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Effect of Selenoamides compounds on the survival and differentiation of mesenchymal dental pulp stem cells.

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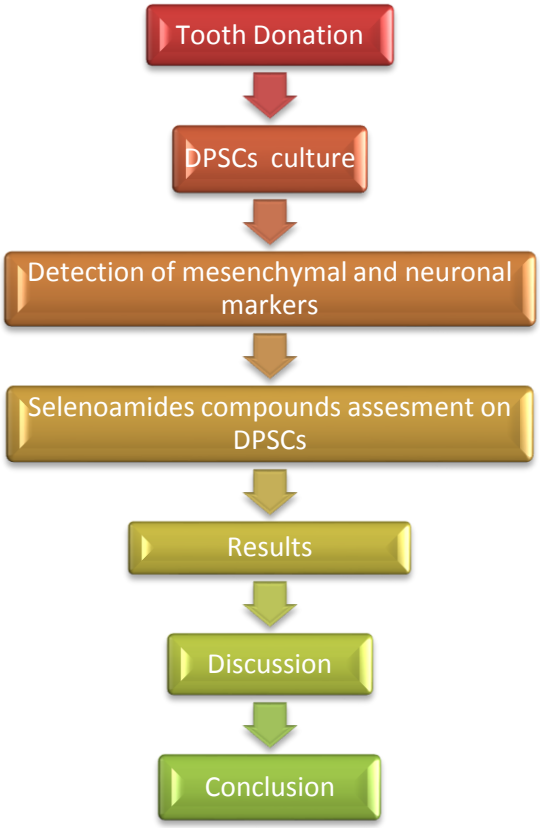
Graphical Abstract



Abstract.

Alzheimer's disease is the most common cause of dementia in elderly people. Currently there are near to 50 million cases of Dementia worldwide, among them 60-70 % correspond to Alzheimer's disease. Unfortunately, the only diagnosis available is postmortem and there is no treatment or cure. However, studies by several authors have proposed Selenoamides as neuroprotective compounds, since they promote survival pathways on stress conditions.

We cultured Dental Pulp Stem Cells (DPSCs) in DMEM/F12 with 10% fetal bovine serum, medium was changed every third day until they reached a confluence of approximately 70-80%, then we treated these cells with the Selenoamides compounds. Cells were fixed with paraformaldehyde (PFH) 4% for immunofluorescence; and protein was extracted for Western blot to detect mesenchymal, stem cell and neuronal markers, such as: CD73, CD13, CD105; and SOX2, OCT4, and Nanog, and b-III-Tubulin, respectively. Neuroprotection by Selenoamides compounds was measured with MTT viability assay. We found that one among seven Selenoamide compounds, showed

	significant effects on DPSCs survival, at relatively low concentration. Our results support the potential use of selenoamides as new therapeutics for Alzheimer´s disease.

Introduction

This research aims to differentiate mesenchymal cells from the dental pulp towards the neuronal lineage as a possible therapeutic tool for Alzheimer's disease that is the main cause of dementia in older adults and is characterized by neurodegeneration affecting memory and cognitive function. Currently there are different therapies based on trying to improve cognitive ability, but it has little impact on the prevention and delay of the neurodegenerative process, so it is important to validate new drugs that may be more efficient in the control of neurodegeneration.

Today, regenerative medicine has implemented mesenchymal stem cell therapies to seek a better alternative in organ transplantation, in the treatment of diabetes, atherosclerosis, and neurodegenerative diseases. (Pillai et al., 2014).

Materials and Methods *(optional)*

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