

Deuterium Effect on the Growth of the Fungus *Aspergillus Fumigatus* and *Candida Albicans*

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Abstract : Introduction and Goals: Deuterium has different action from its isotopes hydrogen in chemical reactions and biochemical processes. It is not a significant difference in heavier atoms between the behavior of heavier isotope and the lighter one but for very lighter atoms it is significant. According to that most of the weight of all creatures body is water natural rate can be significant. In this article we want to study the effect of reduced deuterium on the fungus cell. If we saw the dependence of deuterium concentration of environment on the cells growth we can test this in vivo models too. Methods: First we measured deuterium concentration of the distilled water this analyze was operated by Arak's heavy water company. Then the deuterium was diluted to $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{8}$ $\frac{1}{16}$ by adding water free of deuterium for making media. In three of samples the deuterium concentration was increased by adding D₂O up to 10,50,100 times more concentrated. For *Candida albicans* growth we used Sabouraud medium and for *Aspergillus fumigatus* growth we used Sabouraud medium containing chloramphenicol. After culturing the fungus species we put the mediums for each species in the shaker incubator for 10 days in 25 centigrade. In different days and times the plates were studied morphologically and some microscopic characteristics were studied too. This experiments and cultures were repeated 3 times. Results: Statistical analyzes by paired-sample T test showed that *Aspergillus fumigatus* growth was decreased in concentration of 72 ppm (half deuterium concentration of negative control) significantly. In deuterium concentration reduction the growth reduced into the negative control significantly. The project results showed that *Candida albicans* was sensitive to reduce and decrease of the deuterium in all concentrations.

Keywords : deuterium, cancer cell, growth, *Candida albicans*

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