

Scientists identify superior heart repair product

September 10 2013, by Kerry Faulkner



Allied Healthcare's David Rhodes says there is great interest in its use for heart defect repair and reconstruction in both adults and children. Credit: Eric Schmuttenmaer

A regenerative tissue product developed by a Perth health care group has the potential to help tissue heal better than existing products when used in cardiac repairs.

The findings are a result of a collaboration between Allied Healthcare Group and CSIRO to assess the use of the group's regenerative tissue product CardioCel.

The product, derived from acellular material from the membrane surrounding the heart (pericardium), uses tissue stabilisation technology to aid tissue repair in the heart through delivery of [connective tissue cells](#)

CSIRO was asked to assess CardioCel's suitability for [stem cell therapy](#) in [heart patients](#) by comparing its performance against other commonly used material.

Scientists say the delivery and retention of cells in cardiac repair is difficult and studies show the composition of the [scaffold](#) on which cells are seeded has a direct effect on the behaviour of the stem cells and the new tissue formed.

The repair of tissue through a bioscaffold and adding cells to repopulate and replace the initial synthetic scaffold has potential to be a superior, longer lasting implant that remoulds to become native tissue.

In tests led by research program leader Jerome Werkmeister assisted by research scientist Aditya Vashi, the samples were seeded with human bone marrow – derived mesenchymal (MSC) stem cells and monitored to assess the degree of cell attachment and viability.

They reported the MSC seeded samples showed excellent survival when compared with similarly seeded sample controls.

The stem cells were found to divide and survive as viable cells on the tissue matrix over an extended period of time; whereas in the control, very few [stem cells](#) remained.

It prompted scientists to conclude it provides an ideal scaffold for stem cell delivery.

"It shows the potential for medical professionals to use regenerative products instead of synthetic products currently used in soft tissue repair as a cardiac patch and other biomedical products," Dr Werkmeister says.

Allied Healthcare's chief scientific officer David Rhodes says these could also include uses in vascular reconstruction, hernia repair and pelvic floor reconstruction, speeding recovery in knee joints repairs or rebuilding vessels.

He says there is great interest in its use for heart defect repair and reconstruction in both adults and children.

It has the further advantage of reduced cytotoxicity at the site of repair, thereby reducing the issue of calcification which can often lead patients to have repeated surgeries.

Provided by Science Network WA

Citation: Scientists identify superior heart repair product (2013, September 10) retrieved 6 May 2024 from <https://medicalxpress.com/news/2013-09-scientists-superior-heart-product.html>

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