

# Stem cell infusion and hyperbaric oxygen treatment improve islet function in diabetes

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A study to determine if patients with type 2 diabetes can benefit from a combination of autologous (patient self-donated) stem cell infusions (ASC) and hyperbaric (above the normal air pressure of ) oxygen treatment (HBO) before and after ASC has found "significant benefits" in terms of "improvements in glycemic control" along with "reduced insulin requirements." The combination therapy could decrease type 2 diabetes morbidity and mortality, said the authors, who published their study results in the latest issue of *Cell Transplantation* (Vol. 17 No.12).

"Autologous stem cell therapies are an emerging set of therapies with promising results and low side effects profiles," said corresponding co-author Esteban Estrada, MD, of Stem Cell Argentina. "In addition, hyperbaric [oxygen therapy](#), used primarily in the treatment of carbon monoxide poisoning, air embolism suffered by divers, and as an enhancement to wound healing, has been shown to increase stem [cell mobilization](#) and the release of endothelial [progenitor cells](#) via a nitric oxide-dependent mechanism."

The clinical trial evaluated the safety of ASC-HBO combination treatment in 25 patients with type 2 [diabetes](#).

According to the researchers, it is well known that with type 2 diabetes, there is an ongoing inflammation of the pancreas. Their hypothesis suggested that mobilizing [stem cells](#) would cause the growth of blood vessels ([angiogenesis](#)) and release factors that would result in the local differentiation of progenitor cells with a resulting anti-inflammatory

effect. Diabetes, they added, has been shown to impair progenitor cell mobilization, a problem that local stem cell infusion could remedy.

Once more, the effect of the hyperbaric oxygen therapy, they hypothesized, would be to increase stem cell mobilization in such a way as "to target more than one crucial reparative step" to counteract the chronic injury that attack the endothelial progenitor cells and the islet cells.

"Overall, our results show that a close follow-up with intensive diabetic management alone could not be the only cause of the positive, progressive and consistent outcomes we obtained in this trial over one year of follow-up," said Dr. Estrada.

"A decade ago, research had explored [stem cell transplantation](#) and hyperbaric oxygen therapy as stand alone treatments. This study highlights the potential benefits of using an unusual combination therapy to treat diabetes" said Dr. Cesar V Borlongan, Associate Editor of Cell Transplantation and Professor at the University of South Florida College of Medicine.

Source: Cell Transplantation Center of Excellence for Aging and Brain Repair

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