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Differential expression of CDC25 phosphatases splice variants in human breast cancer cells

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Abstract

Background: CDC25 phosphatases control cell cycle progression by activating cyclin dependent kinases. The three CDC25 isoforms encoding genes are submitted to alternative splicing events which generate at least two variants for CDC25A and five for both CDC25B and CDC25C. An over-expression of CDC25 was reported in several types of cancer, including breast cancer, and is often associated with a poor prognosis. Nevertheless, most of the previous studies did not address the expression of CDC25 splice variants. Here, we evaluated *CDC25* spliced transcripts expression in anti-cancerous drug-sensitive and resistant breast cancer cell lines in order to identify potential breast cancer biomarkers.

Methods: *CDC25* splice variants mRNA levels were evaluated by semi-quantitative RT-PCR and by an original real-time RT-PCR assay.

Results: *CDC25* spliced transcripts are differentially expres-sed in the breast cancer cell lines studied. An up-regulation of *CDC25A2* variant and an increase of the *CDC25C5*/*C1* ratio are associated to the multidrug-resistance in VCREMS and DOXOR breast cancer cells, compared to their sensitive counterpart cell line MCF-7. Additionally, *CDC25B2* tran-script is exclusively over-expressed in VCREMS resistant cells and could therefore be involved in the development of certain type of drug resistance.

Conclusions: *CDC25* splice variants could represent interesting potential breast cancer prognostic biomarkers.

Keywords: alternative splicing; breast cancer; CDC25 phosphatases; prognostic markers