PHAGE DISPLAY IN BREAST CANCER

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Early detection of breast cancer is the main objective to increase survival. This investigation has used phage display technology to isolate ligand peptides to breast cancer tissues in order to select potential biomarkers for the improvement of diagnosis and treatment. Two random peptide libraries, *PhD7* and *PhD12*, were submitted to positive and negative selection against tumor and healthy tissues, respectively. DNA of selected phages was sequenced, translated and submitted to bioinformatic analyses. The immunohistochemistry analyses were performed with six selected phages in breast cancer and the mixture of three phages has been tested in breast and ovary cancers, non-Hodgkin lymphoma and melanoma. The immunohistochemistry analyses have shown specific binding only to tumor cells. The mixture of phages has recognized all types of tumor tissues, except melanoma. Three selected phages have specifically marked the vascular walls of tumor cells. All phages presented high information content with significant ELISA indexes. The *Dot-blotting* and *western-blotting* assays have validated the selection by demonstrating high specificity to tumor proteins. The selected phages may be used in the future as tissue biomarkers for diagnosis and therapeutics procedures in breast cancer. The high information content and the significant data presented by all immunological assays have validated the subtractive selection strategy.

Key words: biomarkers, breast cancer, Phage display

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