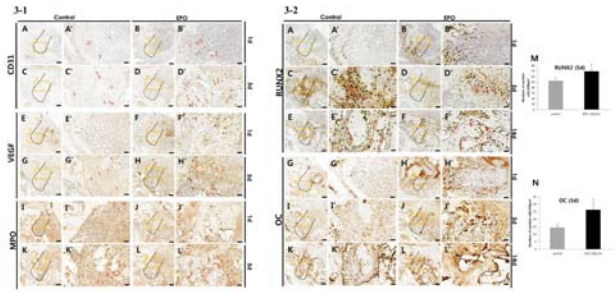

Figure 3. 3-1 Representative photomicrographs of alveolar tissue sections stained with vascular endothelial markers and the inflammatory marker in the control group (A,C,E,G,I,K) and EPO group (B,D,F,H,J,L) at 1 and 5 days. On day 1, the EPO group show stronger expression of cluster of differentiation 31 (CD31) and vascular endothelial growth factor (VEGF) in the entire extraction socket, especially in the apical and middle one-third of the regions compared to the control (A9,B9,E9,F9). On day 5, the localization patterns are intensified in the EPO group compared to those observed on day 1 (B9,D9,F9,H9). The EPO group also show a much stronger localization pattern, especially in the coronal 1/3 compared to that in the apical 1/3 and middle 1/3 regions (B9,D9,F9,H9). In contrast, the EPO group showed decreased immunolocalization of myeloperoxidase (MPO) in both 1- and 5-day specimens (I9,J9,K9,L9). Red arrows point to positive cells against CD31 (A–D), VEGF (E–H), and MPO (I–L). Scale bar: X = 100 μm, X' = 20 μm (X' is higher magnification of X).
3-2 Representative photomicrographs of alveolar tissue sections stained with osteoblast markers in the control group (A,C,E,G,I,K) and EPO group (B,D,F,H,J,L) at 1, 5, and 14 days. Compared to control, the localization of Runt-Related Transcription Factor 2 (RUNX2) in the EPO group is more intense on day 1; however, its localization patterns are decreased on day 5 (A9,B9,C9,D9). In 1-day specimens, the expression of RUNX2 is also more visible along the socket wall and in the apical 1/3 region of the experimental group (A9,B9). In contrast, osteocalcin (OC) localization on the day 1 specimen is weaker in the EPO group; however, its localization pattern is increased on day 5 (G9,H9,I9,J9). Specifically, OC-positive cells are observed only along the socket wall in the control group, but in the entire socket in the EPO group (I9,J9). However, on day 14, RUNX2 and OC are strongly expressed in the entire socket of both groups (E9,F9,K9,L9). Red arrows point to positive cells against RUNX2 (C9,D9,E9,F9). Histological analysis using RUNX2 (M) and OC (N) at 5 days. Scale bar: X = 100 μm, X' = 20 μm (X' is higher magnification of X). *Statistically significant differences compared to the untreated control ($p < 0.05$)

I confirm that ethical permits and approvals are in place in accordance with regulations: Yes, I confirm that ethical permits and approvals are in place.

Please provide the ethic votum number (if applicable): KNU 2015-136.

Disclosure of Interest: None Declared.

Keywords: Alveolar ridge preservation, Histomorphometry, Osteoblast

EAODGI2023-561/PO-BR-021 | Are lithium disilicate and zirconia biocompatible materials to the gingival tissue? An in vitro study

Tárcio Hiroshi Ishimine Skiba[1,*]; Joao Carlos Vicente Jr[2]; Eduardo Vedovatto[3]; Paulo Perri Carvalho[3]; Nidia Castro Santos[4]; Bruno Costa Martins Sá[2]; Douglas Moretti[5]

[1]Implantology; [2]SOEP, Porto Velho; [3]São Leopoldo Mandic, Campinas; [4]Guarulhos University, Guarulhos; [5]São Leopoldo Mandic, Campi, Brazil

Background: A high implant survival rate does not predict the aesthetical success. Therefore, thorough planning and materials selection are mandatory. Among these materials one can include the abutments, which proper selection leads to an ideal prosthetic restoration. On the Other hand, a poor selection may cause the failure of the rehabilitation. Titanium is the most employed material to produce abutments due to its wide support in the literature about its properties, its biocompatibility and its high resistance. Nevertheless, Titanium presents poor aesthetics because of its darkened surface, what may lead to a darkened marginal gingiva. Given the circumstances, alternate materials were pursued like ceramics, which color range match the natural teeth

Aim/Hypothesis: The aim of this work is to study cell viability on two aesthetic prothesis materials, Lithium Disilicate and Yttrium stabilized Zirconia, which surfaces were aged with bovine serum albumin solution, to simulate the period 8 to 10 months in mouth.

