Guilherme de Souza Braga (EPUSP) and Fernando Josepetti Fonseca (EPUSP)

PANI/PSS self-assembled films were fabricated to verify the influence of fabrication parameters (such as concentration and pH of the polymeric solutions; washing and drying steps) on their morphology and electrical characteristics. The effeciviness of the assembly methods (manual versus mechanical) were also studied, thereto, a homemade device was employed on the assembly procedure and the films assembled were compared with the ones assembled manually.

I567 - MECHANICAL AND BIODEGRADATION PROPERTIES OF PCL/PVC BLENDS

Flávia Gaboardi (USF), Derval dos Santos Rosa (USF), Maira de Lourdes Rezende (USF) and Adriana Costa (USF)

The mechanical properties of PCL/PVC blends and their biodegradation in simulated soil were evaluated. The blends showed a lower tensile strength, elongation at break and elasticity modulus than pure PCL. The biodegradation rate increased with increasing PCL content of the blends, and blends with the plasticizer DOA had the greatest biodegradability.

I569 - INTERACTION BETWEEN ANTIMICROBIAL PEPTIDES AND PHOSPHOLIPIDS VESICLES, INVESTIGATED BY SPECTROSCOPIC METHODS

Roseane Rigo (IFSC - USP), Rosângela Itri (IF - USP), Diana Müller (UNL), Georgina Tonarelli (UNL), José Luiz de Souza Lopes (IFSC - USP) and Leila Maria Beltramini (IFSC - USP)

In the search of understanding the mechanism of action of some members from bacteriocin group (Plantaricin 149, Pediocin A and modified forms), the interaction of these peptides with biomimetic systems composed of different phospholipids and detergents have been analyzed by CD, fluorescence, SPR, calorimetric and in vitro studies, showing a high conformational change due to the induction of a helicoidal content on the peptide's secondary structure that can occur by electrostatic interactions between the positively charged residues of Lys of the peptides and the anionic head of phospholipids.

I571 - STUDY OF SUBSTANCES DELIVERY FROM LATEX FILM USING SPECTROPHOTOMETRY LOWRY METHOD AND UV APPLIED TO BONE GUIDED REGENERATION

Cibele Ereno (USC), Carlos F. O. Graeff (FC - UNESP), Rondinelli Donizetti Herculano (FFCLRP - USP), Cecília Pereira Silva (FFCLRP - USP), Sérgio A. C. Guimarães (USC) and Angela M. O. Kinoshita (USC)

In this work, we characterized the release of substances from latex films by Spectrophotometry with the purpose of future use as a barrier membrane and a protein delivery system simultaneously for dental and orthopedic uses.

I573 - MODIFIED AFM PROBES FOR HIGH RESOLUTION IMAGES AND STUDY OF MOLECULAR INTERACTIONS BETWEEN DENGUE VIRUS AND AEDES AEGYPTI CELLS

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Dengue is an important disease caused by an arbovirus worldwide, especially in the tropical regions. We used AFM to investigate the molecular interaction between dengue virus and Aedes aegypti cells. For this, silicon tips functionalized with this virus and the tick-borne cells was used as a substrate for AFM analysis.

I574 - CELL ADHESION AND PROLIFERATION OF HUMAN FIBROBLASTS ON ALUMINA AND HYDROXYAPATITE BASED CERAMICS WITH DIFFERENT SUPERFICIAL TREATMENT

Ana Helena Almeida Bressiani (IPEN), Márcia Martins Marques (FOUSP), Juliana Marchi (IPEN), José Carlos Bressiani (IPEN) and Carina Sinclér Delfino (FOUSP)

The aim of this study is to investigate the influence of different ceramics (Al_2O_3 and HAp), submitted to different superficial treatments (as sintered, rectified and polished) on the biocompatibility. Sintering was accomplished and density was evaluated. The roughness was determined and after sterilization (Co60 Gammacell), 1 x 105 fibroblasts were plated. After 1, 2 and 3 days, the samples were prepared for SEM. It was concluded that the rectification influences negatively on the biocompatibility of the HAp, whereas the rectification and polishing improve the biocompatibility of the Al_2O_3.

I575 - SYNTHESIS AND CHARACTERIZATION OF CAP/COLLAGEN BIOCOMPOSITES DOPED WITH ZINC

Luis Guilherme Dias Heneine (FUNED), Maria Helena - Santos (UFVJM) and Herman Sander Mansur (UFMG)

Calcium phosphate/collagen composites are promising biomaterials however have a rapid bioresorbability. The addition of Zn^{+2} in these materials can be stimulated the osteoblast proliferation and bone formation. Composites were developed mixing calcium phosphates doped and undoped with zinc and pure collagen type I. The characterized samples presented morphologic and structural characteristics similar to their constituents and the biological evaluation in vitro showed cytocompatibility. Probably, the doped Zn^{+2} biocomposites can significantly influence the rate of bone reconstruction.

