



Title: Application of nanotechnology and stem cell technology in the next generation cardiovascular implants

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Abstract:

Emerging advanced technologies such as nanotechnology offers great potential to overcome current issue in different fields including biomedical field. Application of nanotechnology in the field of biomedical and cardiovascular devices has attracted research attention in recent years¹. Development of new nanomaterials and nanocomposite hybrids with enhanced bio and hemocompatibility and improved mechanical and physicochemical properties offers great advantages over conventional materials². Merging nanotechnology with other advanced technologies such as stem cell technology and regenerative medicine principals in development of next generation viable or semi-viable devices is a new paradigm in biomedical research. In this paper we will report our findings of development of next generation cardiovascular devices such as heart valve, coronary stents and bypass grafts based on nanotechnology and regenerative medicine principals. The results of multiple tests to investigate bio and hemocompatibility, mechanical and surface properties and self-endothelialisation potential were very promising. This indicates that future prospect of the application of nanotechnology and stem cell technology in development of next generation cardiovascular devices is bright.

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Reference

- 1- Ghanbari H, et al. Int J Nanomedicine. 2011; 6:775-86
- 2- Ghanbari H, Trends Biotechnol. 2009 ;27 (6):359-67

Biography

Dr. Hossein Ghanbari completed his medical degree (MD) in 2002 and then was awarded a PhD scholarship on nanotechnology & regenerative medicine in 2007. He did his PhD at University College London; Centre for Nanotechnology and Regenerative Medicine and after graduation in 2011, he has been working as an associate professor of regenerative nanomedicine at School of Advanced Technologies in Medicine and co-founder of Research Center for Advanced Technologies in Cardiovascular Medicine, Tehran Heart Center, Tehran University of Medical Sciences. His research interests mainly include application of nanotechnology and stem cell technology in development of biomedical and cardiovascular devices and next generation implants using nanomaterials and stem cell technology.