

**FOURTEENTH ANNUAL CONFERENCE**

# **YUCOMAT 2012**

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P.S.E.17.

**REGENERATION BONE TISSUE BY NEW NANOPARTICLES SYSTEM BASED ON HYDROXIAPATITE AS SYSTEMS FOR LOCAL DELIVERY OF VITAMIN D3**

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Increased life expectancy in developed countries leads to an increase in the number of musculoskeletal disorders, such as osteoporosis, oosteoratritis thus compromising good dental treatment. There are many drug delivery systems based on hydroxiapatite used in bone tissue regeneration. Vitamin D3 is osteodiferentiation factor which regulates bone formation by increasing osteoblast differentiation and bone mineralization. The aim of this study is to examine new multifunctional nanoparticulate system for local delivery of active form of vitamin D3 by biochemical blood marker and histochemical analysis. The research was carried out on female Westar rats, aged 6-8 weeks, which have been implanted biomaterials in the artificial bone defect. Biochemical markers of osteogenesis were statistically significant after only 6 weeks of implantation. ALP activity in bone tissue was showed by histochemical analysis as well as high level reparatory skills. Local realized Vitamin D3 contribute to bone formation by increasing osteoblast differentiation and bone mineralization

Key words: nanoparticles drug delivery system, vitamin D3, alveolar bone, regeneration.

P.S.E.18.

**HYDROXYAPATITE AND HYDROXYAPATITE SUBSTITUENTS IN STRENGTHENING OF THE JAW BONE TEGMENTA**

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In recent years, calcium hydroxyapatite (HAp) and its substituents are increasingly used in dentistry and medicine. The influence of nanoparticles Ca / Co-HAp in strengthening weak osteoporotic bone jaw tegmenta was tested in an experimental model. The study was conducted on Wistar soy rats, aged 6-8 weeks. The biomaterial was implanted in the osteoporotically weekend mandible of these animals. The best results in the strengthening of the lower jaw bone tegmenta were achieved 24 weeks after implantation of hydroxyapatite nanoparticles in which the calcium ion was substituted with 12% of cobalt ions. Histochemical parameters of bone syntesis were in a statistically significant increase. SEM analysis showed a high degree of osteogenetic ability of nano particulate material implanted in the bone defect.

Keywords: hydroxyapatite, Ca / Co-HAp, osteoporosis, jaw bone, osteogenesis.