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[BioChemistry][Medicine] NTU - Department of Biochemical Science and Technology Presents New Nano-Material Treatment for AMI

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NTU Newsletter (Issue 1046) & Now News (2011/04/21) Professor J.A. HO at the Department of Biochemical Science and Techonolgoy, National Taiwan University, combines high polymer nanomaterial technology and stem cell technology presenting a new treatment for acute myocardial infarction (AMI) which is a therapeutics based on stem cells as well as a measure to trace stem cells development. More significantly, the stem cells integrated with high polymer nanomaterials have been proved not to express their disfunction in differentiation. The therapeutics can treat and thus track the infarction together within 30 minutes, enhancing the efficiency of AMI treatment. The findings have been published in Circulation (2010 ; 122 : S132-141). Since the treatment has showed that nano-materials can be applied to the treatment of cardiovascular disease, it opens a promising sci-tech as well as medical opportunity.

The present AMI clinical treatment usually uses drugs like ACE inhibitors, β-blockers, digitalis glycosides, diuretics, etc. However, these drugs mainly help with the symptom relief and are always carried with side effects. On the other side, heart transplant can also be an alternative treatment for AMI, but the shortage of organ donors and the immune rejection make the option a difficult one to take, too. During the past few years, more and more stem cell treatments have been developed, but still many difficulties of clinical application, for instance, the low survival rate of stem cells after injection, have to be resolved.

The outstanding research is a cross-institution cooperation, focusing on the nanomaterial therapeutics development, between two teams from National Cheng Kung University (led by Professor Chen-Sheng YEH and Professor Patrick C.H. HSIEH at the Institute of Nanotechnology and Microsystems Engineering) and National Taiwan University, under the financial support of National Science Council.

Professor Chen-Sheng YEH has developed a specific treatment platform and technology for safe applications of high polymer nano-materials on human body, which has been widely applied in various treatments and diagnoses. Professor HO, with the support of such a platform, has succeeded in developing a nanomaterial stem cell therapeutics treating and tracking AMI, which, more significantly, has been verified to be devoid of differentiation problems. Professor HSIEH, the expert in stem cell studies, has succeeded in curing swine cardiac infarction models with highly biocompatible self-assembling peptide nanofiber hydrogel, providing a mechanical support for the the vessels in the infarction areas.

Further Information:
NTU Newsletter Issue 1046 (Chinese)
NCKU Research Express 2011/01/28
Now News 2011/04/21 (Chinese)

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