Prostate Cancer Cell Lines Inhibition by Umbilical Cord Blood Serum

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PRECLINICAL STUDIES

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ABSTRACT 2

Introduction

Prostate carcinoma, an indolent cancer with a noninvasive nature, has the highest rate of neoplastic transformation in the human body, and related deaths seem to be due to failure to control metastatic disease. Although a diversity of treatment modalities is available to improve survival in patients with metastasis, consideration of stem cell therapy has not received much attention. Several studies have shown umbilical cord (UC) marked therapeutic potential in diverse pathologies, from hematology to immunology, tissue regeneration, and oncology, but the role of some UC components in the oncology field is not yet clear. UC is an easy-access source of stem cells and can be noninvasively obtained from a donor risk-free source. Among UC hematopoietic and mesenchymal stem cells, UC is also a source of cord blood serum (CBS), which has a high concentration of platelet products, essential growth factors, and cell adhesion molecules. Therefore, CBS has been investigated as a potential therapeutic agent for the treatment of a variety of conditions, including ocular surface disease and skin ulcers. In fact, CBS has several therapeutic advantages over adult platelet-rich plasma, considering that CBS contains higher levels of anti-inflammatory molecules and platelet-rich plasma has more pro-inflammatory molecules, which can intensify certain conditions.

Objective

This work aimed to evaluate the effect of CBS on viability, proliferation, and migration of two human prostate cancer cell lines (PC3 and LNCaP).

Methods

CBS was obtained from the cord blood bank BebéVida after an automatic separation with the AutoXpress process. Both cell lines were incubated for 24 hours with 10%, 20%, and 25% of CBS, and the CBS effects on viability, proliferation, and motility were evaluated.

Results

CBS chronic treatment significantly decreased both PC3 and LNCaP viability, in a concentration-dependent form. PC3 and LNCaP proliferation was also significantly impaired, in all CBS concentrations. Regarding migration assay, CBS treatment also decreased the motility of both cell lines.

Discussion

These results suggest an anti-tumor effect of CBS, by the inhibition of viability, proliferation, and migration of both cell lines. This could represent a new treatment direction in the oncology field; however, further studies are needed to clarify the underlying viability- and proliferation-related signaling pathways.

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