Altered Expression of Alpha-1-inhibitor III and Immunoglobulin Heavy Chain Variable Region Proteins in rat Mammary Tumorigenesis: The Prognostic Signatures

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Abstract—*The alarming increase in the figures of breast cancer cases (across the globe) highlights the need to have efficient prognostic tools. Changes in the expression of vital proteins may reflect the manifestation of tumorigenesis, therefore the early evidences of expression changes in secretory proteins may lead to early detection. In the present study, a breast cancer model was developed using Wistar rats. The serum proteome of rats was analyzed by virtue of 1D and 2D electrophoresis, followed by PDQuest software analysis, which revealed the altered expression (downregulation and upregulation respectively) of two proteins at very early stage (13th week) of tumorigenesis. The proteins in question were subjected to MALDI-TOF MS characterization and thereby identified as: Alpha-1-inhibitor III and Immunoglobulin heavy chain variable region. These proteins can hence serve as important tools in the search of prognostic markers for the early detection of breast cancer, and may thus be recognized as prognostic signatures.*

Keywords: *Breast cancer; Wistar rat; MALDI- TOF MS; Proteins; Tumorigenesis.*