

THE DAWN OF A NEW ERA – STEM CELLS IN DENTISTRY

In the scientific literature, the term ‘stem cell’ first appeared in 1868, when it referred to the unicellular ancestor of all multicellular organisms, fertilised eggs and germ cells. At this time, researchers believed that haematopoiesis occurred in the bone marrow, and it was proposed that the stem cell was a common precursor of the blood system. However, it was not until the 1960s that scientists were able to provide definitive evidence answering some of the fundamental questions relating to embryology and the haemopoietic system. Nowadays, the term ‘stem cell’ is given to a cell that is capable of indefinite renewal, and giving rise to one or more differentiated cell types. The dental pulp tissue was shown to harbor stem cells within its connective tissue; the so-called dental pulp stem cells (DPSC). Situated in the cell-rich zone of the isolated pulp chamber, with very limited capacity for dimensional changes, DPSC nevertheless possess enough plasticity to maintain the tissue’s integrity and replace dead and dying cells.

Whole-tooth regeneration is an immense clinical challenge. In the near future, it is hoped that researchers will be able to regenerate fully functional teeth, restore innervation, regain lost hard-and soft-tissues and even transplant fully functional salivary glands using host stem cells. With dental phobia still being very common, using a natural way to stimulate the renewal of dentine could be an especially comforting proposal for these groups.

Restorations could be consigned to history after scientists recently discovered that a drug already trialled in Alzheimer's patients can encourage tooth regrowth and repair cavities. Researchers at King's College London found that the drug Tideglusib stimulates the stem cells contained in the pulp of teeth generating new dentine leading to End of Days for restoring the cavities.



Editor in chief:
Dr. Ranjana Mohan
Prof and Head
Dept of Periodontology
TMDCRC
Moradabad

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