Epidemiology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Epidemiology & Evolutionary Genetics

August 21-23, 2013 Holiday Inn, Orlando-FL, USA

Characterization of human placenta amnion derived mesenchymal stem cells (hpAMSCs) and stem cell aging in a hypoxic culture condition

Jisook Moon

CHA University School of Medicine, Seoul, Korea

Abstract

Stem cells also show reduced proliferation, differentiation capacity, and biological functions with age and their aging mechanism is less understood although stem cell aging or senescence may cause impediment to expansion of stem cells for application. Hypoxia has been suggested to expand stem cells without defect of differentiation potentials and aging. In this study, we try to understand aging processes of stem cells using placenta derived amniotic mesenchymal stem cells (hpAMSCs) in hypoxic condition (3% O_2) because hpAMSCs have advantages over the other adult stem cells in terms of easy acquisition without ethical issues and hypoxic condition is known to induce prolonged proliferation and increased survival. Compared to a normoxia culture (21% O_2), the hypoxic condition increased proliferation capacity of hpAMSCs without their characters at over passage 15. The stem cells marker such as *OCT4, NANOG, KLF-4* and *c-MYC* were expressed at similar levels over the passage in the hypoxic condition but their levels declined from passage 5 in the normoxia. Hypoxia mediated inhibition of aging process was supported by several senescence-associated indicators: Sirtuin1 and Sirtuin 6 were maintained at similar level along the passage and p16INK4a, a senescence marker, was undetectable in hypoxic condition. The hpAMSCs in hypoxic condition relied on glycolysis more than the cells in normoxia condition. Here we suggest that hypoxia condition leads to prolonged proliferation and stemness capacities and delays aging of hpAMSCs partly by epigenetic regulation.

Biography

Jisook Moon has completed his Ph.D from Cornell University and postdoctoral studies from Harvard Medical School/Mclean Hospital. She is the director of Anti-aging center and statistical center at CHA University.

Email: jmoon@cha.ac.kr