Material and Methods: This study encompassed 100 samples of which 50 were lithium disilicate and 50 yttrium stabilized zirconium. The cell lines of human gingival fibroblasts were obtained by inserted human gingival fragments of patients undergoing periodontal surgery.

Results: The results show a higher cell proliferation in the control (glass) group in both strains studied. Regarding the overall average of human cells, statistically significant difference was observed in 24h and 48h periods between the control group and the lithium – zirconia groups. In the analysis of 72h no difference among the groups was noticed. Regarding only the experimental groups (lithium disilicate-Zirconia), there was no statistically significant difference between them.

Conclusion and Clinical Implications: The results demonstrate that the aged surface of lithium disilicate and yttrium stabilized zirconia showed low cytotoxicity, indicating biocompatibility to the gingival tissue.

I confirm that ethical permits and approvals are in place in accordance with regulations: Yes, I confirm that ethical permits and approvals are in place.

Disclosure of Interest: None Declared.

Keywords: All-ceramic

EAODGI2023-565/PO-BR-022 | The impact of quercetin-coated implants to promote osteointegration

Carlos Arias-Mainer[1]; Francisco Romero-Gavilán[1]; Andreia Cerqueira[1]; Iñaki García-Arnáez[2]; Mikel Azkargorta[3]; Félix Elortza[3]; Mariló Gurruchaga[2]; Isabel Goñi[2]; Julio Suay[1,*]

[1]Department of Industrial Systems and Design Engineering, Universitat Jaume I, Castelló de la Plana; [2]Department of Polymers and Advanced Materials: Physics, Chemistry and Technology, Universidad del País Vasco, San Sebastián; [3]Proteomics Platform, CIC Biogune, Derio, Spain

Background: Quercetin (QCT), a flavonoid present in many fruits and vegetables, has been recognized for its remarkable anti-inflammatory and antioxidant properties. Recent research has suggested that QCT could enhance the osteointegration of dental implants by mitigating inflammation and promoting bone growth. Also, protein adsorption on the biomaterials is influenced by its surface properties. Therefore, studying these protein adsorption patterns through proteomics technics can give us valuable information about the biological response to the material.

Aim/Hypothesis: The aim of this work is to develop coatings for Ti surfaces with increasing concentrations of QCT (0, 0.5, 1.5 and 2 by %weight) and analyze their immune response, cell adhesion, bone regeneration and its effect on protein adsorption patterns.

Material and Methods: Coatings for Ti surfaces were synthesized via sol-gel method using methyltrimethoxysilane (M) and tetraethylorthosilicate (T) as precursors, The coatings were doped with increasing concentrations of QCT (0, 0.5, 1.5, and 2 by %weight). Materials were characterized by SEM, FTIR, 29Si-NMR, hydrolytic degradation, QCT release, surface wettability, and roughness measurements. For in vitro characterization, cytotoxicity, ALP activity, and gene expression (ALP, RUNX2, IGF-2, Col-I, iNOS) were evaluated for human osteoblast (HOb). Additionally, the effect of QCT on inflammatory and anti-inflammatory response was evaluated through gene expression (TNF-α, IL-1β, TGF-β, IL-10, MCP-1) and cytokine secretion (TNF-α, TGF-β) measurements in THP-1

monocytes. Cell adhesion was evaluated using a Confocal Laser Scanning Microscope. Cell areas were measured with Image J software. Finally, the adsorption of human serum proteins onto the material surface was also evaluated through nLC-MS/MS.

Results: Stable coatings with controlled release of QCT were successfully synthesized and proved to be not cytotoxic. The addition of QCT to the sol-gel network resulted in the significant increase of ALP activity levels, upregulation of osteogenic gene expression as well as HOb adhesion improvement. In addition, at 0.5% QCT concentrations, there was a decrease in the expression of inflammatory genes (MCP1, IL-1β). Simultaneously, proteomics analysis revealed that QCT coatings exhibit a greater affinity for proteins involved in cell adhesion (HRG, PLAK-1), oxidative stress regulation (CYTC, SEPP1), and tissue regeneration (IBP5, IBP2, COLA1). The results also showed that the amount of protein adsorbed by the materials depends on the concentration of QCT, showing a higher amount of protein adsorption at higher QCT concentrations.

