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# Identification of cytoskeleton and cellular traffic and membrane dynamics of Iranian *Leishmania infantum* by LC-mass spectrometry

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**Introduction:** *Leishmania* parasites cause a broad spectrum of clinical disease. The outcome of infection is influenced of both host immune situation and the parasite species. The mechanisms of species differences and virulence are under the influence of gene expression regulation at post transcriptional stages. Proteomic studies by using the 2 dimensional electrophoresis (2-DE) and mass-spectrometry increase our understanding of the mechanism of the physiological or pathological process.

**Objectives:** Here in, we report the dynamic roles of Cytoskeleton and cellular traffic in *L. infantum* through the 2-DE and liquid mass spectrometry (LC-MS).

**Materials and Methods:** As a preliminary study, we compared the proteome mapping of the Iranian isolate of *Leishmania infantum* through the (2-DE), and identified the prominent proteins by Liquid Chromatography (LC) mass spectrometry.

**Results:** We reproducibly detected about 700 protein spots in *L. infantum* by using the Melanie software. Of the 135 proteins that were detected on the analytical gels, 61 proteins were detected reliably on CBB-stained preparative gels which were analyzed using LC/MS/MS after excitation from CBB stained gels. These proteins according to their functions and biological processes were classified in twelve categories: carbohydrate metabolism process, protein synthesis and assembly, cell signaling and vesicular trafficking, intracellular survival/proteolysis, antioxidant defense, stress related proteins/protein folding, cell motility and cytoskeleton, nucleoside, nucleotide and nucleic acid metabolism.

**Conclusion:** One of the cell signaling proteins was calmodulin-like protein. Calmodulin is a kind of calcium binding protein which expresses in all eukaryotic cells including members of the genus *Leishmania*; it participates in calcium signaling pathways that regulate multiple critical processes such as growth and proliferation. Moreover, it plays a vital role in virulence of *Leishmania* during invasion of macrophage. On the other hand vacuolar sorting-like protein as a vesicular trafficking protein involved in sorting and delivering of vacuolar proteins to each intracellular compartment. Also this protein as a member of endosome sorting and autophagy pathways is essential for differentiation and virulence of *Leishmania*.