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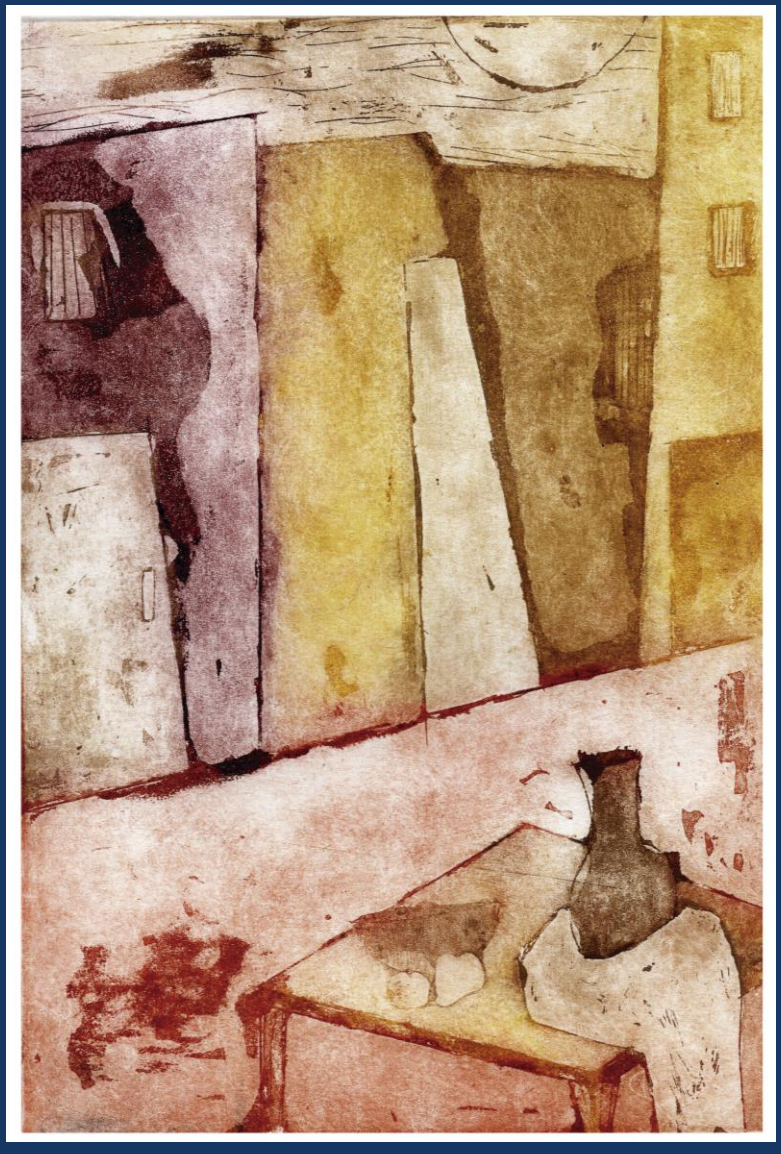

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(30.66 ± 17.28 %). It was concluded that L929 cell line is more sensitive to the changes in surface characteristics (wettability and roughness) than MC3T3-E1. Consequently, the appropriate choice of cell the line and surface characteristics of the biometals are key factors to take into account when cell adhesion is evaluated.

0270 - IMMOBILIZATION OF BENEFICIAL VAGINAL LACTOBACILLI IN POLYMERIC NANOFIBERS FOR ITS POTENTIAL INCLUSION IN VAGINAL PROBIOTIC FORMULATIONS

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Lactobacilli are the predominant microorganisms in the vaginal microbiome of healthy women. Probiotic formulations containing lactic acid bacteria (LAB) must include a high number of viable and active bacteria. The aim of this work was to evaluate the compatibility, survival and maintenance of beneficial properties of Lactobacillus gasseri CRL1320 and L. rhamnosus CRL1332 during their immobilization in polymeric nanofibers by electrospinning and after storage. The compatibility of lactobacilli with mucoadhesive polymers [polyvinylalcohol (PVA), polyvinylpyrrolidone (PVP) and chitosan/polyethylene oxide (Quit/PEO)] were evaluated. Lactobacilli were electrospunned with 15 % w/v PVA (12 kV, 0.3 mL/h, 12 cm distance to aluminum collector). The membranes were later stored at room temperature, 4 and -20 °C. Lactobacillus viability, maintenance of beneficial properties (hydrophobicity, self-aggregation and antimicrobial activity against urogenital pathogens) and nanofibers characterization was performed by SEM and FITR. The combination of PVA and PVP does not affect the bacteria viability, while Quit/PEO mixture was non-compatible. Therefore, PVA was selected for LAB immobilization. Electrospinning process was efficient since it allowed the recovery of a high number of lactobacilli (1010 UFC/g nanofiber) without modifying the surface and antimicrobial properties of the two strains. Lactobacillus immobilized in nanofibers were evidenced by SEM and FTIR. A higher survival rate was obtained in L. rhamnosus CRL1332 than in L. gasseri CRL1320 after the immobilization. The highest viable cells were kept in nanofibers stored at -20 °C. However, a decrease of viable cells (lower than 1 x 10^7 CFU/g) was observed in L. gasseri CRL1320 and L. rhamnosus CRL1332 at 28 and 56 days, respectively. The results obtained support the inclusion of lactobacilli into polymeric nanofibers for the design of vaginal formula. However, further studies are being carried out to improve the Lactobacillus survival.

