J Stem Cell Res Ther 2018, Volume 8
DOI: 10.4172/2157-7633-C2-036

Anti-inflammatory effects of secretome derived from stem cells

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Inflammation is a primary defense mechanism that helps the body to protect itself against various types of diseases, allergens, chemicals and other toxic reactions. Carrageenan induced edema method is most extensively used model for anti-inflammatory studies. It involves the synthesis of release of inflammatory mediators at the injured site. Stem cells, with their regeneration capacity, long-term viability, and differentiation characteristics, have indispensable biological properties. Stem cells in addition to differentiation, including many bioactive molecules, which also fulfill many important features such as tissue repair, inflammation suppression, apoptosis inhibition, immunomodulation, and angiogenesis. In this research, carrageenan is used to induce paw edema. Carrageenan induced edema is a substantial prognostic test for anti-inflammatory studies, the results of this studies suggest that conditioned medium (CM) of adipose derived stem cells (CM-ADSCs), bone marrow stem cells (CM-BMSCs) and umbilical cord stem cells (CM-UCSCs) can be effective in treatment of inflammation when given to carrageenan induced inflammation model. HeLa, HepG2 and MDA-MB-231 were given injury via H2O2 and treated with CM-ADSCs, CM-BMSCs and CM-UCSCs for 48 hours. After 48 hours, ELISA via VEGF was performed to check the angiogenesis, apoptosis via p53 and cell proliferation via MTT. Anti-oxidative activity was analyzed to check the effect of CM-ADSCs, CM-BMSCs and CM-UCSCs on cell lines. Our findings showed that CM-ADSCs, CM-BMSCs and CM-UCSCs can reduce inflammation and injury along with enhanced cell survival.

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