O18: **Resistance of nanobacteria isolated from urinary and kidney stones to broad-spectrum antibiotics**

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**Background and Aim:** Nanobacteria or calcifying nanoparticles (CNP) possesses unique properties such as small size (0.1 to 0.5 microns) and high resistance to heat and routine antimicrobial agents. These organisms are 100 times smaller than bacteria and protected by a shell of apatite, so they could be as candidate for emerging and progress of in vivo pathological calcification. In this study inhibitory effect of broad-spectrum antibiotics on growth of these new forms of life has been investigated.

**Methods:** Powdered urinary and kidney stones were demineralized with HCl and neutralized with appropriate buffers and became filtered. Finally suspension was incubated in DMEM medium with Fetal Bovine Serum (FBS) and broad-spectrum antibiotics (1x) for 8 weeks. During incubation, the culture medium analyzed by optical inverted microscope. After incubation for 8 week, to assessment of nanobacteria growth, culture medium analyzed by Scanning electron microscope (SEM).

**Results:** After 4 week incubation, white sedimentation at bottom of the plates observed .Analysis of optical inverted microscope showed crystal forms related to nanobacteria. SEM analysis of these White-color sediments, showed nanoparticle in size of 160 nm or less. Scanning electron micrographs showed a spherical shape of these nanobacteria. Energy Dispersive X-ray spectroscopy (EDS) also showed a pick for calcium and phosphor.

**Conclusion:** The growth of calcifying nanoparticles after adding the broad-spectrum antibiotics may be because of their apatite hard shells that can be supported them from the antibiotics penetration to their cells.

**Keywords:** Broad-spectrum antibiotics, Nanobacteria, Urinary and kidney stones