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Expression of A_1 and A_3 adenosine receptors in human breast tumors

Mojtaba Panjehpour[1,3], Simin Hemati[2], and Mohammad Ali Forghani[1]

[1]Department of Biochemistry, School of Pharmacy and Pharmaceutical Sciences, [2]Radiation Oncology Department, and [3]Bioinformatics Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

ABSTRACT

Background. Adenosine receptors (A_1, A_{2A}, A_{2B}, A_3) play an important role in the regulation of growth, proliferation and death of cancer and normal cells. We recently showed the expression profile of A_{2A} and A_{2B} receptors in normal and tumor breast tissues. In the present study, we used semiquantitative RT-PCR to measure the A_1 and A_3 gene expression levels in normal and tumor breast tissues.

Methods. Breast tumors (n = 18) and non-neoplastic mammary tissues (n = 10) were collected and histologically confirmed to be neoplastic or non-neoplastic, respectively. Total RNA was extracted and reverse transcribed into cDNA, and PCR was performed under optimized condition for each receptor subtype. Amplification of beta-actin mRNA served as control for RT-PCR. The PCR products were separated on 1.7% agarose gels. The intensity of the bands was quantitated with ImageJ software after normalization against beta-actin expression.

Results. All breast tumor and normal tissue specimens expressed A_1 and A_3 adenosine receptor transcripts. However, we observed that the expression level of the A_3 receptor in tumor tissues was 1.27-fold that of normal tissues, whereas there was no significant difference between the expression levels of A_1 in normal and tumor tissues.

Conclusions. Interestingly, the results of the present study indicate that breast tumors exhibit a higher level of A_3 transcripts (than normal tissues) and support the possible key role of A_3 adenosine receptor in tumor development. However, further studies based on real-time quantitative RT-PCR are needed to identify the exact gene expression levels.

Key words: adenosine receptors A_1 and A_3, breast cancer, RT-PCR.

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Correspondence to: Mojtaba Panjehpour, PhD, Dept. of Biochemistry & Bioinformatics Research Center, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Post Box:81746-73461, Isfahan, Iran.
Tel +98-311-7922592;
fax +98-311-6680011;
e-mail panjehpour@pharm.mui.ac.ir

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