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Alternative choice for human cardiac stem cell culture in stem cell therapeutics: Animal serum-free medium

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Although human cardiac stem cells (hCSCs) would have important clinical implications for treatment of failing hearts, the number of isolated hCSCs is low, which makes a sufficient supply of functional elements an important consideration in cardiovascular research. The aim of this study is to investigate the feasibility of animal serum-free media (ASFM) in culture of hCSCs to eliminate the risk in using animal serum for cell culture thereby avoiding serious issues in clinical applications of stem cell therapeutics. We have evaluated the capacity of expansion of hCSCs in a commercial serum-free medium supplemented with a serum substitute in comparison with a classical medium containing 10% FBS. As a result, comparable hCSCs growth and more angiogenic factors were observed in ASFM comparing with the FBS-containing culture medium. Taken together, we suggest that ASFM can be an alternative to the classical media containing the animal serum for expansion of hCSCs, which leads to establishment of clinically relevant manufacture system for stem cell therapeutics and acceleration of clinical translation thereof.

Image

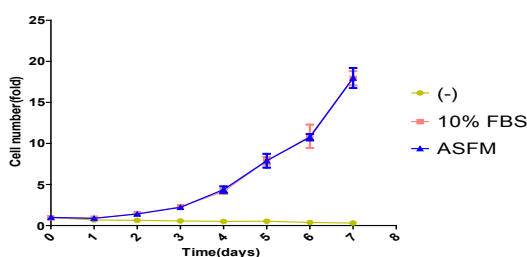


Figure 1: Comparative analysis of hCSCs proliferation efficacy

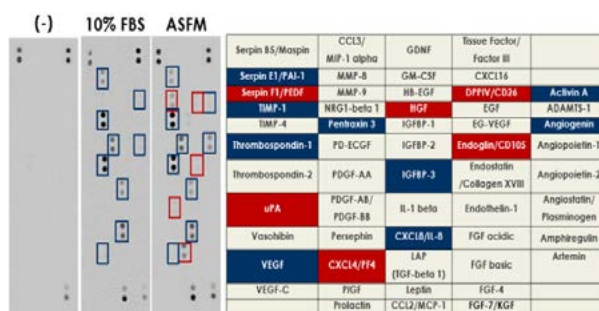


Figure 2: Expression profiles of angiogenic factors from hCSC cultured in different media

Biography

Heiwon Kyung is a Graduate Student of the College of Pharmacy at Ewha Womans University, where she received a BS in Pharmacy. She started her research on the development of novel drug delivery system as a PhD Scholar. She won a scholarship, which is tenable at the Solvay, an international chemical group for 2 years and completed her course works in the College of Pharmacy at Ewha Womans University. She has researched under supervision of her academic advisor, Prof. Seung Jin Lee who has built a strong reputation in research using Biomaterials for Stem Cell-Based Therapy. Now, she devotes all of her concentration on developing novel bio-therapeutics delivery technology including cell, protein and gene using various biomaterials and polymers.

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