

Overexpression of Wildtype *Periostin* and *Transforming Growth Factor Beta I* Genes in Colorectal Carcinoma: A Preliminary Study

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ABSTRACT

The majority of deaths from colorectal carcinoma (CRC) occur due to metastasis during the late stage of tumourigenesis. Recently, *periostin*, i.e. a gene encoding a protein which is initially found in osteoblasts, has been reported to be associated with the late-stage tumourigenesis in colon and a variety of human cancers. The researchers investigated the expression of *periostin* mRNA in normal and tumour biopsy specimens using the RT-PCR analysis to elucidate the role of *periostin* in human colorectal carcinoma. The results showed that there was a significantly ($P<0.05$) higher expression of the *periostin* mRNA in the biopsy specimens obtained from the tumour tissues, as compared to the normal tissues. Nevertheless, sequence analysis revealed no mutation in the full length of the *periostin* gene. As the over-expression of *periostin* in human colorectal carcinoma did not appear to be due to the mutation in the *periostin* gene, the involvement of other collaborative factors was therefore deduced. Consistent with this finding, the researchers focussed on studying the *transforming growth factor (TGF) β_1* which has been reported to be associated with the increasing in the expression of *periostin*. The analysis (RT-PCR) in this study revealed that *TGF- β_1* gene was also highly expressed in tumour biopsy specimens ($P<0.05$). This gene mutation is also absent. These data validated that both *periostin* and *TGF- β_1* work together to control colorectal organogenesis.

Keywords: Metastasis, colorectal carcinoma, *periostin*, tumourigenesis, RT-PCR, *TGF- β_1*

INTRODUCTION

Colorectal carcinoma (CRC), which is also known as the cancer of the colon and rectum, was recorded as the most commonly diagnosed cancer in men, and the third most common cancer in women (Malaysia National Cancer Registry, 2003). Typically, major fatalities from colorectal cancer are due to the dissemination of the primary tumours, which lead to formation of metastases which are resistant to conventional chemotherapy (Fidler, 1990). This event, known as metastasis, is the hallmark of malignant

cancers. Usually, it occurs during the late stage of tumourigenesis to the liver (Galandiuk *et al.*, 1992). For metastasis to take place, the tumour cells must undergo a series of interrelated steps which involve numerous complex molecular interactions (Fidler, 1990; Scanlon and Murthy, 1991).

In the process of identifying genes associated with tumour metastasis, *periostin*, a gene encoding a protein with similarity to the fasciclin family (Takeshita *et al.*, 1993), has been shown to promote tumour metastasis and angiogenesis

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