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DIFFERENTIAL PROTEIN EXPRESSION IN PERIPHERAL BLOOD MONONUCLEAR CELLS (PBMCs) OF PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

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Plasma membrane and cytosolic proteins were extracted from PBMCs lysates upon separation from intact nuclei and NP-40 insoluble material from 14 SLE patients and 15 healthy controls. Proteins were subjected to two-dimensional gel electrophoresis and protein expression patterns were analyzed by using the PD-Quest software to select spots that were differentially expressed between SLE and healthy controls PBMCs. A total of 110 different proteins were identified by matrix assisted laser desorption-time of flight-mass spectroscopy. The molecular functions of these proteins as well as the biological process in which they participate were assigned in accordance with the Human Protein Resource Database (www.hprd.org). The list includes, but is not limited to, polypeptides involved in various biological processes such as signal transduction and cell communication (30%); energy metabolism (7.3%); protein metabolism (17.3%); cell growth and/or maintenance (25.4%); immune response (5.4%); protein folding and peptide metabolism (4.5%); regulation of nucleobase, nucleoside, and nucleic acid metabolism (5.4%); extracellular (2.7%), and 1.8% of the proteins are of unknown function. The calcium-binding proteins S100A8 and S100A9, and the alpha chain of L-lactate dehydrogenase were over-expressed in PBMCs of SLE patients. In contrast albumin, calreticulin, Ras suppressor protein 1, and cyclophilin A were down-regulated. Cyclophilin deficiency is associated with diminished activation of nuclear factor of activated T lymphocytes c (NFATc) and impaired Th2 responses. To test whether SLE patients had an impaired Th2 response the Bio-Plex Precision Pro Human Cytokine 10-Plex kit assay (Bio-Rad, Hercules, CA) was used to simultaneously test 10 cytokines: IL-1 β , IL-2, IL-4, IL-5, IL-6, IL-10, IL-12 (p70), IL-13, IFN- γ and TNF- α in either plasma and/or in tissue culture supernatants from PBMCs stimulated overnight or not with superantigen. The data showed that in most SLE patients there was an unbalanced cytokine production toward Th1 or proinflammatory cytokines, which may correlate with the cyclophilin deficiency.