

Isolation and characterization of *Candida* Sps in people with chronic periodontitis

¹Karishma Desai , ^{*2}DR.RV Geetha

Running Title: Comparitive evaluation of toothpaste with different formulation in reducing streptococcus mutans-an in intro study.

ABSTRACT--*Candida species are commonly found organisms in a normal healthy human being, they are considered normal flora. They are known to cause opportunistic infections with high mortality rates. Other Candida species apart from Candida albicans like Candida glabrata, Candida krusei, Candida dubliniensis, Candida parapsilosis, and Candida tropicalis have recently been discovered in infected individuals. For this study, 25 plaque samples were collected from the periodontics PG department of Saveetha dental college. The sampling was done randomly. The inclusion criteria for the sample was that the patient should have chronic periodontitis. The samples were cultured for the presence of Candida sps in Candida indicator agar. The results observed were that 4 out of the 25 plaque samples showed the growth of bluish green colonies. These bluish green colonies represent the growth of Candida albicans. 16% of the samples showed the presence of Candida species, mainly Candida albicans. Since 16% of the plaque samples taken from patients suffering from chronic periodontitis showed the growth of Candida albicans, it is necessary to take precautionary measures to avoid infections.*

Keywords-- *Candidaalbicans, Chronic Periodontitis, Plaque, opportunistic infection*

I. INTRODUCTION

The term *Candida* originates from the Latin word *Candid* which translates to “White” in English. The spores of *Candida* are a commensal, harmless form, that becomes invasive and pathogenic pseudo hyphae when there is a disturbance in the balance of flora or in debilitation of the host. In recent times, *Candida albicans* has gained more importance majorly due to its ability to cause Candidiasis and also bring about infections in the oral cavity. Apart from *Candida albicans*, other species like *C. krusei*, *C. glabrata*, and *C. dubliniensis* have also gained importance because of their resistance to certain specific antifungal agents. [3] *Candida albicans* is the most common causative agent of Candidiasis. About 60-80% of Candidiasis cases are caused by this species. *Candida* species are commensal organisms in mucous membrane of oral cavity and gastrointestinal tract, etc. *Candida* species bring about opportunistic infections in people that already have a compromised immune system, they cause secondary infections in such people. Candidiasis is a common fungal disease in humans. [4]

Candida species are the most commonly found yeast in patients that are immunocompromised. Hence, the successful identification of these species is very important for isolation of these species. [1] *Candida albicans* is a

¹ Under Graduate Student Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical sciences, Saveetha University, Chennai, India.

² *Associate Professor, Department of Microbiology Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical sciences, Saveetha University, Chennai, India, rvgeetha2015@gmail.com

dimorphic fungi that is found as a commensal in the oral cavity. When the host has a compromised immune system, the *Candida albicans* can trigger various infections of the oral mucosa. The pathogenicity of the *Candida* species is related to a combination of multiple factors that affect virulence,

Such as:

- Ability to grow at 37 degree Celsius
- Biofilm formation
- Change from budding to pseudo-hyphae form
- Presence of homologous molecules (Human integrin CR3 receptor)
- Ability to produce hydrolytic enzymes- Phospholipases, Proteinases, etc. [2]

The long term use of dentures, removable appliances, orthodontic appliances and other prostheses, show a higher chance of the colonisation of *Candida* species in oral mucosa and thus would bring about infection. (Oral candidiasis). [5] The severity of the infections caused can vary greatly depending on the site of infection, virulence of the affecting organism and the state of immunity of the person that is being affected. [6] On growing the *Candida*, it is difficult to differentiate. The important point of distinction is the growth of chlamydozoospores by *Candida albicans*. [7]

Periodontal diseases are present in both developed and developing countries. It is the most commonly occurring condition of the oral cavity. Since it is highly prevalent in adolescents, adults and older individuals, periodontal disease is made a public health concern. [8] Periodontitis is a chronic disease which results in destruction of the periodontal ligament and alveolar bone supporting a tooth and which may eventually lead to tooth loss. Several factors have been associated with the onset and progression of periodontitis, including the presence and overgrowth of certain bacteria, immune function and genetics. It has been found that maybe only one or two organism's maybe taking part in causing periodontitis. These are found to be gram negative bacteria which are mostly anaerobes. These gram negative anaerobic bacteria have a lipopolysaccharide component in their cell wall that is known to play a role in their virulence. [9] Periodontitis has known to play a contributory role in systemic infections like cardiovascular diseases primarily through the inflammatory and microbial overload near the periodontal pocket. [10]

Candida species have previously been extracted from periodontal pockets, periodontal abscess, patients having advanced periodontitis, AIDS patients and patients having chronic periodontitis that has been treated with antibiotics. There are many factors affecting the spread of *Candida* in the oral cavity: saliva, pH, adhesion, hyphae formation, expression of enzymes, hydrophobicity, etc. [11] The *Candida* species have various virulence factors that allow colonisation of these organisms. These fungal organisms can co aggregate with other bacteria present in the periodontal pockets. This leads to the eventual progression of the oral diseases. [12]

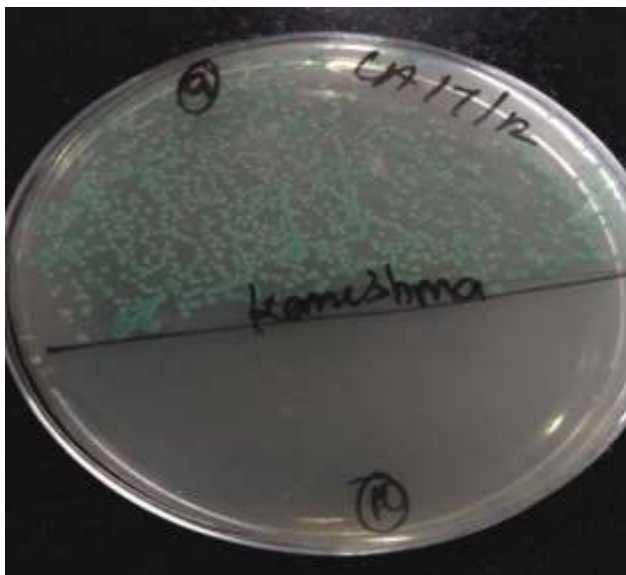
II. MATERIALS AND METHODS

For this study, 25 plaque samples were collected from the out patients attending periodontics PG department of Saveetha dental college. The sampling was done randomly. The inclusion criteria for the sample was that the patient should have chronic periodontitis. The plaque samples were inoculated on CDA i.e., *Candida* differential agar. They were incubated at 37 degrees for two days and observed.

III. RESULTS AND DISCUSSION

The results observed were that 4 out of the 25 plaque samples showed the growth of bluish green colonies. These bluish green colonies represent the growth of *Candida albicans*. 16% of the samples showed the presence of *Candida* species, mainly *Candida albicans*.

Candida albicans is considered as normal flora of the periodontal pockets. Multiple bacteria reside in the oral cavity. Some are commensal while some bring about infections of different types.



IV. CONCLUSION

Since 16% of the plaque samples taken from patients suffering from chronic periodontitis showed the growth of *Candida albicans*, it is necessary to take precautionary measures to avoid infections. *Candida* causes candidiasis which causes different manifestations in the oral cavity itself and also leads to various severe effects in the rest of the body.

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