

Plan Overview

A Data Management Plan created using DMP Tool

Title: Effect of a new bleaching agent for professional use containing hexametaphosphate and fluoride on bleaching efficacy, trans-amelodentinal diffusion, microhardness and cytotoxicity: an in vitro study

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Project abstract:

This study aims to evaluate in vitro the addition of sodium hexametaphosphate (HMP) at a concentration of 1% associated with 0.1% sodium fluoride (NaF) and 35% hydrogen peroxide (PH) on: diffusion trans-amelodentary; color change; surface hardness in longitudinal section and trans-amelodentary cytotoxicity. The methodologies applied will be: 1) 35% hydrogen peroxide (PH); 2) PH associated with 0.1% NaF (PH / F); 3) PH associated with 1% HMP (PH / HMP); 4) PH associated 0.1% NaF associated 1% HMP (PH / F / HMP) and 5) HP Blue 35% (FGM - Odontological Products: HP). The bleaching gel will be applied once in 3 sessions of 7 days each, after the treatment period the color change will be evaluated by quantified reflection spectrophotometry, diffusion of the quantified peroxide, where the specimens will be positioned in an artificial pulp chamber (CPA) containing acetate buffer solution for evaluating optical density in a spectrophotometer. The initial surface hardness and after (final) treatment, and in longitudinal

section, will also be determined. For cytotoxicity analysis, the specimens will be adapted in the CPAs, and the products of diffusion of the bleaches with culture medium will be applied on MDPC-23 odontoblastoid cells for 1 hour. Variables that present normal and homogeneous distribution will be subjected to analysis of variance ($p < 0.05$). Otherwise, they will be submitted to the Kruskal-Wallis test ($p < 0.05$). The multiple comparison test will be Student-Newman-Keuls.

Start date: 01-04-2021

End date: 03-31-2023

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Copyright information:

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Effect of a new bleaching agent for professional use containing hexametaphosphate and fluoride on bleaching efficacy, trans-amelodentinal diffusion, microhardness and cytotoxicity: an in vitro study

Data Collection

What data will you collect or create?

Color values; hydrogen peroxide trans-amelodentinal diffusion; hardness values of enamel/dentin; trans-amelodentinal cytotoxicity.

How will the data be collected or created?

Color data: color values of enamel/dentin samples using the CIE L*a*b* color system. The change values of L* (ΔL), a* (Δa) and b* (Δb) will be calculated. The total color change will be calculated using the formula: $\Delta E = [(\Delta L)^2 + (\Delta a)^2 + (\Delta b)^2]^{1/2}$. Trans-amelodentinal diffusion of the hydrogen peroxide determined by the colorimetric reaction of hydrogen peroxide, and leucocrystalline violet, catalyzed by the enzyme peroxidase; mesuared by absorbance (596 nm) and expressed in $\mu\text{g/mL}$. Enamel surface hardness data: Knoop diamond indenter under 25 g for 10 s in each enamel/dentin disk; and cross-sectional hardness with a load of 5 g for 10 s, and at 5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 100, 120, 140, 160 and 180 μm of the surface. Trans-amelodentinal cytotoxicity: cell viability, alkaline phosphatase and mineralized nodules from immortalized cells of MDPC-23 odontoblastic lineage.

Documentation and Metadata

What documentation and metadata will accompany the data?

Graphic, figures, tables and Microsoft Excel spreadsheet. The data can be accessed through the UNESP Repository.

Ethics and Legal Compliance

How will you manage any ethical issues?

In vitro study. There are no ethical issues involved.

How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?

As a result of this project, articles will be published. Copyright will be determined jointly with the members of our research group.

Storage and Backup

How will the data be stored and backed up during the research?

The data will be stored on external hard drives, SSD on laptop, Microsoft OneDrive, and UNESP repository.

How will you manage access and security?

All researchers involved in the project will have access to the data, but only the researcher responsible and coordinator will edit and update the backup.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

All data will be kept indefinitely. There is no validity. The data can be reused to validate research findings, conduct new studies or to teach.

What is the long-term preservation plan for the dataset?

The data will be storage in the UNESP repository, indefinitely, with no costs for data storage. The data will be prepared and stored by the project participants during the development of the study.

Data Sharing

How will you share the data?

The data will be shared with any interested researcher through the UNESP repository, after publication in international journals; in any situation, prior identification (Country, Institution, Researcher).

Are any restrictions on data sharing required?

There are no restrictions after publishing the data in international journals. In cases of use for research or publications, a partnership and participation agreement must be signed.

Responsibilities and Resources

Who will be responsible for data management?

The data acquired during the project will be managed by the responsible researcher and the project coordinator.

What resources will you require to deliver your plan?

Graphic, figures, tables and Microsoft Excel spreadsheet as well as through publications. The data can be accessed through the UNESP Repository.

