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The future role of stem cells as antimicrobial therapeutics

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There are three main types of stem cells: (1) totipotent stem cells, (2) multipotent or adult stem cells that include mesenchymal stem cells [MSCs], and (3) pluripotent stem cells that include embryonic stem cells [ESCs] and induced pluripotent stem cells [iPSCs]. Recently, stem cell therapies have gained enormous potential as various types of stem cells have been shown to potentially cure various intractable and chronic diseases. Two types of stem cells, MSCs and iPSCs, are receiving particular attention in the treatment of various infectious complications. MSCs are heterogeneous progenitor cells that have the capacity of self-renewal and multi-lineage differentiation. They can be obtained from several sources including: bone marrow (BM), peripheral blood, cord blood, placenta, amniotic fluid, skin and adipose tissue. They have certain distinguishing features and their immunomodulatory and immunosuppressive properties enable them to have several therapeutic applications. On the other hand, iPSCs can be derived from a wide variety of cells and tissues, belonging to the three germ layers, and can avoid the obstacles and ethical issues that limit the use of ESCs. Their reprogramming requires the presence of several elements. They exhibit specific stringency criteria and they have certain identification properties. MSCs are essential constituents of the framework that supports organ integrity and tissue barriers.

Biography

Khalid Al-Anazi is a Consultant Hematologist and Head of Department of Adult Hematology and Hematopoietic Stem Cell Transplantation (HSCT) at King Fahad Specialist Hospital (KFSH) in Dammam, Saudi Arabia. He graduated from the College of Medicine, King Saud University (KSU) in Riyadh, in the year 1986. After passing his Boards in Internal Medicine, he was trained in Clinical Hematology and HSCT at King's College Hospital, University of London, U.K. He has 24 year experience in Adult Clinical Hematology and HSCT at Riyadh Armed Forces Hospital then King Faisal Specialist Hospital and Research Centre (KFSH&RC) in Riyadh, King Khalid University Hospital (KKUH) in Riyadh and KFSH in Dammam Saudi Arabia.

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