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Gene expression pattern of the major caspases and their splice variants in breast carcinoma: Role in prognosis and chemotherapy response

Brynychova V[1,2], Hlavac V[1,2], Ehrlichova M[1], Vaclavikova R[1], Vrana D[3], Pecha V[4], Trnkova M[5], Mrhalova M[2], Kodet R[2], Kovar J[2] and **Soucek P[1]**

[1]National Institute of Public Health, Czech Republic
[2]Charles University, Czech Republic
[3]Palacky University Medical School and Teaching Hospital, Czech Republic
[4]Medicon, Czech Republic
[5]Biolab Ltd., Czech Republic

Caspases initiate, regulate, and execute apoptosis. Functionally divergent splice variants were described for the most of them. Our study aimed to determine the expression pattern of total caspases and their main alternative isoforms in breast carcinoma tissues and tumor cell lines, and to evaluate their potential prognostic and predictive importance. Expression levels of total caspases were assessed by quantitative real-time PCR in tumors and non-neoplastic control tissues from untreated (n=100) and neoadjuvantly-pretreated (n=33) patients with breast carcinoma and compared with clinical data, response to chemotherapy and progression-free survival (PFS). Gene expression pattern of total caspases and their splice variants was also determined in paclitaxel-treated MDA-MB-231 and MT-3 cell lines *in vitro*. We detected an upregulation of caspase-2 and caspase-3 transcript in tumor *vs.* control tissues in untreated group of patients and a downregulation of caspase-9 in both groups. Moreover transcript levels of caspase-9 associated with several clinical prognostic factors (e.g. expression of hormone receptors) in a group of untreated patients but neither with PFS nor with response to therapy. We have not observed significant differences in expression of total caspases after paclitaxel treatment in MDA-MB-231 or MT-3 cells. On the other hand we detected differences in expression of proapoptotic and anti-apoptotic isoforms for caspase-2,-3, and -9 suggesting that paclitaxel treatment influences alternative splicing of caspases and potentially cell death. Our results do not support a strong prognostic and/or predictive role of transcript levels of the total caspases in breast cancer patients. However, a role of caspase isoforms requires further study.

Biography

Brynychova V is a PhD student of Molecular and Cell Biology, Genetics and Virology at the 3rd Faculty of Medicine, Charles University in Prague. She is author or co-author of 5 full research papers published in journals with impact factor.

veronikabrynychova@seznam.cz