

## CHAPTER IV

### RESULTS

The series was divided into three groups: Group 1, normal control students without denture; Group 2, denture wearers with clinically normal palatal mucosa; and Group 3, denture wearers with denture stomatitis.

Group 1 consisted of 76 dental students. The primary results for this group were as shown in Table 2 and Table 3, from which further results were derived and shown in a part of Table 8. The mean and standard deviation of the students' ages were 24.14 and 3.63 years, respectively. Positive candidal cultures from at least one site were found in 60.53 per cent of the individuals. *C. albicans* was isolated in pure cultures for 32.89 per cent and in mixed cultures for 9.21 per cent; other yeast species amounted to 31.58 per cent (Tables 2 and 3).

Group 2 consisted of 27 denture wearers. The primary results for this group were as shown in Tables 4 and 5 from which further results were also derived and shown in a part of Table 8. The mean and standard deviation of the subjects' ages were 33.2 and 13.07 years, respectively. Carriage of yeasts increased to 77.77 per cent. *C. albicans* was isolated in pure cultures for 29.63 per cent and in mixed cultures for 25.93 per cent; other yeast species amounted to 59.26 per cent (Tables 4 and 5).

Table 2. Discovery of yeasts from various areas of oral mucosa in Group 1: Male

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	SUM	MEAN	SPECIES FOUND
SUBJECT 1	23	0	0	0	0	0	0	0	0	1	0	0	1	0.10	C. albicans
SUBJECT 2	25	0	1	0	0	0	0	0	0	0	0	0	1	0.10	C. albicans
SUBJECT 3	24	0	0	0	1	0	0	0	1	1	0	0	3	0.30	C. albicans
SUBJECT 4	29	0	0	0	0	0	0	0	0	1	0	0	1	0.10	C. tropicalis
SUBJECT 5	22	0	0	0	0	0	0	0	0	1	0	0	1	0.10	C. albicans
SUBJECT 6	39	0	0	0	0	0	0	0	1	0	0	0	1	0.10	C. albicans
SUBJECT 7	24	0	0	0	0	0	0	0	0	1	0	0	1	0.10	C. albicans
SUBJECT 8	22	0	1	1	0	3	1	0	1	1	0	1	9	0.90	C. albicans
SUBJECT 9	22	33	1	1	3	4	2	2	2	2	3	1	21	2.10	C. albicans
SUBJECT 10	39	0	0	0	0	0	1	0	1	1	1	0	4	0.40	C. albicans and C. tropicalis
SUBJECT 11	23	500	1	2	3	3	2	1	4	4	0	2	22	2.20	C. albicans
SUBJECT 12	22	200	0	1	3	3	2	0	1	3	0	2	15	1.50	C. albicans and C. parapsilosis
SUBJECT 13	24	66	0	1	1	1	0	0	2	2	0	0	7	0.70	C. albicans
SUBJECT 14	23	0	0	0	0	0	1	1	0	0	0	0	2	0.20	C. parapsilosis
SUBJECT 15	23	0	0	0	1	0	1	1	1	2	0	0	6	0.60	C. tropicalis
SUBJECT 16	25	1533	1	1	0	4	1	1	2	2	3	1	16	1.60	C. albicans
SUBJECT 17	24	100	1	1	1	1	0	0	1	3	0	0	8	0.80	C. tropicalis
SUBJECT 18	24	800	4	3	3	3	1	1	4	4	3	2	28	2.80	C. albicans
SUBJECT 19	24	566	3	3	4	3	3	1	3	3	4	4	31	3.10	C. albicans
SUBJECT 20	21	0	0	0	0	0	0	1	0	1	1	0	3	0.30	C. albicans and C. parapsilosis
SUBJECT 21	26	0	0	0	0	0	0	1	0	1	0	0	2	0.20	C. tropicalis and C. parapsilosis
SUBJECT 22	22	16	0	1	1	0	1	0	0	0	0	0	3	0.30	C. albicans and C. parapsilosis
SUBJECT 23	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 24	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 25	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 26	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 27	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 28	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 29	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 30	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 31	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 32	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 33	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 34	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 35	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 36	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 37	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
COUNT MARK			8	10	10	9	11	9	13	18	6	7			
TOTAL MARK			13	15	21	25	16	10	24	34	15	13			
MEAN			.35	.41	.57	.68	.43	.27	.65	.92	.41	.35			

Table 3. Discovery of yeasts from various areas of oral mucosa in Group 1: Female

