



EBTM

Encontro de
Biotecnologia Medicinal



ICMB

Iberian Congress on
Medicinal Biotechnology

BOOK OF
ABSTRACTS



21OCT
2022

P. PORTO ESCOLA
SUPERIOR
DE SAÚDE

Impact of Umbilical Cord Mesenchymal Stem Cells Secretome in Cancer Progression

ANDRÉ CRISTÓVÃO¹, PEDRO COELHO^{1,2,3}, & ANDREIA GOMES^{2,4}

1. Ciências Químicas e das Biomoléculas, Escola Superior de Saúde do Porto, Porto, Portugal; 2. Unit of Biochemistry, Department of Biomedicine, Faculty of Medicine, University of Porto, Al. Prof. Hermâni Monteiro, 4200-319 Porto, Portugal; 3. i3S—Instituto de Investigação e Inovação em Saúde, Porto, Portugal; 4. Bebê Vida, Ciências para a Vida, S.A; Av. da França 476, 4050-367 Porto, Portugal

Ovarian cancer is a malignant neoplasm exclusive to females that develops in the ovaries, female sex organs and epithelial ovarian cancer [1]. It has a high mortality rate and is the seventh leading cause of death in women diagnosed with cancer because it develops silently and diagnostic tests have a low predictive value [1–3]. Thus, developing more accurate diagnostic tests combined with new anti-tumor therapies advance are needed measure to fight this disease. Mesenchymal stem cells (MSC) are multipotent cells, characterized by high proliferation rate and immunomodulatory, secretory, and paracrine properties. Their cell type can be obtained from several sources in the human body such as marrow bone, adipose tissue and Umbilical cord (UC) [4]. UC stands out for being a source that is easily accessible and obtainable, non-invasive, and contains cells with high proliferation and differentiation rates [5]. It has been verified that these cells may be involved in tumor regulatory processes, exerting their effects on metabolic processes such as cell proliferation, survival, angiogenesis, and in tumor-associated inflammatory and immunosuppressive processes [6]. The present work aimed to evaluate how the secretome of human UC-derived MSC (hUC-MSC) influences the tumor capacity of the epithelial ovarian cancer cell line SKOV-3.

Conditioned medium (CM) was obtained from hUC-MSC culture and then tumor cells were incubated with different concentrations of conditioned medium, 100%, 50%, and 25%. Parameters such as viability, motility, and cell interactions were evaluated. From the results obtained it was found that CM decreases cell viability, proliferation, and cell-cell interactions, however it stimulated the motility of SKOV-3 cells. In summary, it is possible to conclude that MC from hUC-MSC presented an antitumor effect and can be used as a possible co-adjuvant therapy in the treatment of ovarian cancer.

Keywords: Mesenchymal stem cells; Cellular Therapy; Conditioned medium; Ovarian cancer

References:

1. Jayson, G.C.; Kohn, E.C.; Kitchener, H.C.; Ledermann, J.A. Ovarian Cancer. *Lancet* 2014, 384, 1376–1388, doi:[https://doi.org/10.1016/S0140-6736\(13\)62146-7](https://doi.org/10.1016/S0140-6736(13)62146-7).
2. Arora, T.; Mullangi, S.; Lekkala, M.R. Ovarian Cancer; 2022.
3. Momenimovahed, Z.; Tiznobaik, A.; Taheri, S.; Salehiniya, H. Ovarian Cancer in the World: Epidemiology and Risk Factors. *Int. J. Womens. Health* 2019, 11, 287–299, doi:[10.2147/IJWH.S197604](https://doi.org/10.2147/IJWH.S197604).
4. Driscoll, J.; Patel, T. The Mesenchymal Stem Cell Secretome as an Cellular Regenerative Therapy for Liver Disease. *J. Gastroenterol.* 2019, 54, 763–773, doi:[10.1007/s00535-019-01599-1](https://doi.org/10.1007/s00535-019-01599-1).
5. Nagamura-Inoue, T. Umbilical Cord-Derived Mesenchymal Stem Cells: Their Advantages and Potential Clinical Utility. *World J. Stem Cells* 2014, 6, 195, doi:[10.4252/wjsc.v6.i2.195](https://doi.org/10.4252/wjsc.v6.i2.195).
6. Liang, W.; Chen, X.; Zhang, S.; Fang, J.; Chen, M.; Xu, Y.; Chen, X. Mesenchymal Stem Cells as a Double-Edged Sword in Tumor Growth: Focusing on MSC-Derived Cytokines. *Cell. Mol. Biol. Lett.* 2021, 26.

Acknowledgements: Study partially funded by Bebê Vida-Ciências para a Vida, SA, and by FCT under the project FATTYMESS - Fat Diet-induced Obesity in Melanoma Metastasis (EXPL/SAU-NU/0843/2021)