Validation study of a cell culture model of colorectal cancer

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SUMMARY

Colorectal cancer is a significant cause of morbidity and mortality in Western populations. Due to the fact that epithelial cells of colon have an important role in the pathophysiology of cancer, we set up a mechanical method combined with an enzymatic digestion of surgical resections derived from our Clinical Centre to obtain tumoral colon epithelium cell cultures. The cells proliferated under the chosen culture conditions and were maintained for several weeks, including subcultivation steps. We characterised the cell morphology by light and phase contrast microscopes and by immunoistochemistry analysis. Moreover, we also demonstrated the preservation of the secretory function of the cultured cells over the time.

This validated model of primary epithelial cells from colon cancer will be used to understand the biological and pathological features of human tumoral colonic cells. This will be done by studying the expression of specific proteins in the tumor and analysing mutations of specific genes in each patient to relate each genetic signature to a precise pharmacological response.

INTRODUCTION

Epithelial cells of the colon play a key role in the pathophysiology of a wide variety of large-bowel disorders, including colon cancer. Thus it seems pivotal for large-bowel research to investigate pathophysiological mechanisms at the epithelial level (Seidelin et al., 2003).

Colorectal cancer represents one of the most common malignancies among populations in the U.S. and Western Europe. It presents some particular features: known environmental risk; presence of benign pretumoral lesions (adenomas), which can give origin to cancer; genetic origin for most of them. The latter has been