0274 - DERMATAN SULFATE/CHITOSAN NANOMATERIALS LOADED WITH IRW MODULATE HUMAN ENDOTHELIAL STERILE INFLAMMATORY RESPONSE.

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The present work describes a novel delivery system for the selective targeting of egg-derived anti-inflammatory tripeptide Ile-Arg-Trp (IRW) to modulate human endothelial cells inflammation, in the context of high levels of oxidized triglyceride-rich lipoproteins (VLDLox). IRW is produced by solid phase peptide synthesis. Dermatan sulfate/Chitosan nanoparticles loaded with IRW (8.00% w/w) (DS/CS-IRW) are prepared by ionotropic gelification method and characterized by dynamic light scattering (DLS) and transmission electron microscopy (TEM). VLDLs were isolated from healthy human volunteers by density-gradient ultracentrifugation and oxidized by 5µM CuSO4 for 2 at 37 °C. To analyze the selective binding and uptake, human endothelial cells (EA.hy926) and human macrophages were incubated in the presence of FITC-nanoparticles at the biologically active concentration of DS, 10 µg/mL. Endothelial sterile inflammatory response was evaluated by NFkB subcellular distribution through immunofluorescence analysis and zymography studies. The incorporation of IRW results in a stable nanoparticle dispersion with a single size population of 539 ± 75 nm (n= 6). TEM shows that IRW inclusion resulted in compact spherical-like particles. Co-cultures between endothelial cells and macrophages confirm the selective interaction of fluorescent DS/CS-IRW with EA.hy926. After incubating endothelial cells with 100 µg protein/mL of VLDLox for 24 h, NFkB is localized both at the cytoplasmic and nuclear compartment. Nevertheless, the transcriptional factor is restricted to the cytoplasm in the presence of DS/CS-IRW nanoparticles. NFkB subcellular distribution was correlated with endothelial inflammatory response through the evaluation of the effect of DS/CS-IRW nanoparticles on matrix metalloproteinases activity-9. Zymographic analysis reveal no detectable MMP-9 activity after DS/CS-IRW treatment. We report here on the capability of these IRW-loaded complexes to modulate endothelial inflammatory response by as simple and potentially scalable nanotechnological platform.

0382 - DEVELOPMENT OF VITAMIN COATED TITANIUM DIOXIDE NANOPARTICLES WITH IMPROVED BIOCOMPATIBILITY

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Titanium dioxide (TiO_2) is widely used in sunscreens because it protects against UV radiation. Current ones are micronized or nanoparticle formulations (TiO_2@NP), which blend in with the skin tone and attain better cosmetic effect. Nanosized TiO_2 is approved by the Food and Drug Administration, but its biocompatibility is controversial. Concern about negative effects has lately been raised. In fact, cytotoxicity and oxidative stress produced by TiO_2@NP when exposed to sunlight were demonstrated in some studies. The goal of this work was to coat this kind of nanoparticle to protect skin cells from the damage generated upon the interaction with light. Functionalization of TiO_2@NP was done with antioxidant vitamin B_2 (riboflavin) because it has the potential to bind to the nanoparticle through an amine group. Binding was achieved after few minutes of sonication in aqueous media, followed by characterization. We used a model of prokaryotic cells (methicillin-sensitive Staphylococcus aureus biofilm) exposed to light to study the protective capacity of vitamins@TiO_2NP. Viability was assessed using XTT salt. The absorbance values are proportional to the metabolic activity of the cells and indicate cell survival. The analysis of the supernatant by UV-Vis spectrometry showed that every gram of TiO2@NP is loaded with 0.8 grams of vitamin B_2, after washing them. The IR spectrum of vitaminB2@TiO2NP showed signs of binding between compounds. The OH bending peak (1634 cm^{-1}) corresponding to bare nanoparticle disappeared and the NH_2 bending band characteristic of vitamin B_2 appeared (1650 cm^{-1}). Cell viability percent was higher for prokaryotic cells when they were treated with vitaminB_2@TiO_2NP (153 ± 9 %) compared to the ones treated with