

# A Study To Assess Effect Of Probiotics On The Amount And Ph Of Saliva In Edentulous Patients

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DOI: 10.47750/pnr.2023.14.S02.200

## Abstract

### Introduction

Survival rate and its effect on the atraumatic restorative treatment are essential. In this situation, the detrimental impact plays a vital role in salivary flow. It helps for reducing stomatitis's insignificant number. According to some reports, probiotics have been shown to increase saliva production in the oral cavity. Therefore, this motive aimed to measure the volume and pH of saliva in patients with complete dentition after taking probiotics for 60 days.

### Methods

Specific materials and methods are needed to identify so that study can be completed without any challenges. Probiotic capsules can be used in this situation as a saliva collection kit. After that, probiotic pills containing  $3.3 \times 10^7$  CFU/g were given to each patient to take once daily for 60 days. Patients' saliva was born, its quantity and pH were calculated, and its results were compared to the initial value.

### Results

Moreover, Table 2 exhibits the frequency distribution "before and after 60 days in terms of whole stimulated and unstimulated pH and saliva".

### Conclusion

However, the precise molecular mechanism behind this action is still unknown, and further research is required on a larger scale to understand it. The average unstimulated and stimulated saliva enhanced from base to that after sixty days when saliva samples were compared, with the differences being 0.406 and 0.433, respectively.

**Keywords** Glass ionomer cement, streptococcus mutans

## Introduction

Saliva is a specific fluid with glycoproteins, electrolytes, and enzymes. This is responsible for keeping mucosa hygienic and protests from aids digestion. It is important to have quantity and quality saliva to complete edentulous patients. It is possible to use a wetting mechanism so that saliva can help for creating cohesion and adhesion.

Therefore, the null hypothesis suggested that probiotics do not impact the amount of saliva. A recent analysis has been done to examine the impact of probiotics on the saliva of edentulous patients for two months [6]. This analysis will give standard data regarding the utilization of probiotics in enhancing the amount of saliva and pH in edentulous patients, which in turn will lead to better denture maintenance and thus may aid in the care of dry mouth problems in artificial teeth wearers.

## Materials and methods

This analysis was done by collecting edentulous patients in the prosthodontics department. The main motive is to identify patients if they are suffering from any debilitating disease, which is essential. They also should not take

any medication, and only then can they be a part of the study. Patients also needed to provide consent, and they must be willing to be part of the study [1].

Apart from that, it has been found that the collection should have gauze pieces, beakers, a pH meter, and a weighing scale [7]. Probiotic strains are responsible for this study so that *Lactobacillus Acidophilus* HS 101 and *Lactobacillus rhamnose* GG HS111 can be included.

This potential interventional analysis was done on a total of entirely edentulous patients visiting the department of prosthodontics. The study was conveyed for two months on 29 patients (males – 21 and females – 8) chosen on the basis of the following criteria: totally edentulous patients of the age 60 years or more, patients who were not going through any severe debilitating disease or not on any medicine, lack of any oral pathology, and patients who supported and were agreeing to be a part of these studies. Patients who did not give full consent or were not agreeing to be included in this analysis were kept out of the study [8].

## Saliva collection

Two saliva collection methods have been used for the concerned situation, and ethical approval has been collected from patients before collection. The dental and oral status of the patients is also collected while collecting saliva [9].

Whole unstimulated saliva product is required for patients to be sat without chewing or taking. Patients are also required to spit saliva into a preweighed beaker, which can be done for 5 minutes. [2] The flow rate of unstimulated saliva is measured, and it has been found that 0.5 ml/min is possible to consider as hyposalivation.

Another method is stimulated saliva production, where patients chew for 5 min and saliva is collected in the preweighed beaker [10]. The stimulated flow rate for the concerned situation is 0.8 ml/min, which is responsible for indicating hyposalivation.

## Microbial analysis

In microbial analysis, it is necessary to measure saliva in grams through a weighing scale. After collecting saliva, it is necessary to calculate pH through a pH meter. 60 probiotic capsules are needed to give patients so that they can take capsules for 60 days with water. Patients' follow-up is required in this 60 days period daily [11]. After completing the interventional phase, some patients dropped out due to health issues.

