

Dental remineralization with a silver nanoparticle compound

Submission date 25/07/2024	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 19/08/2024	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 18/08/2024	Condition category Oral Health	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Dental caries (tooth decay) is the most frequent oral disease in children. Silver diamine fluoride can prevent caries with the adverse effect of tissue pigmentation. The main of the present study is to evaluate the effectiveness of a compound of silver nanoparticles with a fluoride varnish to mineralize dentine affected by tooth decay.

Who can participate?

Healthy schoolchildren aged 6 to 9 years old with caries in primary molars (milk teeth)

What does the study involve?

Primary molars are distributed into two groups: Group A is treated with a compound based on silver nanoparticles and Group B with a silver diamine fluoride compound as a control treatment. All participants receive a clinical oral examination and radiographic diagnosis at the beginning of the study and the application of the treatments every 6 months for one and a half years.

What are the possible benefits and risks of participating?

The children participating in the study are included in an oral health program for diagnosis and preventive treatments and receive a painless and easy treatment to stop their caries lesions. There are minimal possible risks because the treatments are safe and carried out under safety measures by experienced pediatric dentists. The secondary effect of pigmentation of the cavities treated with diamine fluoride silver could be observed.

Where is the study run from?

Reforma Multidisciplinary Clinic of the Faculty of Superior Studies of Zaragoza (Mexico)

When is the study starting and how long is it expected to run for?

April 2021 to March 2024

Who is funding the study?

Universidad Nacional Autónoma de México (Mexico)

Who is the main contact?

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Contact information

Type(s)

Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number

FESZ -CE/21-208-05

Study information

Scientific Title

Effectiveness of remineralization with compound silver nanoparticles and fluoride varnish in caries lesions

Study objectives

Silver nanoparticle compound is a conservative treatment to stop the progression of dental caries

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 29/07/2021, Research Committee of Faculty of High Studies of Zaragoza, Mexican National University (Campus 2 Batalla 5 de mayo S/N, Iztapalapa, 09230, Mexico; +52 (0) 5556230724; div.posgrado.investigacion@zaragoza.unam.mx), ref: FESZ -CE/21-208-05

Study design

Non-randomized study

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Dental caries

Interventions

Primary molars were distributed into two groups: Group A was treated with a compound based on silver nanoparticles and Group B with silver diamine fluoride compound as control treatment. Laser fluorescence was used for evaluation, with follow-up examinations at 15 days, 6 and 12 months. Also, a clinical examination for the detection of active or arrest caries lesions was performed at baseline and 12 months.

This study was conducted in a convenience sample of school children aged 6 to 9 years with at least two carious lesions in primary molars. The selected molars were assigned to each study group, taking care that both treatments were applied to one of the carious molars of the same patient.

Intervention Type

Procedure/Surgery

Primary outcome(s)

Remineralization measured for each caries lesion using the Diagnodent pen test (laser fluorescence) and data will be recorded at baseline and after each application: 15 days, 6 and 12 months

Key secondary outcome(s)

The arrest of caries lesions measured by considering the texture and colour of the caries lesions by clinical inspection with the aid of a WHO probe to classify them as active or arrested lesions at baseline and 12 months

Completion date

15/03/2024

Eligibility**Key inclusion criteria**

1. Children with caries lesions
2. Children agree to participate in the study

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Child

Lower age limit

6 years

Upper age limit

9 years

Sex

All

Total final enrolment

40

Key exclusion criteria

1. Children with general disease
2. Molars with non-reversible pulpitis, abscesses

Date of first enrolment

26/08/2022

Date of final enrolment

30/10/2022

Locations

Countries of recruitment

Mexico

Study participating centre

Lazaro Cardenas School

Norte 10 Col. Reforma

C.P. 57840

Ciudad Nezahualcóyotl

Estado de México

Mexico City

Mexico

09230

Sponsor information

Organisation

Universidad Nacional Autónoma de México

ROR

<https://ror.org/01tmp8f25>

Funder(s)

Funder type

Government

Funder Name

Dirección General de Asuntos del Personal Académico, Universidad Nacional Autónoma de México

Alternative Name(s)

General Directorate of Academic Personal Affairs, General Direction of Academic Staff Affairs, UNAM - Dirección General Asuntos del Personal, Dirección General de Asuntos del Personal Académico, Dirección General de Asuntos del Personal Académico (DGAPA) de la Universidad Nacional Autónoma de México (UNAM), DGAPA, UNAM, DGAPA

Funding Body Type

Government organisation

Funding Body Subtype

Universities (academic only)

Location

Mexico

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during the current study will be stored in a non-public repository of the Mexican National University

IPD sharing plan summary

Stored in non-publicly available repository, Published as a supplement to the results publication