Zorica Becker-Kojic, Transl Med 2014, 4:3
http://dx.doi.org/10.4172/2161-1025.S1.014

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference on
Translational Medicine
November 03-05, 2014 Las Vegas, USA

Human GPI-linked glycoprotein ACA and its role in promoting self-renewal and expansion of primitive human haematopoietic stem cells

Zorica Becker-Kojic
ACA CELL Biotech, Germany

Haematopoiesis and development of human haematopoietic stem cells (HSC) are the key role to improve efficient expansion for the transplantations. Successful immune reconstitution with HSC is highly dependent on the number of CD34+ cells transplanted/kg body weight. However, BM and especially single UCB extraction provide insufficient numbers of CD34+ cells for adult transplantation, often requiring the pooling of multiple cord samples to obtain the optimal cell dose for full reconstitution. Complications related to the use of pooled samples include the possibility of graft-versus-graft or multiple graft-versus-host reactions and unpredictable reconstitution of each sample. We report here that activation of human GPI-linked glycoprotein ACA at the surface of human peripheral blood (PB) progenitor cells via PLCγ /IPI3K/Akt promotes self-renewal and generation of primitive HSCs. Pre-clinical studies reveal, that starting with as little as 40 ml PB, averagely 2-6 x106 progenitor / HSCs (CD34+) cells could be generated, resulting in 63,6 -192 fold increase of these cells compared with the number of these cells that circulate in PB. Evidently, a larger volume of PB, as used in a clinical routine, would give a far greater yield of HSCs. Using xeno-transplantation assay in immunocompromised (NSG) mice, ACA-generated self-renewing cells show long-term multi-lineage repopulation activity in primary and secondary recipients, including T-and natural killer cells. Unmanipulated, steady-state peripheral blood as the strictly autologous source for generation and expansion of early primitive HSCs with long-term functional capacity is an easily accessible and practically infinite source of cells which could circumvent the most confiding limitations of HSCs transplantation, insufficient number of CD34 (CB) or availability of appropriate donor (BM). Accessibility of PB as well as generation and amplification of CD34+ cells by ACA method warrants the major problem in transplantation medicine to be solved.

Biography

Zorica Becker-Kojic has Bachelor in Chemistry at University of Belgrade, earned PhD at University of Heidelberg, Germany. During her carrier she had held senior research positions at the University of Heidelberg, University of New York, USA, Centro de Investigacion Principe Felipe, Valencia Spain, as well as teaching position at Mannheim University of Applied Science, Germany. She holds various international patents related to Novel Human GPI-linked Protein ACA and its role in the regulation of self-renewal from adult to embryonic human stem cells. Currently, she is Co-founder and the leading scientists at R&D Centre for Autologous Adult Stem Cell Therapies Heidelberg Germany.

becker-kojic@gmx.de