

Adult Stem Cells in Comparison to Embryonic Stem Cells

D K Sharma*, David Mansom, John Smith and Fred Cox

Department of Anatomy, All India Institute of Medical Sciences (AIIMS), INDIA

Review literatures indicated two broad-types of stem cells: Embryonic Stem Cells (ESCs) and Adult Stem Cells (ASCs) with main differences between them as follows:

1. ESCs are derived from inner cell mass of blastocyst and three germ-layers of embryo while ASCs are localized amongst differentiated cells in adult body like skeletal muscle, liver, brain, dental-pulp, skin, bone-marrow etc.
2. ESCs as pluripotent have potential of differentiation into various cell-types whereas ASCs as multipotent cannot be differentiated into any kind of a specialised cell.
3. Embryonic Stem Cell Based Therapies (EBTs) are insecure, more prone to develop cancerous cells and with less advantage compared to Adult Stem Cell Based Therapies (ABTs).
4. ESCs use in research and therapy is controversial as derived from 5-days old embryos generated by *In Vitro* Fertility (IVF) clinics while use of ASCs is uncontroversial.
5. ESCs are used to treat blood & lymphatic related genetic-diseases, cancers disorders, juvenile-diabetes, Parkinson's, blindness and spinal-cord injuries while ASCs have potential to increase healing/regenerating entire organ from few cells.

Conclusion: ASCs are frequently used in medical-therapies like bone-marrow transplantation. Stem cells can be artificially grown and transformed/differentiated into specialized cell-types with characteristics consistent with cells of various tissues like muscles or nerves. Embryonic cell lines and autologous ESCs generated through somatic cell nuclear transfer or dedifferentiation have been proposed as promising candidates for future therapies. Stem cells may form tumors after transplantation, especially pluripotent ESCs are linked to tumor formation; sometimes it is with fetal stem cells despite their multipotency.

Biography:

Dr D K Sharma was born on 16th June 1956 and has done his education in Ravishankar University, Raipur, India. At present he is a Professor and head of the Department of Anatomy AIIMS, Raipur. As founder Faculty-member and Head Department of Anatomy he established Department and its major constituents Dissection-Hall, Microanatomy-Lab and Museum for UG/PG teaching and research-activities.