TARGETING PEPTIDES TO HER2 USING PHAGE DISPLAY TECHNOLOGY

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HER2 is a member of the epidermal growth factor receptor family of tirosine kinases and it is overexpressed in about 30% of breast cancers. ErbB2 is often associated with an unfavorable prognosis. A monoclonal antibody against HER2, trastuzumab, is currently in use as a treatment for breast cancer; however it can develop a high rate of cardiac failure. As an alternative to trastuzumab we have recently selected anti-ErbB2 peptides by phage display tecnhology. A cyclic 7 amino acid phage display random peptide library was panned against an external domain of ErbB2 (R&D System®). Specific peptides were selected by dislodgment binding assay with trastuzumab solution. After five rounds of panning assays it was identified several ErbB2 binding phage clones that had been selected, sequenced and analyzed by ClustalW program (European Bioinformatics Institute, Cambridge, UK), using matrix ID. Three ErbB2 specific phages were amplified by infection of K91Kan and tested in cell culture proliferation and viability assays. We could observe that one of the three selected peptides promoted a significant decrease in breast cancer cells viability and proliferation, compared with trastuzumab results. The data obtained with these studies demonstrated a potential new insight to develop anti-tumor therapy for breast cancer. Supported by FAPESP, CAPES, CNPq and NEPAS.

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