Proteomics analysis reveals that HSP70 interacts with estrogen receptor alpha in the nucleus of human breast cancer

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Heat shock proteins (HSPs) are known to associate with Estrogen Receptors (ER) and regulate ER-mediated cell proliferation. Historically, the studies in this area have been focused on HSP90. However, some critical questions on the HSP-ERα interactions remain unclear. In this study, through a quantitative proteomic method we found that 21 HSPs and three HSP co-chaperones were associated with ERα in human cells. Four HSP70 family members, HSP70-1, HSC70, GRP75 and GRP78 were the predominate HSPs accounting for 78% of all identified ERα-associated HSPs. Two HSP90 family members, HSP90α and HSP90β three HSP110 family members, HSP105, HSP4 and HSP4L were also identified to associate with ERα, accounting for 8% and 6% of identified ERα-associated HSPs respectively. The abundance of HSP90α in the ERα-complexes was two-fold of that of HSP90β. Among the reported HSP co-chaperones, we detected p23, FKBP51 and CHIP in the ERα-containing protein complexes. Studies with the two most abundant ERα-associated HSPs, HSP70-1 and HSC70 demonstrated that the two HSPs interacted with ERα in the nucleus despite that the majority of them were localized in the cytoplasm. Further studies showed that a significant portion of HSP70-1 and HSC70 were associated with transcriptionally active and inactive chromatin in human breast cancer cells.

Biography

Ahmed E Dhamad has received his Bachelor’s degree in 2004 and completed his Master’s degree in Biological Science in 2006. He has worked as an Instructor for five years. He taught basically three subjects Biotechnology, Genetic Engineering, Immunology and Molecular Biology. Presently, He is a PhD candidate in Cell and Molecular Biology at the University of Arkansas, USA. He has published 4 papers and was involved in 3 conferences in USA.

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