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## <u>Chitosan-Collagen-Genipin Biomatrix presents physico-chemical and biological</u> <u>properties for the preservation of intrinsic characteristics of adipose mesenchymal</u> <u>stem cells at molecular and chromosomal levels for translational therapy</u>

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**Introduction**: Therapy of artificial tissues and organs has increased the life expectancy of thousands of people, and one in five over 65 years has already benefited from tissues and organs generated *in vitro*. Thus, it is imperative to develop new strategies for the development and optimization of biomatrices and stem cells to meet demand, which is capable of promoting tissue and organ regeneration, cost amortization, and safe use at the cellular level. In this context, adipose mesenchymal stem cells (AMSC) have aroused great scientific interest.

**Objective**: The biocompatibility at the cellular and chromosomal/chromatidic level of chitosan-collagengenipin biomatrix with human AMSC was analyzed.

**Methods**: Different concentrations of genipin for matrix establishment were tested by the analysis of the number of cells, the degradation, and the degree of crosslinking by <u>spectrophotometry</u>. AMSC was obtained by enzymatic processing of human lipoaspirate and cultured in Petakas (control) and the selected biomatrix after physicochemical characterization, with and without cryopreservation. The AMSC were characterized for adhesion and proliferation by conventional optical microscopy, phase contrast and scanning electron microscopy, immunophenotyping, cell viability with Trypan blue test, chromosomal stability, by conventional cytogenetic techniques, <u>neoplastic potential</u> by Papanicolaou test, and the capacity of cell differentiation in three types of tissues, with a statistical approach.

**Results**: The crosslinked biomatrix with 0.75% v/v genipin was the best for the cell studies. The tests of adhesion, proliferation, and differentiation capacity showed that the AMSC in contact with the biomatrix maintained their natural characteristics. The cytogenetic and Papanicolaou tests after different culture conditions in the biomatrix did not reveal statistically different frequencies of the control cells (cultured without the biomatrix).

**Conclusion**: The results suggest that the chitosan-collagen-genipin biomatrices with 0.75% v/v genipin are biocompatible at the cellular and chromatidic/chromosomal level, with adipose mesenchymal stem cells.

## Biography

Idiberto Jose is affiliated from ABRAN- Brazilian Association of Nutrology, Brazil. He is a recipient of many awards and grants for his valuable contributions and discoveries in major area of subject research. His international experience includes various programs, contributions and participation in different countries for diverse fields of study. His research interests reflect in his/her wide range of publications in various national and international journals.

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