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EFFECT OF AUTOIMMUNE REGULATOR PROTEIN (AIRE) EXPRESSION ON THE CELLULAR PROTEOME

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T Lymphocytes are cells from the adaptive immune system involved in the immune response against infected cells. They express a clonally variable membrane receptor that recognizes highly specifically peptides arising from cellular catabolism (of pathogen proteins, in case of an infection, or modified, in case of a tumour), presented by the major histocompatibility complex (MHC) molecules on the cellular surface of presenting cells. Circulating T lymphocytes have to be "taught" to not react against own intact cells. Developing T cells are selected in the thymus. More than 95% of the thymocytes (either not able to recognize MHC, or too reactive against own MHC-peptide complexes) are deleted. Transcription of genes that code for tissue specific antigens (TSA) –"promiscuous expression"– has been observed in thymus. Expression of many of those genes is blocked when AutoImmune Regulator (AIRE) protein is not expressed. The absence of AIRE triggers a poliorganic autoimmune disease called APECED. Therefore, AIRE seems to be a key element in the development of the central tolerance.

We present here the comparison between the cellular proteomes of the HT93 thyroid cell line transfected or not with AIRE. With this purpose, two quantitative proteomic methodologies, DIGE and ICPL-LC-MS/MS, have been used in the analysis. DIGE analysis showed that in cells expressing AIRE there is an increase in different chaperons, including HSP70 y HSP27. A decrease of proteins related with cytoskeleton is also observed. Results of the ICPL–1DE-LC-MS/MS analysis were consistent with the ones obtained by DIGE. Proteomic data were confirmed through western blot experiments and flow cytometry for some of the differentially expressed proteins.

Hence, although changes in TSA expression could not be detected, the proteomic analysis show that AIRE expression increases the expression of different chaperon proteins and modifies the expression of some proteins related with the cellular cytoskeleton.