oXIM was revealed. It provided a good surface for cell growth and promoted cell proliferation. The cells maintained morphology typical for bone cells.
Discussion and conclusions: Our observations indicate that GoHAP is a promising material for resorbable bone implant fabrication.
Acknowledgments: Grant No. POIG.01.01.02-00-022/09.
Disclosure: The authors report no con flicts ofinterest in this work.
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## PP52
## Osteotransductive Octacalcium phosphate ceramics as functional bone graft: from materials science to cl inical applications

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Introduction: During the last several years, there has been growing attention to octacalcium phosphate (OCP) as a synthetic bone substitute material. The approach is aimed at testing the properties of this material with a phase composition closer to the earliest state of the natural bone tissue with the hope of a signi ficant improvement ofits biological behaviour. It is very important to note that all of studies were carried out with OCP which were prepared by lightly grinding the dried OCP pressed powders. Therefore, the obtained agglomerates from OCP powders didn't contain any structure required for arti ficial bone grafts. The aim of this study was to develop the production route for OCP ceramic with the defined structure. Further to investigate the resorption, the osteogenic properties in ectopic models and the contemporary bone deposition after in vivo implantation. At the end of this work, two clinical cases are presented.
Materials and methods: OCP ceramics were prepared from calcium carbonate (CC) powders. Brie fly, we took in account a simple idea to prepare CC ceramics with designed structure at first then to transform it in chemical solutions to OCP material. The simplest formulation such as granules was used as model. Materials were characterized by chemical analysis, BET, XRD, SEM, IR-spectroscopy. The following tests with complimentary techniques were used: resorption and protein adsorption tests, cells adhesion and proliferation, subcutaneous and kidney capsule implantations, distal femoral epiphysis and cranial models. The clinical trial is a single-arm non-randomized intervention, and two cases of sinus lifting and cyst cavity were studied. All animal and clinical trials were performed in conformity with institutional guidelines in compliance with national laws and policies.
Results: We have developed a method to produce porous base OCP ceramics with a speci fically designed microstructure and phase compositions depend on the preparation route. By this method we have got the lamellar or flat plate crystals OCP with dramatically enlarged surface area, controlled resorption rate and high capacity to proteins adsorption. The immunohistochemistry analysis showed that OCP granules were stimulating osteocalcin synthesis in subcutaneous and kidney capsule models. Qualitative histology proved biocompatibility, osteoconduction and favorable resorption, mainly through a cell-mediated mechanism. The results showed that the OCP ceramics have osteogenic features ofinterest and formed trabecular bone at 3 months after in vivo implantation. At 4.5 months after OCP implantation, dental radiography and histology of biopsy of patients in the treated defect revealed the new formed bone.
Discussion and conclusions: The present study shows that the developed OCP ceramics has biocompatible and osteoconductive /osteotransductive features. It can be used as synthetic alternative to others bone substitutes or as a scaffold material in regenerative medicine.
Acknowledgments: VSK is grateful to the Russian Foundation for Basic Research, grant no. 12-03-33074.

## PP53
## Shark teeth derived micro and nano crystalline bioapatites

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Introduction: Nowadays synthetic hydroxyapatite (HA) is widely used in clinics as bone filler material due to its similarity to the inorganic phase of same but, conversely, once implanted its functionality is limited to, basically, produce a tightening effect and reduce the volume of the defect. On the other hand, biological sources of HA have been investigated to incorporate osteoinductive and bioactive properties in vivo. Thus, bovine bone has been successfully implemented, but the recently confirmation of the risk of bovine spongiform encephalopathy transmission has compromised its use. The obtaining of biological apatites from marine sources is, then, of great interest due to the non reported diseases transmission from marine organisms to humans. Shark teeth suppose an abundant and promising source of bioapatites. The aim of the present work was the valorization of shark teeth derived bioapatites for bone void fillers and dental applications.
Materials and methods: Shark teeth ( I. oxyrinchus, P. glauca) were subjected to a pyrolysis at 950 °C for 12 hours with controlled heating and cooling ramps. A ball mill was used to obtain the bioceramics as granules, microparticles and nanocrystals. For this latter a sieving and centrifugation process was also required. Physicochemical characterization by SEM, EDS, TEM, XRD, FT-Raman, FTIR, XPS, I -CT, DLS and nano-indentation techniques, was performed. Preliminar biocompatibility tests on MC3T3-E1 cells on morphology and proliferation were carried out.
Results: The physicochemical characterization of the natural shark teeth and the obtained bioceramics gave compositions of carbonated HA, HA and other CaP in dentin and fluoroapatite (FA) in enameloid. In Fig. 1 SEM and EDS of the section of natural shark teeth are shown, where the presence of fluorine in enameloid (zone 1 and 2) and ofits substitution with other elements as sodium and magnesium in dentin (zone 3) was con firmed. The bioceramics were obtained as granules (>1 mm diameter), microparticles (1 mm –20 l m) and as nanocrystals ofless than 50 nm in one of the dimensions.