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EGFR and c-Met crosstalk in glioblastoma and its regulation by human cord blood stem cells

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Recently we reported that retrovirus-delivered human ADC genes (vhADC) in NSCs improve cell survival against oxidative insult in vitro but the characterization and cell fate of ADC-NSCs is not yet known. Cortical NSCs after 1-week culture were infected with empty retrovirus (vLXSN) and the vhADC genes. The NSCs infected with vhADC (ADC-NSCs), NSCs infected with vLXSN (LXSN- NSCs), and retrovirus-noninfected control NSCs were used for the experiments. Stemness was determined by checking the expressions of SOX2 and Nestin by western blot and immunostaining in control, LXSN and ADC-NSCs. Immunocytochemial staining and western blot analysis was done in all the experimental groups for determining the cell lineage (MAP-2, GFAP, Olig-2) and the cell adhesion molecules integrins and NCAMs expressions. The western blot results showed increased expression of stem cell markers: Nestin, SOX2 and Oct-4 in ADC NSCs. Neural lineage was checked in all the experimental groups and the results showed increased expression of MAP-2 and oligo-2 and decreased expression of GFAP in ADC-NSCs compared to control NSCs and LXSN NSCs depicting the ADC-NSCs lineage to neuron. Here, we also found that most of the ADC-NSCs were found attached and differentiated to the bottom surface of the culture plate and. these outcomes were investigated by checking the expression profiles of adhesion molecule, integrins and NCAM. The importance of BMPs and ERK1/2 expression in the differentiation of ADC-NSCs is highlighted as critical for neural lineage and consideration of the integrin expression profile should be made while differentiating neural stem cells for use in therapy

Biography

Velpula received his PhD in 2008 from the University of Hyderabad, India. He has served postdoctoral fellowships at the University of Central Florida and Case Western Research University, Cleveland, Ohio. He is currently a Postdoctoral Research Associate at the University Of Illinois College Of Medicine at Peoria, working with Dr. Jasti Rao in the Program of Cancer Biology, where he is investigating the use of human umbilical cord blood stem cells for treating glioblastoma. Dr. Velpula has published more than seven papers in peer-reviewed scientific journals and serves as a reviewer for a number of highly-regarded cancer and biomedical journals

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