Conclusion and Clinical Implications: QCT-doped sol-gel coatings showed positive effects on the expression of several osteogenic genes, cell adhesion and antioxidant regulation. Furthermore, a correlation between the concentration of QCT and immune response was found. As a result, the development of QCT-doped sol-gel coatings can have a significant impact on promoting bone health and tissue regeneration.

Disclosure of Interest: None Declared.

Keywords: Biomaterial, Dental implants, Osseointegration

EAODGI2023-566/PO-BR-023 | Implications of antidepressant medication in patients suffering from chronic periodontitis

Efstratios Charisis*; Christos Tsamis; Ilias Papailiadis
Private Clinic, Thessaloniki, Greece

Background: None

Aim/Hypothesis: This study seeks to explore the implications created by antidepressant medication in patients suffering from chronic periodontitis.

Material and Methods: A case-based approach, drawing insights from relevant literature on antidepressant drugs, chronic periodontitis patients, periodontal status and psychiatric diseases that has been published from 2018 to 2023. As part of the study, a total of 50 patients suffering from chronic systemic diseases that affect the periodontium under antidepressants (SSRI [fluoxetine] and SNRI [venlafaxine]) was examined in the span of 5 years, in an attempt to understand and estimate the effect of psychoactive medication on dental health.

Results: The present case-based study suggests that psychoactive medication, such as antidepressants, could be associated with higher alveolar bone level and less bone destruction, while in some cases side effects include, among others, xerostomia, and orthostatic hypertension. As far as the individual antidepressant categories are concerned, it should be noted that the number of periodontal collapse cases was significantly lower in patients undergoing SSRI medication, compared to patients that are not under antidepressants.

Conclusion and Clinical Implications: Based on the results of the present study, the use of antidepressant medication could be considered a risk factor for dental health. Although antidepressant drug treatment does not constitute the sole factor that should be taken into consideration when evaluating periodontal health status, patients should be examined regularly and, if deemed necessary, undergo sialometry or biochemical examination to ensure that there are no alterations in saliva composition.

Disclosure of Interest: None Declared.

Keywords: Systematic Review

EAODGI2023-576/PO-BR-024 | Chemical and morphological evaluation of the association of osteoconductive alloplastic matrices with osteoinductive molecules

Fernando A Mauad De Abreu[1,2,*]; Melissa Braga de Carvalho[1]; Nicole Silva Olyntho Bahia[1]; Rafael de Freitas Cançado[1]; Maurício Greco Cosso[1]; Elton Gonçalves Zenóbio[1]
[1]*Dentistry, Pontifical Catholic University of Minas Gerais;* [2]*Morphology, Federal University of Minas Gerais, Belo Horizonte, Brazil*

Background: The scientific literature still discusses the choice of biomaterial to be used in bone grafting techniques. The association of conductive and inducing biomaterials of a biological process has been presented as a promising strategy.

Aim/Hypothesis: The objective was to evaluate the surface interaction of the association of conductive alloplastic biomaterials with an inducer. Can the morphological alteration of biomaterials alter the adhesion of inducing molecules?

Material and Methods: For this, two commercially available alloplastic conductive biomaterials were selected, one formed by pure hydroxyapatite and the other biphasic, presenting in its composition the proportion of 60% hydroxyapatite and 40% β-tricalcium phosphate, which was associated with a matrix derived from enamel, as an inductor biomaterial. For control, each alloplastic conductive biomaterial was used and tested for its association by agglutination, with the inducing biomaterial in a 1:1 ratio. The samples, control and tests were prepared in triplicate. Their morphology was evaluated by Scanning Electron Microscopy (SEM), the chemical composition by Energy Dispersion Spectroscopy (EDS), and this chemical distribution by MAPA.

Results: The results show that despite being made up of calcium and phosphate molecules coated with oxygen, these biomaterials present differences in their morphology, which reflects a difference in agglutination and surface loading when associated with the inducing biomaterial. The presence of pores and an irregular surface is suggested to contribute to better loading. The molecular distribution on the surface suggests oxygen as a binding agent between the inducing biomaterial and the conductor.