

Research Explanation

Title:

The effect of Consumption of *Lactobacillus reuteri* Prodentis Probiotics on Crevicular Gingival Fluid Inflammatory Response and Metagenomic Profile Oral Microbiome in Orthodontic Patients

We hereby ask for your willingness to participate in this research. Please read the explanation sheet for this research and if you have any questions, please don't hesitate to ask us.

In this study, researchers will test the effectiveness of probiotic consumption against oral pathogenic bacteria and reduce the occurrence of gingival inflammation in subjects using orthodontic fixed appliances (braces).

Subjects in this study were 21 student volunteers from the Faculty of Dentistry, Trisakti University or patients of Oral and Dental Teaching Hospital, Trisakti University, and 21 people in the control group, with the following criteria:

- 18 – 28 years old (M/F)
- Using orthodontic fixed appliance for at least 1 year
- Do not consume probiotics and antibiotics (at least 3 months before)
- No history of systemic disease

Subjects were willing to provide 2 samples of saliva, dental plaque and gingival fluid (gum fluid), on the first day (before consuming lozenges) and on the 14th day after the subject consumed lozenges containing *L. reuteri* probiotic. Probiotics are taken once a day for two weeks after breakfast and brushing their teeth.

The time for taking 3 samples was approximately 15 minutes. Sampling will be conducted at the executive clinic of Oral and Dental Teaching Hospital, Trisakti University. If the subject has objections to this research, the subject will not be forced to participate in this research and can resign at any time and the confidentiality of the subject data is guaranteed.

Objective:

1. To evaluate the effect of consumption of *L. reuteri* Prodentis probiotic lozenges on the inflammatory response (inflammation) of gingival fluid.
2. To evaluate the effect of consumption of the probiotic lozenges of *L. reuteri* Prodentis against oral pathogens in dental plaque and saliva.

Research Benefits:

This study was conducted to observe the effectiveness of *L. reuteri* (ProDentis) probiotic against oral pathogenic bacteria on patients using orthodontic fixed appliance, to reduce gum inflammation and improve oral health.

Research Benefits for Subjects:

1. Providing information about the benefits of probiotics on oral health
2. Providing a positive effect for patients using orthodontics by reducing the number of pathogenic bacteria in the oral cavity and reducing inflammation on gingiva.

Procedures:

We will ask about the orthodontic treatment condition of the subjects and take samples of gingival fluid, saliva and dental plaque that have been obtained before and after consuming probiotic lozenges to perform a series of laboratory tests, so we can know the effect of probiotics against pathogenic bacteria in the plaque and saliva. Subjects will be given toothpaste and toothbrush during the study period. Probiotics were consumed two weeks after orthodontic control to the dentist.

How to take samples:

1. Saliva: The subject is asked to sit while lowering his head and opening his mouth so that saliva drips passively from the lower lip. Saliva was collected using a pre-weighed sterile tube. Subjects should not brush their teeth at least 45 minutes before taking saliva samples.
2. Dental plaque: Plaque samples are obtained by rubbing all surfaces of the mandibular molars using a sterile toothpick.
3. Gingiva fluid: Gingiva fluid samples are collected using absorbent paper strips which are carefully placed into selected locations. The strip is removed after it feels heavy, about after being left for 30 seconds.

Product use safety:

BioGaia Prodentis lozenges is a food supplement for oral health that contains patented lactic acid bacteria *Limosilactobacillus reuteri* (formerly known as *Lactobacillus reuteri*) Prodentis (a combination of strains of *L. reuteri* DSM 17938 and *L. reuteri* ATCC PTA 5289) which helps good microorganisms maintain natural balance in the mouth. This product is safe for daily use and this product can be used during pregnancy and breastfeeding. The ingredients of this product are: bulking agent (isomalt), *L. reuteri* DSM 17938 and *L. reuteri* ATCC PTA 5289, fully hydrogenated palm oil, peppermint flavoring, menthol flavoring, peppermint oil and sweetener (sucralose). One candy contains a minimum of 200 million live *L. reuteri* Prodentis. Net weight per candy is 800 mg. Excessive consumption can have a laxative effect due to the sweetener content in the product. This product has obtained a distribution permit in Indonesia with a BPOM number: SI194510521 with the name Probiotic Prodentis (Pro-D).



In the event of an SAE, the following procedures are:

1. Researchers recorded all patient complaints related to drug side effects and asked about allergy history in the subject.
2. Researchers report to the principal investigator about the complaints experienced by the subject.
3. Researchers continue the instructions from the principal investigator for follow-up on the safety and comfort of the subject.
4. Researchers recommend to the subject if there are still complaints experienced, immediately report to the nearest hospital for immediate follow-up.
5. Researchers will be responsible for and bear all treatment costs for side effects caused by this study.