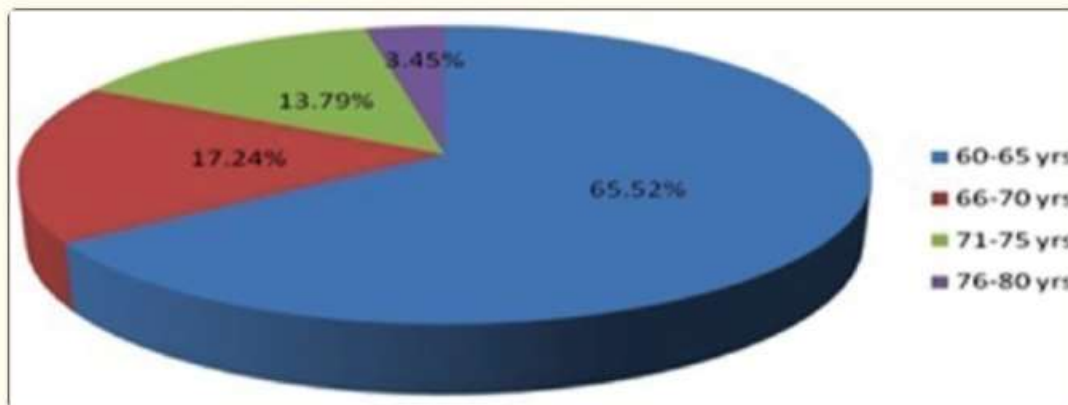
## Statistical analysis

The STATAIC-13 statistical tool has been used for data analysis in this research. Standard Deviation (SD) and Mean Deviation (MD) were measured using the descriptive analysis style. In addition, paired t-test was utilized to calculate the statistical dissimilarities between the mean values [3]. It needs to note that the “accepted level of statistical significance” or the P value is  $<0.05$ .

## Result

Table 1, mentioned below, shows the statistical data where saliva was collected at baseline and after 60 days. Comparative analysis has been done here to check the pH value of both samples. In addition, it depicts the age group distributions of the registered patients [12].

### Graph 1: Descriptive statistic



**Table 1: T-test**

| Whole saliva | mean  | n  | Standard deviation | Standard error mean |
|--------------|-------|----|--------------------|---------------------|
| 0 days       | 2.034 | 29 | 0.574              | 0.114               |
| 60 days      | 2.465 | 25 | 0.615              | 0.124               |

Statistical analysis reveals that the “mean unstimulated saliva at baseline” was near about  $0.815 \pm 0.628$ . However, the value has increased to  $1.222 \pm 0.617$  after 60 days interval period. Hence, the difference between the two values is approximately 0.406, which is statistically essential (P value <0.05).

**Table 2: Frequency distribution**

|        | Whole unstimulated saliva 0 week | Saliva 0 days | Whole stimulated saliva 0 weeks | Whole stimulated saliva 60 days | pH 0 week | pH 60 days |
|--------|----------------------------------|---------------|---------------------------------|---------------------------------|-----------|------------|
| Mean   | 0.822                            | 1.223         | 1.998                           | 2.467                           | 7.818     | 7.826      |
| SD     | 0.596                            | 0.618         | 0.547                           | 0.617                           | 0.227     | 0.188      |
| Median | 0.69                             | 1.23          | 2.000                           | 2.461                           | 7.801     | 7.801      |
| IQR    | 0.51                             | 0.936         | 0.876                           | 1.106                           | 0.100     | 0.000      |

Moreover, it was observed that the mean value of stimulated saliva was  $2.033 \pm 0.575$  at baseline, and it increased to  $2.466 \pm 0.616$  after 60 days of interval. Therefore the difference between these two mean values is 0.433, which is again analytically essential (P value <0.05). Furthermore, the average pH data was  $7.818 \pm 0.231$  at baseline and enhanced to  $7.825 \pm 0.189$  after 60 days of the interval [4]. Therefore, the difference between these two values is 0.007, which is also analytically essential (P value <0.05). All these comparisons are collective.

## Discussion

A total amount of 29 patients who are suffering from edentulous were given three different strains of probiotics for consumption for 60 days. The patients were advised to consume three probiotic capsules for this research. The samples of these patients were taken in two phases- one at baseline and another after 60 days of treatment.

It is observed from the research that these three capsules of probiotics have some impact on the amount of saliva of the patients. The statistical analysis shows that while there are no substantial changes in the pH content of the patients, the amount of saliva increases after treatment [13]. As mentioned earlier, one of the primary aims of this research was to decrease the incidence of oral Candida species in the saliva of elderly persons. The statistical

analysis shows that the amount of oral candida has also significantly reduced in these volunteers after consuming probiotics for 60 days.

However, the exact mechanism behind Candida reduction needs to be adequately explained due to the absence of a vast amount of secondary research regarding this topic. However, probiotics have some role in changing salivary compositions that reduce the number of candida species after consuming capsules for 60 days [5]. In addition, the amount of salivary secretion gets altered when the patients finish these probiotic strains. In this regard, there is evidence that probiotics influence the secretion of beta-adhesin 2 in human saliva. It reflects that probiotics can alter the compositions of the epithelial cells of the salivary glands [15].

As mentioned earlier, researchers have made close contact with the patient to monitor whether they are taking the capsule regularly [14]. Besides, the duration of this particular research was only two months. Therefore, the chance of a null hypothesis is low, and the statistical results are very significant.

Therefore, it can be concluded that prebiotics significantly affects saliva secretion increment, especially in edentulous patients.

## Conclusion

It is evident from this research that probiotics have the ability to increase salivary secretion in edentulous patients. Hence, these probiotic solutions can be used to treat hyposalivation or xerostomia.

## Dispute of interest

There are no disputes of interest.

## Legends

## Tables and Graph

### Table 1: t-test

### Table 2: Frequency distribution

### Graph 1: Descriptive statistic

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