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Relationship between CD44 cancer stem cells phenotype and treatment response in oral cavity cancer primary tumors

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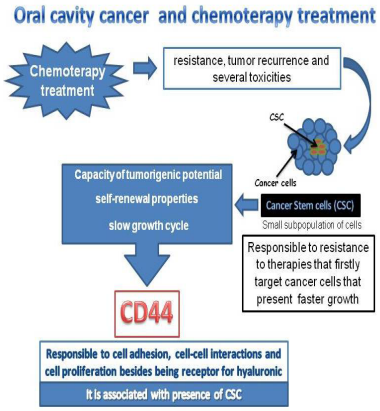
Introduction: Chemotherapy treatment for Oral Cavity Cancer (OCC) has shown unfavorable results due to tumoral resistance. Current evidence suggests that the resistance is associated to presence of cancer stem cells (CSC) in OCC tumor. CSC are responsible for initiation, growth, and invasion of cancer and they are identified through molecular biomarkers as CD44, a cell surface biomarker associated with cell aggregation, proliferation, invasion, migration tumoral and metastasis. The purpose of this study is to identify and characterize OCC primary tumors with regards to CD44 positive profile and to investigate the influence of chemotherapy treatment in OCC primary tumors with CD44 positive cells.

Methodology & Theoretical Orientation: Four OCC primary tumors biopsies were cultured and stained with anti-CD44-PE-conjugated. Cell sorting was performed using BD FACSAria Fusion (BD Biosciences) Citometry and CD44+ subpopulation cells were collected. The CD44+ OCC cells were treated with Taxol, 5-Fluorouracil and Docetaxel chemotherapies separately during 24 hours. The determination of cell viability was verified by staining experiments using tripan blue. Test t Student was utilized for statistical analysis in Bioestat 5.3 Program. $P<0.05$ was considered significant.

Findings: OCC primary tumors biopsies cells contained an average of 47% of CD44+ subpopulation cells. After treatment, the average percentages of viable CD44+ cells were 36.7%, 31.5% and 17.4% for Taxol, 5-Fluorouracil and Docetaxel chemotherapies, respectively, when compared to control cells without chemotherapy application. There was significant association between 5-Fluorouracil ($p= 0.03$) and Docetaxel ($p= 0.04$) treatment and OCC primary tumors with CD44+ cells.

Conclusion & Significance: OCC primary tumors present around 47% of CD44+ cells. 5-Fluorouracil and Docetaxel chemotherapies seems to be associated with better efficacy to eliminate CD44+ cells of OCC primary tumors. The identification of CSC subpopulation through the CD44 cell surface biomarker is important for the development and application of new therapeutic strategies to eliminate CSC within the tumor to improve the therapeutic outcome of OCC.



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Biography

Ana Livia S Galbiatti-Dias has her expertise in Head and Neck cancer and cancer stem cells in the response in chemotherapy treatment. She is experienced in Biology and Pharmaceutics research. She holds Master's in Heath Sciences with focus in Molecular Biology, Genetic Polymorphisms, Folate Metabolism and Head & Neck Cancer and Doctorate in Health Sciences with focus in Head and Neck Cancer, Genetic Expression, Protein Expression and Antifolate Chemotherapies. Now, she is Postdoctoral Researcher in São José do Rio Preto Medical School, Brazil. Her research is about identification of cancer stem cells in head and neck cancer: Genetic and protein expression in the response to chemotherapy. She performed a part of her research in University of Michigan, USA

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