The expression of Hsa- miR-21-5p as minimal invasive marker to adjuvant chemotherapy in breast cancer patients

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ABSTRACT

Breast cancer remains the leading cause of death among women, and there is a need to develop minimally invasive marker. Our previous study based on clinicopathological profile in pre-chemotherapy patients showed upregulation of miR-21, 1.32 folds higher at advanced stage compared to early stage. Therefore, the patients were used as post-chemotherapy samples. The aim of this research is to examine the expression of miR-21-5p as potential marker to assess the response of adjuvant chemotherapy in breast cancer patients. The samples were collected using cross sectional method, with total 39 blood plasma samples from breast cancer patients receiving adjuvant chemotherapy and 12 healthy control samples. Plasma was obtained from blood samples and RNA isolation was performed. Total RNA was reverse-transcribed using cDNA synthesis. The expression of miR-21-5p was then analyzed using specific primer for miR-21-5p, while miR-16 was used as the reference gene. Livak Method was used to calculate the expression level in each group. The result showed that there is significantly decreased expression of miR-21-5p in post-chemotherapy patients, as much as 2.61 folds compared to pre-chemotherapy ($p<0.05$). The expression of miR-21-5p was 2.2 folds higher ($p<0.05$) in pre-chemotherapy group compared to healthy control, while its expression was 0.8 folds higher ($p<0.05$) in post-chemotherapy compared to healthy control. In conclusion, miR-21-5p might be used as marker for adjuvant chemotherapy response in breast cancer, due to its significantly different expressions found between pre-chemotherapy, post-chemotherapy, and healthy control. The research on analysis of the expression of tumor suppressor protein regulated by miR-21-5p might be required in near future.

Keywords: breast cancer; adjuvant chemotherapy; miR-21-5p; minimal invasive marker

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