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New drug combo may boost stem cell production

By: Michael Kahn

LONDON (Reuters) - A novel drug combination using Genzyme's Mozobil shows it may be possible to spur bone marrow into releasing extra adult stem cells into the bloodstream to repair the heart and broken bones, researchers said on Thursday.

The study of mice raises hope that researchers could use the same technique to tackle autoimmune diseases such as rheumatoid arthritis in which the body confuses healthy tissues for foreign substances and attacks itself, they said.

"We hope that by releasing extra stem cells, as we were able to do in mice in our new study, we could potentially call up extra numbers of whichever stem cells the body needs," said Sara Rankin of Imperial College London, who led the study.

"Our work could lead to new treatments to fight various diseases and injuries which work by mobilising a person's own stem cells from within."

Stem cells are the body's master cells, giving rise to various tissues and the blood. They are found throughout the organs, blood and tissue and are in immature form until they generate needed cell types.

Doctors hope to use them some day in a new field called regenerative medicine in which tailor-made transplants of tissues and perhaps organs can be grown from a patient's own cells.

Rankin and her team looked at mesenchymal stem cells -- immature cells than can give rise to bone, muscle or blood vessels -- and endothelial cells that help make blood vessels in the heart.

They treated healthy mice with one of two proteins that occur naturally in bone marrow called VEGF and G-CSF growth factor. Following this treatment the mice received Genzyme's stem-cell transplantation drug Mozobil.

Researchers know that G-CSF in combination with Mozobil mobilizes one kind of stem cell used in bone marrow transplantation known as haematopoietic stem cells, which give rise to blood cells. But Rankin and colleagues wanted to see if VEGF growth factor could stimulate other types of stem cells involved in building heart and bone tissue and blood vessels.

The team, which reported the findings in the journal Cell Stem Cell, found that mice given VEGF and Mozobil released around 100 times as many endothelial and mesenchymal stem cells into the bloodstream compared to mice that had no treatment.

While trials of the drug combinations in humans is years away, the researchers said the next step is determining in mice whether the technique actually helps repair damage, Rankin said.

"One of the exciting aspects is this would be a non-invasive treatment," she said in a telephone interview. "With this you are just giving a drug to promote what is a natural process."

(Reporting by Michael Kahn; editing by Maggie Fox and Elaine Hardcastle)