

## CHAPTER V

### DISCUSSION AND CONCLUSION

The frequency of carriage of yeasts in this population was 60.53 per cent in dental students (Group 1), 77.77 per cent in denture wearers with normal mucosa (Group 2), and 100 per cent in denture stomatitis patients (Group 3), averaging 74.83 per cent for all the three groups. All of the numbers are slightly high when compared to previous surveys: The carriage rates from the previous surveys range from 11 to 71 per cent (6 - 11). This disparity may be explained in part by the different ages of the population studied, the daily variation in the yeast flora (45), and the different methods of sampling (34, 35, 46).

From inspection of Tables 2 - 7 in Chapter IV, it can be seen that the mean salivary candidal count from salivary samples corresponds to some extent with the candidal growth level number from imprint cultures in the sense that a higher mean salivary candidal count is, on the average, accompanied with higher candidal growth level numbers. However, the corresponding numbers do not increase proportionally because there were many variations in the salivary contents, such as enzymatic activities on the viscosity of serous and mucous saliva (47 - 48).

According to the previous reports a higher number of positive carriers was obtained with the imprint cultures than with the salivary samples technique (34, 35, 17). Arendorf, T. M., (35) revealed carriers of *C. albicans* in healthy dentate adults to be 44.4 per cent by imprint cultures. This study also agrees with Arendorf's report, as can be seen from the corresponding average frequencies of 42.11 per cent in Table 10.

One notable point in the results of this study is that carriage rates in males and females are almost equal, in agreement with other studies (10, 49). On the contrary, a previous report by Martin, M.V., (6) revealed that the carriage rate in females is approximately 3 times that of the males. Another report by Arendorf, T. M., (35) showed that females were more frequent carriers than males, as were subjects with lower salivary pH on the surface of the tongue; but this differences were not significant.

The discovery rates of isolated yeasts from this study show that the major yeasts were the five common species of *Candida* genus (92 per cent of all isolated yeasts) and a few organisms of *T. glabrata*, *Trichosporon*, and *Rhodotorula* (Table 11). *C. albicans* was by far the most dominating species, accounting for 52.76 per cent of all isolated yeasts from these three groups (Table 11), and confirming previous reports (6, 8, 10, 11, 34, 35). In addition, the following *Candida* were isolated:

*C. tropicalis* and *C. parapsilosis* in all the three groups but *C. krusei* only in Group 3. Additional few yeasts isolated were *Trichosporon*, *Rhodoturula*, and *T. glabrata*, which were mostly isolated in mixed culture. Two isolates of *Rhodotorula* species were cultured from the right commissure area of one subject in Group 2 and another subject in Group 3. Therefore, the yeast from this muco-cutaneous border of the lip may be a contaminant fungi in the environment. *T. glabrata* was the frequently encountered species in the oral cavity of denture wearers in agreement with Vandebussche and Swinne (7). Table 11 of this study shows that normal control student in Group 1 did not harbor *T. glabrata*.

By imprint culture technique the positive cultures were isolated from various different areas of oral mucosa. In some areas more than one kind of yeast could be isolated, so that there might be 1 - 20 isolates in individuals. No one knows that the same isolated species of those individuals will belong to the same strain. Therefore, a further study is suggested to identify those isolated *Candida* into biotypes (50 - 52) and serotypes (53 - 58) by finding the correlation of different strains of *Candida* in the healthy subjects. The study of *Candida* species and biotypes associated with oral lesions such as leukoplakia, lichen planus, and other diseases is also suggested.

Actually, the results that *Candida* most densely colonized the tongue in almost subjects indicates that the tongue is its primary oral reservoir and that other sites and saliva are colonized secondarily. The tongue papillae provide a large surface area for adherence of *Candida* and possibly shelter the organisms from being removed during eating and swallowing (35). The less blood circulation supplies to the middle posterior tongue, the lower resistant and the more suitable for candidal colonization the area becomes. This study has revealed that different groups of subjects have different levels of densely colonized area. In denture wearers, the *Candida* distribute somewhat more widely than in normal control Group 1 (Tables 14 - 16) because of a higher density of the *Candida*. Group 1 has by far significant difference in area distribution ( $p < 0.01$ ). Both Group 2 and Group 3 have no significant difference for various sites; however, the tongue is still the site where the *Candida* are most frequently found. Moreover, in denture wearers the fitting surface of maxillary prosthesis and the anterior palatal area are secondarily colonized. Tables 14 - 16 clearly show that positive candidal isolates from the area of the posterior tongue, the anterior palatal mucosa, and the fitting surface of denture in Group 2 and Group 3 had significant correlation.

The results from Table 17 shows that there was a consistently higher percentage of positive findings of the *Candida* in healthy denture wearers compared with normal dentate control subjects. But the difference noted visually was not significant statistically. On the other hand, denture stomatitis patients had a significantly higher density and frequency of candidal colonization at all of the oral sites sampled, compared with those of healthy denture wearers and normal dentate subjects. This was analyzed statistically, and it can be concluded that there was a significant difference between Group 3 and the combination of Group 1 and Group 2 ( $p < 0.05$ ).

The characterization of the isolates obtained from this study enables us to describe in detail the base line oral commensal yeast flora of 76 normal control dentate students, 27 control denture wearers, and 40 patients with denture stomatitis.

Thus this study shows that imprint cultures provide a simple, comfortable, and reliable method for detection of *Candida* in the oral cavity. Denture stomatitis is often accompanied by increments of oral populations of *Candida*. This might be particularly useful for rapid and confirmed diagnosis, efficient treatment, and awareness in prophylaxis of candidiasis. *Candida* should be detected in diabetic patients and in all high-risk patients, especially cancer patients before irradiation therapy, in which case long-term immunosuppressive or antibiotic therapy is planned (59 - 67).