

# The anti-erosion effects of two different toothpastes on tooth enamel

<b>Submission date</b> 02/04/2015	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 15/04/2015	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 08/07/2024	<b>Condition category</b> Oral Health	<input type="checkbox"/> Individual participant data

## Plain English Summary

### Background and study aims

One of the effects of the growth of the food and drinks industry is the huge increase in the consumption of soft drinks, fruit juices and sport drinks. Many drink products are acidic in nature, such as orange or grapefruit juice or certain fruit squashes and fizzy drinks. Such drinks, if taken in excess, will promote erosion of the tooth surface, erosion being a loss of tooth substance by a chemical process not involving bacterial. Stannous fluoride has been shown to provide some protection for the enamel against acid attack. This study tests whether a stannous-containing toothpaste is better compared to a conventional toothpaste.

### Who can participate?

Healthy adults

### What does the study involve?

Participants are randomly allocated to one of two groups. Each participant receives a stannous-containing toothpaste and a conventional toothpaste twice in a random order. The participants are asked to wear a device (palatal appliance) positioned in the roof of their mouth which contains 2 enamel samples. The palatal appliances are made specifically for each person and are similar in design to those used in orthodontic treatment. On each treatment day, participants are asked to rinse one of the study toothpastes around their mouth twice a day. They are also required to rinse their mouth with orange juice 4 times a day while wearing the appliance to replicate drinking soft drinks.

### What are the possible benefits and risks of participating?

There is no direct immediate benefit to those taking part in this study. However, they may have helped in the development of a toothpaste with protective properties against damage done to the teeth by acids. Participants might find wearing the palatal appliance uncomfortable to begin with, but a clinician will be on hand to adjust the appliance accordingly. There is an extremely remote risk of transmission of prions to those taking part in the study, but this risk is not considered to be any higher than compared with having normal dental treatment. This research group have run over 50 similar trials over the past 27 years and no participant has ever had a problem. It is not expected that those taking part in the study will experience any side effects from the toothpaste formulations used in this trial. Since there is always the possibility that a

rare or previously unknown side effect may occur in when somebody uses a new toothpaste, trained dental staff will be available in the Clinical Trials Unit should any negative effect occur.

Where is the study run from?

Trial study centre: Bristol Dental School and Hospital (UK)

Trial run from: University of Bristol (UK)

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

January 2015 to June 2015

Who is funding the study?

The Procter and Gamble Company (UK)

Who is the main contact?

Prof. N West

## Contact information

### Type(s)

Scientific

### Contact name

Dr Nicola West

### Contact details

Clinical Trials Unit (Periodontology)

Bristol Dental School and Hospital

Lower Maudlin Street

Bristol

United Kingdom

BS1 2LY

## Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers

2014119

## Study information

### Scientific Title

A clinical study to measure the anti-erosion properties of two dentifrices

### Study hypothesis

This study will evaluate the protective effects of a stannous-containing toothpaste compared to a conventional toothpaste by comparing the enamel protection efficacy (loss of tooth enamel as measured by surfometry) of two dentifrices in a 10-day in situ erosion model. This trial will evaluate the protective effects of stannous ions on sections of human enamel that are repeatedly subjected to a citric acid drink challenge. Loss of enamel will be evaluated and compared by the use of surfometry (profilometry).

### **Ethics approval required**

Old ethics approval format

### **Ethics approval(s)**

NRES South West - Exeter REC, 24/03/2015, ref: 15/SW/0028

### **Study design**

Single-centre double-blind randomised supervised-usage two-treatment four-period crossover trial

### **Primary study design**

Interventional

### **Secondary study design**

Randomised cross over trial

### **Study setting(s)**

Hospital

### **Study type(s)**

Prevention

### **Participant information sheet**

Not available in web format, please use the contact details to request a patient information sheet.

