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Regucalcin in buffalo fetal fibroblasts and Wharton's jelly stem cells

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Statement of the problem: Regucalcin/Senescence Marker Protein-30 (RGN/SMP-30), a multifunctional calcium binding protein, has many pivotal roles in calcium homeostasis, ascorbic acid biosynthesis and having anti-proliferic and anti-apoptotic functions. All these functions are very important in stem cells. However, there are no reports regarding the role of RGN in stem cells. The aim of the present study was to investigate the expression of RGN in buffalo derived Wharton's jelly (BWJ) and fetal fibroblast (BFF).

Methodology: Gravid buffalo uteri of (~40- 50 days old) were procured. Mesenchymal stem cells (MSCs) were isolated from BFF and BWJ and cultured in DMEM with 15% FBS. The expression of RGN in BFF and BWJ was elucidated by qPCR, immunostaining and western blot analysis.

Results: The real-time PCR products of BWJ and BFF were confirmed on 2% agarose gel electrophoresis by the presence of 197bp product. An immunoreactive band of 34 kDa specific for RGN was detected in Western blot of BWJ and BFF. Cellular localization in both BWJ and BFF by immunocytochemistry revealed that RGN is located in both cytoplasm and nucleus.

Conclusion & Significance: This study is the first report on the expression of RGN in stem cells of any kind. It confirms the presence of RGN in fetal stem cells in mRNA and protein level. As this work provides initial information regarding the presence of RGN in MSCs, further investigation is needed to find out the role of RGN in important role in the differentiation, proliferation and aging of stem cells.

Biography

Harikrishna Pillai has completed his Master of Veterinary Science and Doctorate of Philosophy in Animal Biochemistry from Indian Veterinary Research Institute. He has done his doctoral thesis on the Protein Regucalcin. He has done purification, expression, structural and functional studies of Regucalcin of Water buffalo (*Bubalus bubalis*) in various cell types. His research is first to report the presence of regucalcin in stem cells and spermatozoa. He investigated the anti capacitary effects and putative cryoprotective effect of regucalcin in spermatozoa using recombinant protein. His research so far has generated five first-author peer-reviewed journal articles. Currently he is working as Laboratory Manager in Almarai, Saudi Arabia. His career objective is to further his research capabilities by pursuing a Post-doctoral position in a reputed laboratory to learn, develop, and diversify himself.

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