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MATERIALS SCIENCES AND ENGINEERING**

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Program and the Book of Abstracts

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Prof. Dr. Nenad Ignjatović

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In vitro evaluation of antimicrobial activity of nano composite biomaterials based on hydroxyapatite

Zorica Ajduković¹, Jelena Milićević¹, Milica B. Petrović¹, Nadica Djordjević², S. Mladenović- Antić³, B. Kocić³, Nenad Ignjatović⁴, Dragan Uskoković⁴, Vojin Savić⁵

¹Faculty of Medicine, Niš, Clinic of Stomatology, Department of Prosthodontics, Niš, Serbia,

²Faculty of Medicine The University of Priština located in Kosovska Mitrovica, Clinic of Stomatology, Department of Prosthodontics, Niš, Serbia, ³Institute of Public Health, Center for Microbiology, Niš, Serbia, ⁴Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Belgrade, Serbia, ⁵Faculty of Medicine, Niš, Institute of Biomedical Research, Niš, Serbia

Antimicrobial materials based on hydroxyapatite are potentially attractive in a wide variety of medical and stomatological applications. The objective of this paper is to examine antimicrobial activity of cobalt-substituted calcium hydroxyapatite nanopowders and biphased calcium-phosphate/ poli-lactide-co-glicolide. The antimicrobial effects of these substances (powders) against two pathogen bacterial strains- *Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 25923) were tested by disc diffusion method and quantitative antimicrobial test in liquid medium. It was noted that the inhibition zone of the bacterial cells *S. aureus* around the sample of the Ca/Co-HAp, was a lot bigger compared to the inhibition zone of bacterial cells *E. coli* around the sample of the mentioned biomaterial, which means that this material has bigger antimicrobial activity on *S. aureus*, in relation to *E. coli*. Quantitative antimicrobial test in liquid medium demonstrate that cobalt-substituted calcium hydroxyapatite samples show viable cells reduction of both tested microorganisms. It may be concluded that nanoparticles of cobalt-substituted calcium hydroxyapatite nano-powders has a satisfactory antimicrobial activity according to the tested bacteria strain.