

Stem cells could treat diabetes

Early-stage study in mice shows potential of adult blood in yielding insulin-producing stem cells; treatment could side-step ethical debate over embryonic cells.

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CHICAGO (CNNMoney.com) -- Early-stage studies in mice have shown that adult blood could be a richer source of insulin-creating stem cells than fertilized eggs, according to Dr. Yong Zhao, assistant professor at the University of Illinois.

If these test results are repeated in humans, it could possibly lead to a diabetes treatment that would avoid the controversy surrounding embryonic stem cells.

Dr. Zhao, who presented his findings at the annual conference of the American Diabetes Association, emphasized the early-stage, experimental nature of his study results, which were funded by his Chicago-based university.

Dr. Zhao said he intended to seek funding from the National Institutes of Health so he could begin human studies. But even if human studies are successful, potential treatments are years away. Dr. Zhao said it could take five years just to complete the first phase of human studies.

In his animal studies, Dr. Zhao drew blood from diabetic mice, extracted insulin-making stem cells from the blood, condensed the stem cells into a solution and then injected that back into the mice.

As a result, the diabetic mice maintained healthy blood-sugar levels for three months without any other treatment, the scientist said.

Diabetics have difficulty producing their own insulin, which is necessary to convert blood-sugar into energy. Without insulin, diabetics often suffer dangerously low blood-sugar levels known as [hypoglycemia](#). [Diabetics](#) control blood-sugar levels by injecting insulin, or taking various drugs like [Merck's \(Charts, Fortune 500\)](#) Januvia, or Byetta from [Eli Lilly & Co. \(Charts, Fortune 500\)](#) and Amylin Pharmaceuticals. Novo Nordisk is the world leader in insulin production.

In his human studies, Dr. Zhao intends to use adult blood and blood taken from umbilical cords. Since he does not plan to use embryonic stem cells taken from eggs fertilized in vitro, the scientist would be exempt from the current restrictions on federal funding.

President Bush vetoed a Congressional bill on June 20 that would have lifted restrictions on federal funding for embryonic stem cell research. This was Bush's second veto regarding stem cell research since he took office.

Bush opposes the use of fertilized eggs for research on pro-life grounds. But many medical experts believe that embryonic stem cell research could eventually lead to treatments for crippling traumatic injuries, like severed spines and brain damage, or debilitating diseases, like Parkinson's and Alzheimer's.

Biotechs involved in the fledgling industry for stem cells are engaged primarily in research, with few products on the market. [Geron Corp. \(Charts\)](#) and Advanced Cell Technologies focus on embryonic stem cells. [Cytori Therapeutics \(Charts\)](#), [Aastrom Sciences \(Charts\)](#), [Osiris Therapeutics \(Charts\)](#) and [Stem Cells \(Charts\)](#) Inc. derive stem cells from adult tissue.

Dr. Zhao said adult humans are a richer source of insulin-making stem cells than fertilized eggs. He found that 7 percent of human embryonic stem cells are capable of making insulin, compared to 70 percent of stem cells from adult human blood and umbilical cord blood.

"Application of these stem cells is very easy to access, culture, expand, and safe, without any ethical issues and immune [system] rejection," said Dr. Zhao, in an email to CNNMoney.com "Therefore, these stem cells possess much more advantages than application of embryonic stem cells."

As a potential treatment, the scientist said blood would be drawn from human diabetics. Then, the insulin-making stem cells would be extracted from the blood and injected back into the diabetics. The patient's own blood would be used because blood from another donor has a strong chance of being rejected.

Stephen Brozak, biotech analyst for the investment research firm WBB Securities, said the study "has the potential to advance science," but the potential was hard to gauge because the study is "early, early stage."

"It's an interesting scientific discovery," said Brozak. "That's as far as I would go with it."

[Correction:](#) An earlier version of this story incorrectly referred to hypoglycemia as high blood sugar, hypoglycemia is low blood sugar. CNNMoney regrets the error. ([Back to story](#)) ■

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