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The cannabinoid system: Stem cell and cancer therapy potential

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The majestic world of cannabinoid system excite many investigators around the world in the recent years. Variety studies was designed to reveal how cannabinoid system affects our cell environment: cancer cells to neural cells. The discovery of endogenous cannabinoids, named endocannabinoids, have focused much consideration on cannabinoids.

This system shows linkage with promotion of cancer cell survival through PI3K/PKB tumor pathway, inhibition of cancer cell migration through activation of ERK downstream and anti-apoptosis effects in one side and in the other side promotion apoptosis through inhibition of p27/KIP1 and immunomodulator property through Treg cells and etc. We need to determine the balance between these various mechanisms, and how they modulate cancer in vivo.

In addition, endocannabinoid system as a regulator of bone remodeling presents novel therapeutic strategies for the prevention and treatment of bone disorders based on its targeting and through the survival of differentiated mesenchymal stromal cells (MSCs) which provide an ideal source for cell transplantation or tissue engineering therapies.

Moreover, neural stem cells (NSCs) are self-renewing cells that can differentiate into multiple neural lineages and proof regions of the brain after injury. Studies indicate a critical role of endocannabinoid system for proliferation and differentiation of embryonic or adult NSCs mediated by PI-3K/AKT pathway and/or IL-1 signaling cascades in the brain and coupled to TNF signaling. This may be a therapeutic option in the field of brain repair.

In conclusion, the cannabinoid system is an exciting target for research on treatment of cancer and neurodegenerative disorder like other different areas.

Biography

Reza Mehdizadeh received his MSc (2011) in cell and molecular biology from University of Tehran, Iran. He is a researcher on Iranian Breast Cancer Research Center and works on many projects in coordination with Iranian Cancer Institute about molecular targeted therapy especially on triple negative Breast cancer. He researched about receptor tyrosine kinases (RTKs) and followed their signaling pathways in tumors.

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