The types of DNA repair, ubiquitination and transcriptional regulations which is encoded by BRCA1 gene. It is expressed in cells of breast and other tissues. In the majority of Nationalities two mutations in BRCA1 have been reported. 185delAG and 5382insC. Cancer stem cell-like cells (CSC-like) may generate tumor through the stem cell processes of self-renewal and differentiation into multiple cell types. The present study aims to identify the existence of 5382insC polymorphism in breast cancer and breast CSC-like cells.

**Materials & Methods:** There were studied four different breast cancer cell lines. The established human breast cancer cell lines MCF-7 and T47D (ECACC), breast cancer stem cells (CelProgen), as well as breast CSC-like cells, which were isolated from circulating tumor cell cultures from a patient with breast cancer. The gene expression levels were studied with RT-qPCR experiments and relative quantification among the four cell lines, according to Livak Method (ΔΔCt-Normalized to 18SrRNA) was performed. In the last experimental panel the samples were sequenced with two different platforms (pyrosequencing and capillary electrophoresis). The stemness was checked with specific stemness transcription factors (Nanog, Oct4, Sox2).

**Results:** The BRCA1 gene expression levels are higher in breast CSC-like cells with similar ratios between established and patients-derived CSC-like cells. In cancer cells, BRCA1 is expressed higher in T47D cell line. The absence of 5382insC was determined in all samples.

**Conclusion:** The 5382insC polymorphism is correlated with higher risk of breast cancer. However, in many cases this polymorphisms does not exist. CSC-like cells are able to tumor genesis via epithelial to mesenchymal transition (EMT) and mesenchymal to epithelial transition (MET). 5382insC seems not to effect in this procedure. It is therefore necessary to examine and other polymorphisms of BRCA1 gene as well as other genes that may be involved in tumor generation.

**Disclosure of Potential Conflicts of Interest**

None of the authors of the above study has declared any conflict of interest.