

## Comparative growth kinetics and functional gene expression analysis in different media formulations for porcine mesenchymal stem cells *in vitro*

Sangeetha Kannan<sup>1</sup>, Shree Vidhya Srinivasan<sup>1</sup>, Punith B D<sup>1</sup>, Sujoy K Dhara<sup>2</sup> and Jyotirmoy Ghosh<sup>1</sup>

<sup>1</sup>National Institute of Animal Nutrition and Physiology, India

<sup>2</sup>Indian Veterinary Research Institute, India

Porcine mesenchymal stem cells (pMSC) are useful in human regenerative therapies and transgenic animal production. However, the conventional basal media formulation is not best suited for long term *in vitro* expansion of these cells. The study was thus designed to test the suitability of three commonly used basal media formulations, namely alpha minimum essential media (αMEM), advanced Dulbecco's Modified Eagle Medium (aDMEM), tissue culture media 199 (M199) alone and their 1:1 combinations (αMEM/M199, aDMEM/M199, aDMEM/αMEM) with the same standard culture supplements for derivation and propagation of bone marrow pMSC. The pMSC derived and grown from the same animals in different basal media were tested for the growth kinetics and expression status of cell proliferation, osteogenic, adipogenic and chondrogenic differentiation marker genes viz., cyclin dependant kinase II (CDK-II), osteocalcin, CCAAT-enhancer binding protein α (CEBP α) and Collagen2 (Col2), respectively at passage 5. The growth kinetics based on the population doubling showed the αMEM/M199 media had the least doubling time of 56.3±10.18 hours compared to the cells derived and grown in any other basal media formulations alone or in combination (above 80 hours). Coinciding with the proliferation rate the expression of cell proliferation marker CDK-II gene was found maximum in αMEM/M199 combinations as compared to other media formulations. The lower expression of differentiation marker genes, osteocalcin, CEBP and Col2 in αMEM/M199 revealed that the cells in this media remained more undifferentiated compared to other media formulations. The results of this study indicated that the αMEM/M199 combination might be a better basal media for derivation and culture of bone marrow derived pMSC.

### Biography

Sangeetha Kannan has completed her Master's degree from PESIT, Bangalore University in 2006. She has then worked as DST-Woman Scientist A project under the Guidance of Dr. Jyotirmoy Ghosh, Senior Scientist, NIANP, Bangalore. She is also pursuing her PhD under Jain University, Bangalore.

[sangeetha\\_k26@rediffmail.com](mailto:sangeetha_k26@rediffmail.com)

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