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ABSTRACT BOOK

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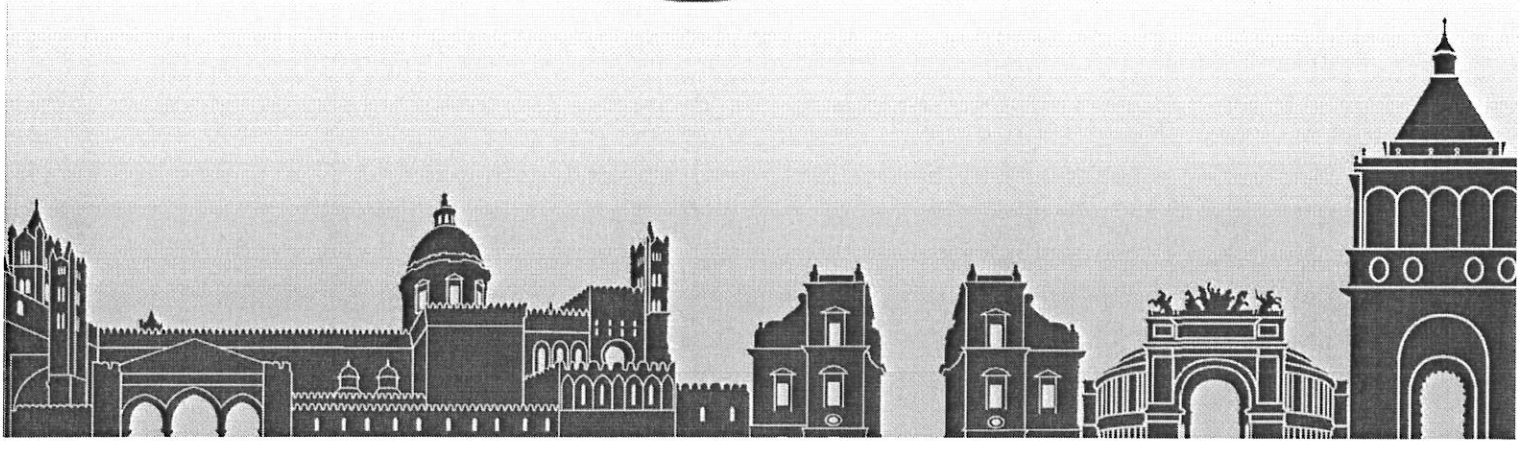

Heat Shock Proteins exosomal localization and levels in non-tumoral and tumoral thyroid tissues

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Exosomes (EXs) secreted from cells to the extracellular environment play an important role in intercellular communication in normality and pathology. In particular, EXs contribute to cancer progression through the modulation of tumor microenvironment. Heat Shock Proteins (Hsps) are implicated in the development of carcinogenic process because they interact with many metabolic and biomolecular mechanisms of cancer cells [1]. Different studies shown that they can be released by tumors cells and that the mechanism of release is mediated by EXs pathway. In this study we performed an immunomorphological and biomolecular analysis to investigate Hsp27, Hsp60, Hsp70, Hsp90 levels expression profile in thyroid tissue and in plasma samples from patients undergoing thyroidectomy. We studied two groups of patients, one surgically treated for benign goiter, another surgically treated for papillary carcinoma. Samples of thyroid tissue of benign goiter and papillary carcinoma were used for IHC analysis. Two blood samples from each subjects were taken, the first one day prior to the surgical removal of the thyroid, and the second, one week after, on the day of medication. These blood samples were used for exosomal isolation. The immunoistochemistry shown an overexpression of Hsp27, Hsp60 and Hsp90 in the PTC cases comparison with peritumoral tissue and with goiter samples. Hsp70 expression level has not shown significant difference between two groups studied. In particular Hsp27, Hsp60 and Hsp90 were visible at cytoplasmic and membrane levels. The membrane localization of these HSP suggested their release in tumor microenviroment. The exosomes, obtained from the plasma, were analyzed by Dynamic Light Scattering (DLS), Transmission Electron Microscopy (TEM), and Atomic Force Microscopy (AFM) in order to estimate the exosomes size/diameter and morphology. After, we performed Western Blotting analysis for Alix and CD81, as exosomal markers, and for Hsp27, Hsp60 and Hsp90. The levels of Hsp27, Hsp60 and Hsp90 in the exosomes of patients with PTC before surgery were significantly higher than in the exosomes from the same patients after surgery. The data obtained shown that, as demonstrated in human large bowel cancer [2], the Hsp levels studied increased in PTC specimens respect to goiter specimens.

References:

[1] Rappa et al. (2012) HSP-molecular chaperones in cancer biogenesis and tumor therapy: an overview. Anticancer Res. 32:5139-50.

[2] Campanella et al. (2015) Heat shock protein 60 levels in tissue and circulating exosomes in human large bowel cancer before and after ablative surgery. Cancer 121:3230-9. doi:10.1002/cncr.29499.