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BOOK OF ABSTRACTS

REGENERATIVE MEDICINE and AGEING



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and the cervical canal with histological examination of the material. In the absence of bloody discharge in postmenopausal women and with an endometrial thickness of less than 8 mm according to ultrasound data without its structural changes, especially in patients with severe somatic pathology, it is possible to monitor such patients with pelvic MRI or pelvic ultrasound once every three months.

SHORT PEPTIDES PROTECT ORAL STEM CELLS FROM AGEING

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Primary stem cells, after several cell divisions, enter into a senescence state, that is characterized by alterations to spindle-shape typical morphology. This concern is one of the main problems in the use of human mesenchymal stem cells (hMSCs) in clinical applications which demand cells in large numbers. Short peptides had geroprotective properties and stimulated stem cell differentiation. The aim of the study is to demonstrate the role of AEDG and KED peptides in maintaining oral hMSCs morphology and functions over long-term expansion. 2 types of hMSCs were investigated: human periodontal ligament stem cells (hPLSCs) and human gingival mesenchymal stem cells (hGMSCs). Cells at the 25th passage were divided into 3 groups: 1 - control (without adding peptide), 2 - treated with AEDG peptide, 3 - treated with KED peptide. Cell cultures were analyzed by an immunofluorescence method and RT-PCR on the p16 and p21 senescence markers expression. AEDG peptide decreased p16 and p21 mRNA expression by 1.56-2.44 times in comparison with the control group. KED peptide decreased p16 and p21 mRNA expression by 1.82-3.23 times in comparison with the control group. These results were confirmed by immunofluorescent visualization. AEDG and KED peptides could be used as supplementary substances in a culture medium to delay the expression of senescence markers in long term stem cell cultivation in order to promote the large-scale in vitro expansion necessarily required for stem cell therapy clinical application. The data obtained confirm the

geroprotective effect of AEDG and KED peptide, which was shown early in animal and cells models. RUNX2 and COL1A showed a high expression in treated samples when compared to the untreated showing a role in the enhancement of differentiation. The application in vitro of the studied peptides could represent a promising tool for preventive purpose in the ageing process and to led the knowledge significantly in the physiological functions as a bioregulators of cell differentiation.

PREVENTION OF COGNITIVE DECLINE AND DEMENTIA

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Cognitive decline and dementia are major concerns for public health in ageing societies. Failure of numerous amyloid-specific therapies for dementia has changed focus to prevention of cognitive disorders. From the distribution of etiology of old age dementia (majority being vascular or mixed type Alzheimer + vascular), it can be presumed that even up to 50-60% could be postponed or prevented.

It has been known for a long time from observational studies that midlife vascular risk factors – high blood pressure, cholesterol, diabetes, smoking, etc – predict development of dementia in late life. Evidence has also been gathered from randomized trials. The Finnish FINGER study (Lancet 2015;385:2255-63) showed for the first time that multidomain intervention consisting of physical exercise, diet, cognitive training, and monitoring vascular risk factors, can prevent cognitive decline in older persons without dementia at baseline. Meta-analysis of randomized trials showed that blood pressure lowering with drugs can prevent clinical dementia (J Nutr Health Aging 2019; 23:914-915). Finally, randomized trial with medical food Souvenaid R has shown promising results in prodromal dementia.

Overall, current evidence supports the idea of “what is good for the heart, is good for the brain”. This is good news for dementia prevention, because we have evidence-based, safe, and also cheap treatments for prevention of vascular diseases.