

A search for biomarkers for early detection of colorectal cancer

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Researchers at the Zhejiang University, Hangzhou have discovered that mimecan and Thioredoxin Domain-Containing Protein 5 (TXNDC5) were differentially expressed in colorectal adenoma. The research article describing this work entitled “Differential Expression of Mimecan and Thioredoxin Domain-Containing Protein 5 in Colorectal Adenoma and Cancer: A Proteomic Study” will be featured in the October 2007 issue of *Experimental Biology and Medicine*.

Adenoma is the major precursor lesion of colorectal cancer, one of the most common cancers worldwide. The elucidation of the molecular mechanism underlying adenoma is essential for early detection, prevention and intervention of colorectal cancer.

The research team, led by Maode Lai, a professor of molecular pathology, found 27 differentially expressed proteins in colorectal adenoma using two dimensional electrophoresis (2-DE) and mass spectrometry. Western-blot analysis clearly validated 2 differentially expressed proteins, mimecan downregulation and TXNDC5 upregulation in colorectal adenomas and cancers.

“Adenoma is a very important step in the development of cancer. Discovering the biomarker of adenoma will improve the early detection and prevention of cancer,” said Lai. “2-DE is an efficient traditional approach for the identification of differentially expressed proteins in cancer biology. Using this technology, we first identified 27 differentially expressed proteins in individual-matched colorectal

normal, adenoma and cancer tissues.”

“This study found two novel proteins which have never been found to be associated with colorectal cancer. We clearly demonstrated that absence of mimecan and up-regulation of TXNDC5 were involved in the early development of colorectal cancer,” said the article’s first author Yinghong Wang. “Our further work showed that mimecan can inhibit cell growth and induce cell apoptosis in colorectal cancer cells implying a candidate role as a tumor suppressor gene for the mimecan gene. These results suggested that mimecan might serve as a potential biomarker for future gene therapy.”

Dr. Steven R. Goodman, Editor-in-Chief of Experimental Biology and Medicine, said “Lai and his colleagues have performed a protein profiling proteomic study to understand the molecular mechanisms leading to colorectal cancer. It is this type of approach which can lead to the identification of biomarkers for the early detection of colorectal cancer, and targets for future gene therapy”.

Source: Society for Experimental Biology and Medicine

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