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**ADIPOSE TISSUE-DERIVED STEM CELLS EMBEDDED WITH ENOS RESTORE CARDIAC FUNCTION IN ACUTE MYOCARDIAL INFARCTION MODEL**

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**Objective** This study assessed the potential therapeutic efficacy of endothelial NO synthases (eNOS)-expressing adipose tissue-derived stem cells (ADSCs) on infarcted hearts.

**Methods** We isolated CD29+, CD44+, CD45 cells from adipose tissue. We hypothesised that combination of eNOS over-expression and transplantation of ADSCs could restore NO bioavailability and improve cardiac function in infarcted hearts.

**Results** Here with several lines of experimental evidences, we demonstrated that ADSCs with eNOS-overexpression induced eNOS expression in host endothelial cells and vascular smooth muscle cells, both in vitro and in vivo. This effect was possibly mediated by calcium signal. Transplantation of ADSCs with eNOS embedded showed great therapeutic efficacy in reduction of infarcted size, compared with normal ADSC.

**Conclusions** Results of this study suggest that ADSCs could be an attractive vehicle for the exogenous eNOS expression into heart after infarction, which is beneficial to restoration of cardiac function. Paracrine effect by mobilising the host endothelial cells and smooth muscle cells may be the mechanism underlying the therapeutic effect.