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The Prevalence of *S. Mutans* and Other Oral Streptococci in Dental Plaque and Saliva of Adults

Dr. Nahidha R.Al – Zahid. B.S.c.,M.Sc.

Dr. Ilham S.Banno. B.S.c.,M.Sc.

Abstract

Oral streptococci constitute the most oral bacterial groups in the human oral cavity. Most of the oral streptococci belong to the viridians group and include the species *S. mutans*, *S. sanguis*, *S. salivarius* and *S. milleri*.

Dental plaques and saliva samples were randomly taken from 210 selected students of Education College of 22 – 24 years old. The results showed that *S. mutans* was isolated from 75 salivary samples (35.7%) and from 80 plaque samples (38.1%); the other oral streptococci were isolated from all saliva and plaque samples.

Key words: Saliva, plaque, streptococci, *S. mutans*

Introduction

Oral streptococci are the commonest organism in the mouth, and Alpha – hemolytic streptococci were predominate in both carious and non carious mouths.

There is a positive correlation between the prevalence of *S. mutans* is due to its ability to produce extracellular polysaccharide (glucan) from sucrose.

Other oral streptococci also can synthesize extracellular polysaccharide but they are unable to produce caries, because these bacteria do not have glucan specific binding sites on its cell surfaces whereas *S. mutans* has receptor sites on its surface that bind the extracellular polysaccharide.

Materials and Methods

1. Subjects: This study was conducted on 210 randomly selected students of 22 – 24 years old in college of education.

2. Sampling and Culturing: Saliva and plaque samples were taken from each adult. Plaque samples were collected by tooth picks and immediately placed in a small screw – capped vials containing 0.5 ml. transport medium. The vials were agitated in vortex mixer. One loopful of each plaque suspensions were plated on the mitis-salivarius agar and incubated an aerobically for 2-3 days. Saliva samples were taken by cotton swabs and plated immediately on the mitis – Salivarius agar.
3. Identification of *S. mutans*: in the present study identification of *S. mutans* was carried out depending on the following bases:-
 - a. Cellular morphology.
 - b. Colony morphology on mitis – Salivarius agar.
 - c. Biochemical tests, including fermentation of mannitol and polysaccharide production in sucrose broth. The

polysaccharide production is done by inoculating of streptococcus in 20% sucrose broth. After incubation one volume of ethanol is added which yielded an insoluble precipitate?

The aim of the present study was to screen the *S. mutans* which is caries inducing streptococci and its differentiation from other streptococci in dental plaque and saliva.

Results

Our results indicated that the differentiation of *S. mutans* from other oral streptococci depends on the colony morphology which is highly convex, light blue, moderate to large, mucoid and their surface appears as frosted glass.

S. mutans ferments mannitol sugar compared with the other oral streptococci that can not ferment mannitol (table – 1), furthermore, *S. mutans* was detected in 75 saliva samples (35.7%) and in 80 plaque samples (38.1%) (table – 2).

Discussion

In this study *S. mutans* was cultured from 75 saliva samples and from 80 plaque samples and the other oral streptococci were cultured from all samples, and the percentage of *S. mutans* and other oral streptococci in saliva and plaque were similar.

Those results are in agreement with the other finding, it was found that the prevalence of *S. mutans* and other oral streptococci in plaque and saliva were similar in all age groups.

The presence or absence of *S. mutans* within plaque and saliva is depending on the tooth cleaning and other oral hygiene procedures.

S. mutans is transmitted within family members through salivary contamination of glasses caps, spoons,

tooth past and toothbrush. It is recommended that individual who carries *S. mutans* must use mouth rinses, topical fluoride application to reduce the level of *S. mutans* in their oral cavity. Mothers with high salivary concentrations of *S. mutans* are more likely to infect their infants than mother with low salivary concentration.

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Table (1):- The biochemical tests for identification of *S. mutans*.

	<i>S. mutans</i>	Other oral streptococci
1. Mannitol fermentation.	+	-
2. Polysaccharide production from sucrose.	+	+ or -

Table (2):- Number and percentage of saliva and plaque samples that gave *S. mutans* and other oral streptococci.

	Saliva No.	sample %	Plaque No.	sample %
<i>S. mutans</i>	75	35.7	80	38.1
Other oral streptococci	210	100	210	100