

## MiR-520d expression analysis in breast cancer

### Abstract

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**Background:** Breast cancer is the most common cancer in women. Non-coding RNAs especially miRNAs have important regulatory roles in cancer. MiRNAs are 21-24 nucleotides which have different levels of expression between tumors and normal tissues. In this study, we have analyzed expression level of miR-520d in three different groups of breast cancer.

**Methods:** Fifty nine samples were divided into different groups according to their immunohistochemistry (IHC) classification: estrogen receptor (ER) positive and/or progesterone receptor (PR) positive group (as group I); human epidermal growth factor receptor 2 (HER2) positive group (as group II); and Triple negative group (as group III). After small RNA extraction from tissues, cDNAs were synthesized and Real time RT-PCR carried out using DNA binding dye. Expression levels were analyzed by LinRegPCR and REST software.

**Results:** MiR-520d under- expressed in all of three different groups. The expression ratio in groups I, II, and III were 0.193, 0.167, 0.21, respectively, but only the result from group II was significant (P=0.017). According to the different clinicopathological status of breast cancer, miR-520d underexpressed significantly not only in patients with metastatic lymph node (P=0.019) but also in patients which have cancer at stage III (P=0.036).

**Conclusion:** In this study, we found that miR-520d possibly acts as a tumor suppressor. It may be useful for diagnosis of tumor from normal tissue. In addition, miR-520d significantly underexpressed in HER-2 positive group of breast cancers. Therefore, it may be useful as an additional diagnostic test in this group of breast tumors along with other biomarkers.

**Keywords:** Breast cancer, miR-520d, real time RT-PCR, SYBR green I Dye.