Quantification of Plasma DNA with Cancer by Real-time PCR

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ABSTRACT

Genetic alterations are associated with the development of cancers.Those that have direct effects on the carcinogenesis can be divided into oncogenes and tumor suppressors. In most cases, cancer developed due to that a series of mutations have accumulated in a somatic cell, activating oncogenes or inactivating tumor suppressors.Tumor metastasis is the major cause of death in cancer patients. In the process of metastasis, tumor cells disseminate from the original site through the circulatory system and establish the secondary tumors in distant organs. Therefore, increasing levels of circulating tumor DNA was found in the bloodstream of cancer patients and apoptotic and necrotic cells are a major source for plasma DNA. In the recent studies of cancers, early diagnosis and identification of molecular tumor markers are the main topics of clinical cancer research. It was postulated that identifying the genetic alterations in plasma may play an important role in the cancer diagnosis and prognosis of cancers. In current study, DNA concentration of plasma samples, including 25 liver cancer, 25 lung cancer， 30 primary breast cancer patients, 30 patients with metastatic breast cancer, and 50 non-tumor individuals, was determined with LightCycler quantitative real time PCR using SYBR Green I. The resule indicated that plasma DNA concentration of the liver cancer (p=4.34E-11), lung cancer (p=8.87E-11), primary breast cancer patients (p=3.02E-12) and patients with metastatic breast cancer (p=5.69E-12) were significant higher than that of normal control. Moreover plasma DNA concentrations of cancer patients were highly associated with cancer stages (p

Keywords : REAL-TIME PCR， PLASMA DNA， ONCOGENE， CANCER

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