Glyceraldehyde-3-Phosphate Dehydrogenase as a surface antigen shared by breast cancer cell lines

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Breast cancer is a major health burden worldwide. It is responsible for over 1 million of 10 million cases of cancer in the world. Advances in breast cancer detection and treatment have contributed to improving the rate of survival, although mortality rates remains significantly high. Despite all these advances, more efficient diagnostic methods and effective treatments are necessary. The establishment of breast cancer cell lines is an important tool to understand biological processes involved in this disease, as well as the identification of potential therapeutic targets. In the present work, two breast cancer cell lines were established: MACL-1 and MGSO-3. We used antibodies from immunized rabbits with MCF-7 and MDA-MB-231 commercial breast cancer cell lines to purify antigens shared by the cell lines established in this work. We purified a 37 kDa antigen by affinity chromatography and its N-terminal amino acid sequence was homologous to glyceraldhyde-3-phosphate dehydrogenase (GAPDH). Immunohistochemical analysis demonstrated that cell growth determines the subcellular localization pattern of human GAPDH in normal cells. In quiescent normal cells, GAPDH was detected only in the cytosol while in proliferating cells GAPDH localized preferentially in the nuclear or perinuclear regions. On the other hand, early studies identified GAPDH as an erythrocyte-membrane-bound protein. Therefore, we performed immunofluorescence co-localization experiments in which Na^+/K^+-ATPase was used as a cytoplasmic membrane marker. Confocal microscopy results showed co-localization with Na^+/K^+-ATPase demonstrating that GAPDH is a surface protein shared by commercial and the recently established breast cancer cell lines. This

finding opens new perspectives since GAPDH could be used as a novel biomarker for diagnosis or as a potential therapeutic target in breast cancer.

Key words: breast cancer, GAPDH, primary cell lines, antigens