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A comparative study of thermo-inducible *HSP70* gene expression pattern in clinical and environmental isolates of *Aspergillus fumigatus* in a time-course manner

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Introduction & Aim: *Aspergillus fumigatus* is the most frequent etiologic agent of invasive Aspergillosis in immunocompromised patients. Economic significance of *Aspergillus* spp., in animal health is mainly characterized by their ability in production of mycotoxins and cause disease in respiratory system of poultry. The ability of a pathogen to adapt to a high temperature environment such as that in the host body is the key factor for the pathogenesis. *HSP70* family of genes and their related proteins play a pivotal role in resistance of microbial cells to stressed conditions within host body. Here, we examined relative gene expression of heat-inducible *HSP70* gene in environmental and clinical (from infected ostriches) isolates of *Aspergillus fumigatus*.

Methods: The isolates were cultured at four temperature-points (20°C, 30°C, 37°C and 42°C) for five days, quantitative real-time PCR used to measure the relative gene expression of *HSP70* gene in clinical isolates in comparison to *Aspergillus fumigatus* ATCC 90906 standard strain which was incubated at 25 °C for five days.

Results: During entire five days *HSP70* expression level in clinical samples was higher than in environmental samples ($p < 0.05$, Mann Whitney U test). Difference in expression level between two groups at 42 °C was reduced. Mean *HSP70* expression level of five incubation days showed a slow and constantly increasing pattern by temperature elevation in both groups at 30 °C, 37 °C and 42 °C but in contrary at 20 °C both groups demonstrated a decreasing expression pattern. Temperature shift from 20 °C to 42 °C resulted in a strong *HSP70* induction and up to 10 and 8.6 fold change in its expression levels at the end of fifth day of incubation in clinical and environmental groups, respectively.

Conclusion: We concluded that two temperature-points including 37 °C and 42 °C are major temperature-points inducing *HSP70* expression in *Aspergillus fumigatus* and cause highest expression shift in both experimental groups.

Biography

Golnaz Sharafi has completed her DVM with excellent grade from Veterinary School in Tehran University, Iran. She is currently a R&D and Lab Officer in Viromed Laboratory. She has published more than 5 papers in reputed journals and also attended several international conferences.

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