PROTEOMIC ANALYSIS OF NIPPLE ASPIRATE FLUID (NAF) FROM BOTH BREASTS OF A PATIENT WITH UNILATERAL BREAST CANCER

Brunoro,G.V.F.[1], Pagnoncelli,D.[2], De Moura-Gallo,C.V.[3], Chapeaurouge,D.A.[1], Neves-Ferreira,A.G.C.[1], Perales,J.[1]

[1]Laboratório de Toxinologia, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil;
[2]Departamento de Ginecologia, Instituto Fernandes Figueira, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil;
[3]Departamento de Biologia Celular e Genética, Instituto de Biologia Roberto Alcântara Gomes, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brazil;

Breast cancer is the main cause of cancer deaths in women. Most breast cancer deaths are caused by metastatic disease, highlighting the importance of early detection and screening. Mammary ductal cells are the origin for 70–80% of breast cancers and NAF contains proteins directly secreted by the ductal and lobular epithelium. Proteomic approaches offer a sensitive and largely unbiased way to evaluate NAF. In this study we have optimized sample preparation and 2D-electrophoresis conditions to allow the proteomic analysis of NAF from patients with unilateral invasive breast carcinomas. Preliminary results from a single patient showed that several protein spots were differentially expressed between the healthy breast and the one with cancer. Some of these spots were digested with trypsin and identified by MALDI-TOF/TOF MS as transferrin, apolipoprotein-D and zinc-a2-glycoprotein, among others. In summary, this study demonstrates the promising new application for NAF as a noninvasive tool for early detection of breast cancer. Besides diagnosis of breast cancer, it could also be useful on screening, drug selection, risk evaluation and treatment monitoring.