cells in type I diabetes

Adipose-derived mesenchymal stem cells can differentiate into insulin producing cells. ^{Ref.5, 6}

Clinical trial: ^{Ref.6}

- IV injection into omental vein
- No side effects
- Decrease of insulin requirement
- Reduction of Hb1Ac
- Raise of serum c-peptide levels
- Resolution of diabetic ketoacidosis



Ref.6: 11 patients;

pre-treatment c-peptide serum levels of 0.1 ng/ml increased to 0.37 ng/ml

pre-treatment exogenous insulin requirement fell from 1.14 units/kg body weight/day to 0.63 units/kg BW/day

TREATMENT OF TYPE 2 DIABETES

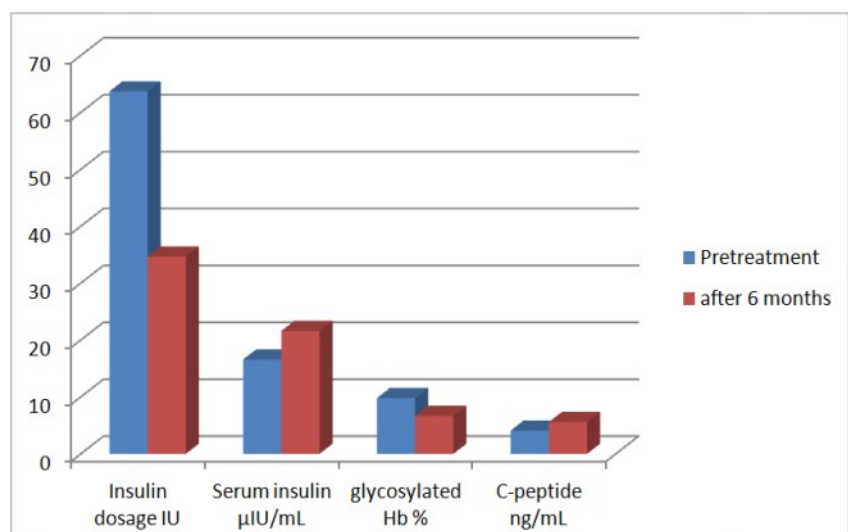
WITH MESENCHYMAL STEM CELLS

Mesenchymal stem cell infusion: a simple, safe and effective therapy of type 2 diabetes. ^{Ref.7}

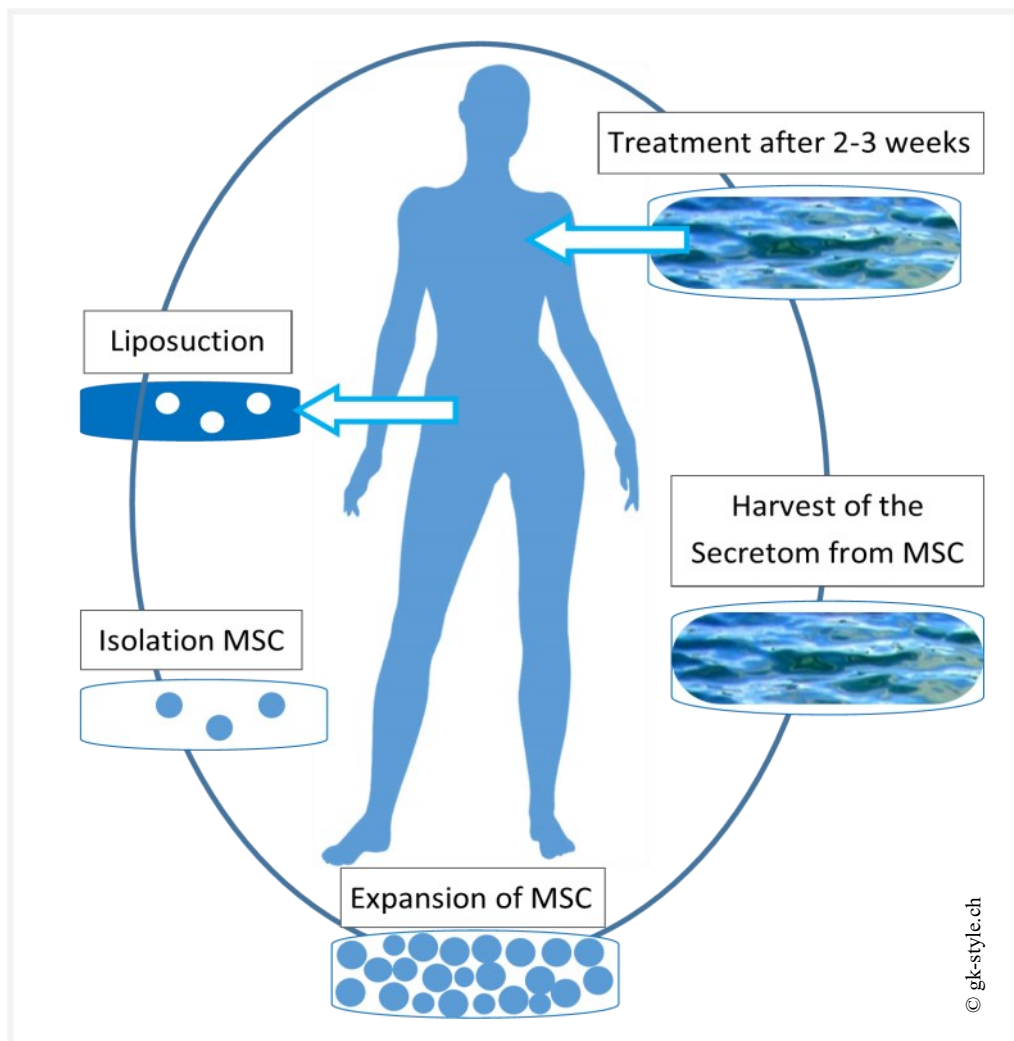
Ref.7.

10 patients treated with 3 monthly intravenous injections of mesenchymal stem cells (1.35×10^6 cells/kg BW):

- necessary insulin requirement from 63.7 IU (pretreatment) fell to 34.7 IU (after 6 months),
- serum insulin increased from 16.6 μ U/mL to 21.6 μ U/mL.
- levels of glycosylated hemoglobin fell from 9.8 % to 6.7% and
- levels of C-peptide rose from 4.12 ng/mL to 5.6 ng/mL during the six months examination period.



STEM CELL CYCLE



STAMP

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