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BOOK OF ABSTRACTS



Effective current approaches
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SHORT PEPTIDES EFFECTS ON ORAL-DERIVED STEM CELLS

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Relevance: Central nervous system pathologies are considered the emerging disease, that exhibit synaptic plasticity and are involved in higher brain functions loss, as learning and memory. Cell therapy has emerged as an alternative treatment of central nervous system diseases. The use of adult stem cells, such as Mesenchymal Stem Cells (MSCs) from oral cavity, have the potential to decrease cognitive deficits, possibly by reducing neuronal loss through blocking apoptosis, increasing neurogenesis, synaptogenesis and angiogenesis [1]. These processes are mediated primarily by the secretion of many growth factors, anti-inflammatory proteins, membrane receptors, microRNAs (miRNA) and exosomes [2]. The aim of this work was to investigate the effect of short peptides on neural differentiation of human periodontal ligament stem cells (hPDLSCs).

Methods: The experiments were carried out using immunofluorescence and biochemical analyses.

Results: The results suggest that the treatment with AED (Ala-Glu-Asp), KED (Lys-Glu-Asp), KE (Lys-Glu), AEDG (Ala-Glu-Asp-Gly) peptides and their mixture enhance the neurogenic capacity differentiation of hPDLSCs when compared to the untreated cells. Results obtained by means immunofluorescence, western blot and RT-PCR analyses of specific markers related to neurogenic differentiation, Nestin, GAP43 and Beta Tubulin-III. The mixture of all considered peptides showed the better performance in terms of hPDLSCs differentiation.

Conclusion: Taking this into consideration, the use of short peptides could be part of a strategy to promote neuroplasticity, improve cognitive impairment and neural replacement.

Reference list:

1. Trubiani, O.; Orsini, G.; Caputi, S.; Piatelli, A. Adult mesenchymal stem cells in dental research: A new approach for tissue engineering. *International journal of immunopathology and pharmacology* 2006, 19, 451.
2. Ramassone, A.; Pagotto, S.; Veronese, A.; Visone, R. Epigenetics and micrnas in cancer. *International journal of molecular sciences* 2018,19.