MedicalXpress

Ultrasound improves stem cell transplants

September 6 2011

Transplantation of haematopoietic stem cells is an effective treatment for patients with malignant blood diseases. The composition and quality of the transplanted cells are crucial to the outcome. Researchers from Lund University, Sweden, have now developed a method to improve the quality of the transplanted cells using ultrasound for cell separation.

For patients with blood cancer, a blood stem cell transplant is often the only treatment that can cure the disease. The quality of the transplanted blood stem cells and the choice and composition of the transplanted cells can be crucial.

Current methods of collecting and processing stem cell products leave a lot to be desired. Recent results from Lund University indicate that it may be possible to considerably improve the quality of the blood stem cell product by using a method known as acoustic cell separation.

"The method was developed in the field of microtechnology and builds on basic engineering research from Lund University", explains Professor Thomas Laurell, research group leader at the Faculty of Engineering. The method is expected to facilitate improvements in the processing of blood stem cells.

Associate Professor Stefan Scheding, senior consultant at the Department of Haematology at Skåne University Hospital and research group leader at the Stem Cell Centre at Lund University, is in charge of the preclinical development of the new method, which aims to effectively separate and possibly remove or concentrate cell populations

which are normally found in standard blood stem cells products. The first step has been to show that the method works, by separating out platelets from stem cell products.

"Our hope is that it will become possible to produce the optimal stem cell product for each individual transplant patient", says Stefan Scheding. "This would give us a good chance of improving the treatment of patients who would otherwise be at risk of suffering from serious transplant complications, such as graft-versus-host disease and infections. By optimising the quality of the transplanted cells, it may even be possible to better fight the leukaemia cells that remain in the body despite the transplant treatment", he explains.

More information: *PLoS ONE* paper: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0023074

Provided by Lund University