عنوان مقاله:

Synthetic and Biogenic Selenium nanoparticles Boost Macrophage Responses Exposed to Bladder Tumor Cells

محل انتشار:

بیست دومین کنگره میکروب شناسی ایران (مجازی) (سال: 1400)

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خلاصه مقاله:

Background and Aim : Synthetic and biogenic nanoparticles have shown the lowest deleterious effect in comparison to other common medications. The anti-tumor properties of Selenium nanoparticles (SeNPs) were reported in several types of research. In the present research, the effect of synthetic and biogenic selenium nanoparticles on macrophage responses was assessed and compared to BCG as a common treatment Methods : The biogenesis of selenium nanoparticles were performed synthetically by ascorbic acid and biogenically by intravesical M. Bovis bacillus Calmette-Guérin. Macrophages were cultured and treated with synthetic and biogenic SeNPs, which each of them combined with bladder tumor lysate and BCG. The other experimental groups include SeNPs + tumor lysate + MQs, BCG, BCG+MQs, and MQs. The mRNA levels of IL-۲۷, IFN-γ, IL-۱۲, TNF-α, IL-۱۰, and MHC-I were determined using the real-time PCR method.Results : The gene expression of IL-۲۷, IFN-γ, IL-۱۲, TNF-α, MHC-I were drastically upregulated in the combination treatment of selenium nanoparticles (synthetic or biogenic) with the tumor lysate and macrophages compared to the BCG control group. As such, the expression of IL-۱۰ did not show remarkable differences in all experimental groups among each other. The maximum effect of synthetic and biogenic selenium nanoparticles was observed after ۲۴h treatment. Conclusion : Synthetic selenium nanoparticles showed better activity than Biogenic nanoparticles, and both of them had treatment-dependent-function.

کلمات کلیدی:

Synthetic selenium nanoparticles; biogenic selenium nanoparticles; BCG therapy; bladder tumor lysate; Macrophage response