### **Condition**

Enamel erosion

### **Interventions**

Participants will wear a palatal appliance that is positioned in the roof of their mouth and contains 2 enamel samples. Participants are asked to rinse one of the study toothpastes (a slurry of 3g toothpaste:10ml water) around for 60 seconds, twice per day. Participants are required to rinse their mouth with orange juice (250ml over a 10 minute period) 4-times a day. Participants are provided with toothpaste and a toothbrush to use at home from screening until the end of the study and will be required to brush their teeth twice per day, in the morning and in the evening.

### **Intervention Type**

Other

### **Primary outcome measure**

Dental erosion measured by profilometry at baseline and Day 10

## **Secondary outcome measures**

There are no secondary outcome measures

## **Overall study start date**

06/01/2015

## **Overall study end date**

30/06/2015

# **Eligibility**

## **Participant inclusion criteria**

1. Provide written informed consent to participate in the study, and receive a copy of the signed consent form
2. Agree not to participate in any other oral/dental product studies during the course of the study
3. Agree to delay any elective dentistry (including dental prophylaxis) until the study has been completed
4. Agree to refrain from the use of any non-study dentifrice or other oral hygiene products for the duration of the study
5. Agree to return for all scheduled visits and follow study procedures
6. 18 years and older
7. Agree to refrain from taking an acidic medication (pH <5.3) during the course of the study
8. Be in good general health, as determined by the Investigator/designee based on a review of the health history/update for participation in the study

## **Participant type(s)**

Healthy volunteer

## **Age group**

Adult

## **Lower age limit**

18 Years

## **Sex**

Both

## **Target number of participants**

36

## **Total final enrolment**

36

## **Participant exclusion criteria**

1. Susceptibility to acid regurgitation
2. Recurrent or regular aphthous ulcers
3. Dental erosion or a previous history of being susceptible to high dental erosion after drinking sports drinks or juices

4. Excessive gingival inflammation
5. Severe periodontal disease, as characterized by purulent exudate, generalized mobility, and /or severe recession
6. Any pre-existing oral or medical condition that the examiner determines may place the subject at increased health risk from study participation
7. Non-removable mouth or tongue jewellery
8. Any subject who in the opinion of the investigator (or medically qualified designee) should not participate in the study
9. Personnel, i.e. an employee of the Sponsor, member of the Clinical Trials Unit at the Bristol Dental School and Hospital or family relative. Employees of the Bristol Dental School and Hospital or Bristol University not associated with the Clinical Trials Unit are eligible to participate.

**Recruitment start date**

08/04/2015

**Recruitment end date**

20/04/2015

## Locations

**Countries of recruitment**

England

United Kingdom

**Study participating centre****Clinical Trials Unit**

Bristol Dental School and Hospital

Lower Maudlin Street

Bristol

United Kingdom

BS1 2LY

## Sponsor information

**Organisation**

The Procter and Gamble Company

**Sponsor details**

Procter & Gamble Technical Centres Limited

Rusham Park

Whitehall Lane

Egham, Surrey

United Kingdom

TW20 9NW

**Sponsor type**

Industry

**ROR**

<https://ror.org/02a8cv967>

## Funder(s)

**Funder type**

Industry

**Funder Name**

Procter and Gamble

**Alternative Name(s)**

Procter & Gamble, PandG, The Procter & Gamble Company, P&G

**Funding Body Type**

Government organisation

**Funding Body Subtype**

For-profit companies (industry)

**Location**

United States of America

## Results and Publications

**Publication and dissemination plan**

Within a year of the study conclusion, it is anticipated that the study will be submitted for publishing in a peer reviewed journal and the results presented at an international conference.

**Intention to publish date**

30/06/2016

**Individual participant data (IPD) sharing plan**

Not provided at time of registration

**IPD sharing plan summary**

Not expected to be made available

**Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	01/04/2018		Yes	No

<a href="#">Protocol file</a>	version 1	09/02/2017	24/10/2022	No	No
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Results article</a>	erosion protection efficacy	17/12/2018	08/07/2024	Yes	No