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Rejuvenation therapy for ischemic heart disease

Cell-based therapy for ischemic heart disease holds a promise for the management of the disease condition. However, controversies regarding the eventually clinical benefits often arise from experimental and clinical studies. Unmatched conditions between experimental animal studies and clinical trials and the distinction between acute and chronic heart disease are major attributable factors to the controversies. Most experimental studies are carried out in young and healthy animals but clinical patients are often elders with multiple complications. Under acute ischemic heart disease conditions, freshly injured heart tissue may retain the potential for recovery. But under chronic conditions, the progressively deteriorative milieu dampens the repair mechanism, eliminating the tissue injury signals and diminishing the rejuvenation capacity. Therefore, reestablishing tissue injury signaling system and remobilizing the rejuvenation capacity would greatly enhance the efficacy of cell-based therapy for ischemic heart disease. To achieve this goal, we developed an approach to activate the tissue injury signaling system in the cardiac ischemic infarct tissue of Rhesus monkeys, reestablishing mesenchymal stem cell homing process and reacting myocardial repair mechanism. This approach, in combination with our recently established 3D bio-printing program, significantly improved the disease condition of heart failure in monkey model of myocardial ischemic infarction.

Biography

Y James Kang is currently a Professor and Director of the Regenerative Medicine Research Center at Sichuan University West China Medical College, the President and CEO of Sichuan 3D Bio-printing Institute, the Director of Sichuan Regenerative Medicine Research and Technology Center, the Editor-in-Chief of the journals *Cardiovascular Toxicology* and *Regenerative Medicine Research* and the Editor of the book series of *Methods in Pharmacology and Toxicology*. Prior to his current positions, he was a Professor and Distinguished University Scholar at University of Louisville, USA (1996-2009). He was elected as a Fellow to the Academy of Toxicological Sciences in 2001. His research interests are in regenerative medicine, focusing on 3D bio-printing and cardiovascular regeneration as well as dietary manipulation of cardiovascular disease, liver fibrosis and cirrhosis, oxidative stress and antioxidant mechanisms and non-human primate models for human diseases.

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