

Expression and Interaction of Claudin-3 and Occludin During the Colorectal Cancer Progression

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INTRODUCTION: Colorectal cancer represents the fourth most common cause of cancer-related death worldwide. During tumor progression, epithelial cells undergo cell-cell adhesion disassembly increasing their malignant potential. In this context, the claudins and occludin (tight junctions proteins) play important role regulating events related with carcinoma progression. Previous studies have showed altered expression of claudin proteins in human colorectal cancer samples. Nevertheless, the molecular interactions that modulating the Tight Junction (TJ) functions and their role regulating the malignant potential remain to be defined. **OBJECTIVE:** Evaluate the importance of expression and interaction of the claudin-3 and occludin proteins during the colorectal cancer progression. **MATERIALS AND METHODS:** Human colorectal specimens were obtained from surgical resection of colorectal cancer patients treated in Brazilian National Cancer Institute. In all cases, we collected adenocarcinoma specimens and their paired normal mucosa, distant at least 5 cm from carcinoma. These samples were classified by TNM staging system of American Joint Committee on Cancer. Claudin-3 and occludin protein levels were analyzed by immunoblotting and the interaction between these proteins were evaluated by immunoprecipitation. This study is being carried out with approval of the Brazilian National Cancer Institute Human Research Ethics Committee. **RESULTS AND DISCUSSION:** Our results showed that samples in the earliest stage presented decreasing of claudin-3 and occludin expression in tumors. On the other hand, samples in advanced stage presented increasing of expression these proteins in tumors. Moreover, we observed decreasing of interaction between claudin-3 and occludin in tumors during all stages of the disease. Together, our findings indicate that during colorectal cancer progression there is increase of claudin-3 and occludin expression in tumor tissue, which is accompanied by decrease of interaction between these proteins. **CONCLUSIONS:** The dysregulation of expression and interaction of the claudin-3 and occludin TJ proteins could disrupt cell-cell adhesion system, contributing with colorectal cancer malignancy.

Keywords: Colorectal cancer, cell adhesion, tight junction

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