I577 - MODELING OF AGGREGATION PROCESSES IN NANOSTRUCTURED SYSTEMS

Helinando Pequeno de Oliveira (UNIVASF), Felipe Nascimento de Souza Leão (UNIVASF), Thiago Fernandes dos Santos (UNIVASF) and Celso Pinto de Melo (UFPE)

Electrical impedance spectroscopy has been established as a tool of fundamental importance for the study of molecular organization in aqueous and solid state systems in the presence of an external field. In this work we examine the process of micelle formation in an aqueous environment by use of a computational simulation based on first-neighbors charge transport by percolation through a 2-D mesh of surfactant and water molecules. By varying the concentration of the components we follow the evolution of the resistance of the circuit.

I578 - STUDY OF CHITOSAN EFFECTS IN LIPOSOMES

Nádya P. da Silveira (UFRGS), Adriana R. Pohlmann (UFRGS), Marc Schmutz (Institut Charles Sadron), André Schroder (Institut Charles

Cell adhesion and proliferation of human fibroblasts on alumina and hydroxyapatite based ceramics with different superficial treatment

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Abstract – The biocompatibility of alumina and hydroxyapatite based ceramics substrates was evaluated thought human fibroblasts adhesion and proliferation in cell culture. The surfaces were finished in three different ways: as sintered, retificated and polished. It was observed that the superficial treatment has a great influence on cell adhesion and proliferation according to different ceramic substrates.

It is well known that the biocompatibility of materials for dental implants is the most important characteristic that promote the viability. Alumina based ceramics (Al_2O_3) have excellent mechanical properties which may allow the application structural bioinert materials[1]. In the other hand, hydroxyapatite ceramics (HAp), despite their lower mechanical properties, has a bioactive behavior, allowing a suitable osteointegration[2]. These materials can be used in several applications in biomaterials field, such as bone reconstruction and substitution[3]. Physical properties, such as final density, roughness and superficial treatment should be related with biological characteristics of such materials, in order to optimize the biological response. In this point of view, in vitro tests are required to understand the interaction between these ceramics and the human tissues[4]. The cell culture is considered a promising technique due do fast evaluation of the biocompatibility of several ceramic materials. The objective of this study is to investigate the biocompatibility of different ceramic substrates thought human fibroblasts (FMM1) adhesion and proliferation in cell culture.

The commercial powders of Al_2O_3 and HAp were uniaxially and cold isostatically pressed (200 MPa). Sintering was carried out at 1650°C/1 h and 1100°C/1 h for Al_2O_3 and HAp samples, respectively. Densities after sintering were evaluated for each sample. The surfaces were finished in three different ways: as sintered, retificated and polished. The roughness (Ra) was evaluated in all samples according to different superficial treatment. The samples were then sterilized using a γ Co-60. In order to evaluate the citotocicity, a fibroblast cell line derived from gingival human (FMM1) was used (10^5 cells)[5]. Three samples of each group were used at each time of experiments (1, 2 and 3 days). The samples were sputtered with gold before Scanning Electron Microscopy (SEM) analysis. Five micrographs were obtained for each group / time in order to have enough data.

Analysis of variance and Turkey test were carried out in order to compare the type of superficial treatment (as sintered, retificated, polished), the time of experiments and the studied substrates (Al_2O_3, HAp). As expected, Ra values depend on the superficial treatment. The results indicate that, considering the same material, there was no significant statistical difference (α=0,05) among several treatments. However, there was difference among culture exposure time, where the third day showed the best proliferation. In conclusion, considering the as sintered samples, HAp substrate was more biocompatible than Al_2O_3. Within the retificated samples, however, Al_2O_3 was more biocompatible than HAp, indicating that the superficial treatment has a great influence on cell adhesion and proliferation according to different ceramic substrates. Fig. 1 shows the difference in cell adhesion according to different ceramic substrates after 1 day cell exposure.

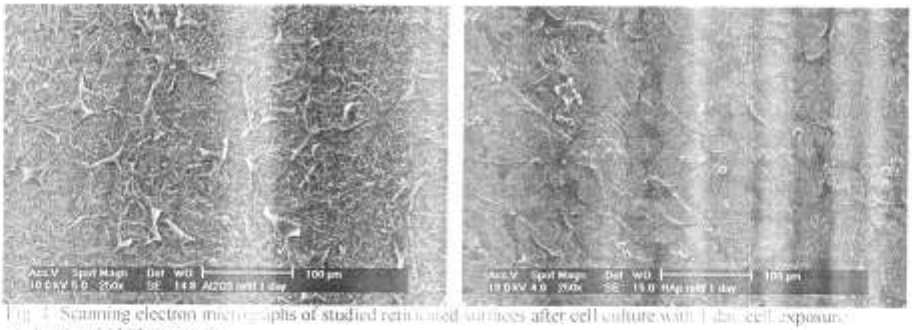

Fig. 1: Scanning electron micrographs of studied retificated surfaces after cell culture with 1 day cell exposure: a) alumina, b) hidroxyapatite

References

[1] M. Karlsson, T. Pålsgard, P. R. Wilshaw and G. Di Silvio, Biomaterials, 3039-3046, 24 (2003)
[2] E. J. Evans, Biomaterials, 574-576, 12 (1991)
[3] J.C. Wataha, J. Oral Rehabil, 79-90, 23 (1996)
[4] M. Eiskjaer and D. Arendholt-Bindslev, J. Dent. Res. 952, 73 (1994)
[5] R. I. Freshney, *Culture of Animal Cells* (Wiley-Liss, New York, 2nd ed.)