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	FL	SUM	MEAN	SPECIES FOUND
SUBJECT 1	22	933	3	1	2	2	1	2	3	4	2	3	23	2.30	<i>C. albicans</i>
SUBJECT 2	22	0	0	0	1	0	0	0	0	1	0	0	2	0.20	<i>C. albicans</i>
SUBJECT 3	23	0	0	1	1	0	0	0	0	2	0	0	4	0.40	<i>C. albicans</i>
SUBJECT 4	23	0	2	0	2	3	0	2	1	3	2	0	15	1.50	<i>C. albicans</i>
SUBJECT 5	20	0	0	0	0	1	0	0	1	1	0	0	3	0.30	<i>C. albicans</i>
SUBJECT 6	23	1120	1	1	4	4	3	2	2	2	2	1	22	2.20	<i>C. albicans</i>
SUBJECT 7	24	0	1	0	1	0	0	0	0	1	0	0	3	0.30	<i>C. albicans</i>
SUBJECT 8	23	0	0	0	0	0	1	1	0	1	1	0	4	0.40	<i>C. parapsilosis</i>
SUBJECT 9	25	0	0	0	0	1	0	0	2	2	1	0	6	0.60	<i>C. albicans</i> and <i>C. tropicalis</i>
SUBJECT 10	25	0	4	0	1	1	0	1	2	2	1	2	14	1.40	<i>C. tropicalis</i>
SUBJECT 11	22	0	0	0	0	0	0	0	1	3	0	0	4	0.40	<i>C. tropicalis</i>
SUBJECT 12	24	0	0	1	0	0	0	0	0	0	0	0	1	0.10	<i>C. guilliermondii</i>
SUBJECT 13	23	0	0	0	0	0	1	1	0	0	0	0	2	0.20	<i>C. albicans</i> and <i>Tr. cutaneum</i>
SUBJECT 14	23	100	0	0	0	0	0	0	0	1	0	0	1	0.10	<i>C. albicans</i>
SUBJECT 15	22	500	0	0	0	0	0	0	1	1	0	0	2	0.20	<i>C. albicans</i>
SUBJECT 16	23	0	0	0	0	0	0	0	0	1	0	0	1	0.10	<i>C. albicans</i>
SUBJECT 17	24	0	0	0	0	0	1	0	0	1	0	0	2	0.20	<i>C. tropicalis</i> and <i>C. parapsilosis</i>
SUBJECT 18	23	166	1	0	0	0	1	1	0	1	1	0	5	0.50	<i>C. albicans</i> and <i>C. parapsilosis</i>
SUBJECT 19	24	0	0	0	0	0	0	0	0	1	0	0	1	0.10	<i>C. tropicalis</i>
SUBJECT 20	43	0	0	0	0	0	0	0	2	4	0	0	6	0.60	<i>C. parapsilosis</i>
SUBJECT 21	21	475	1	2	1	1	0	2	1	1	1	0	10	1.00	<i>C. albicans</i>
SUBJECT 22	24	33	0	0	0	0	1	1	0	1	0	0	3	0.30	<i>C. tropicalis</i> and <i>C. parapsilosis</i>
SUBJECT 23	23	42	0	0	0	0	0	0	0	1	0	0	1	0.10	<i>C. parapsilosis</i>
SUBJECT 24	29	766	4	3	3	2	2	1	4	4	3	3	29	2.90	<i>C. albicans</i>
SUBJECT 25	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 26	25	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 27	22	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 28	22	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 29	22	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 30	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 31	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 32	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 33	22	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 34	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 35	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 36	21	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 37	23	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 38	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 39	24	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
COUNT MARK			8	6	9	8	8	10	11	22	9	4			
TOTAL MARK			17	9	16	15	11	14	20	39	14	9			
MEAN			.44	.23	.41	.38	.28	.36	.51	1.0	.36	.23			

Table 4. Discovery of yeasts from various areas of oral mucosa in Group 2: Male

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM	MEAN	SPECIES FOUND
SUBJECT 1	55	1050	1	1	2	0	1	1	1	2	0	1	1	11	1.00	C. albicans and C. parapsilosis
SUBJECT 2	31	8000	1	2	0	1	0	1	1	1	1	0	4	12	1.09	C. albicans and C. parapsilosis
SUBJECT 3	20	366	1	2	3	3	2	2	3	4	1	2	4	27	2.45	C. albicans
SUBJECT 4	21	133	1	2	3	3	2	3	2	4	2	1	2	25	2.27	C. albicans
SUBJECT 5	24	0	0	0	0	0	0	0	0	1	0	0	0	1	0.09	C. tropicalis
SUBJECT 6	58	33	0	1	1	0	0	0	1	1	0	0	0	4	0.36	C. albicans and C. parapsilosis
SUBJECT 7	21	0	0	0	0	0	2	0	0	0	0	0	0	2	0.18	C. parapsilosis
SUBJECT 8	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	C. parapsilosis
COUNT MARK			4	5	4	3	4	4	5	6	3	3				
TOTAL MARK			4	8	9	7	7	7	8	13	4	11				
MEAN			.5	1	1.13	.88	.88	.88	1	1.63	.5	1.38				

Table 5. Discovery of yeasts from various areas of oral mucosa in Group 2: Female

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM	MEAN	SPECIES FOUND
SUBJECT 1	32	200	1	1	1	1	0	0	1	1	0	0	4	10	0.91	C. albicans
SUBJECT 2	56	8533	1	1	1	1	1	1	3	2	0	0	4	15	1.36	C. albicans, C. tropicalis, T. glabrata
SUBJECT 3	29	16	0	0	0	0	1	0	1	1	0	0	1	4	0.36	C. albicans, C. parapsilosis
SUBJECT 4	24	325	3	4	2	4	3	3	4	4	3	3	3	36	3.27	C. tropicalis, C. parapsilosis, C. species
SUBJECT 5	29	175	2	1	1	1	0	1	3	3	1	1	4	18	1.64	C. albicans
SUBJECT 6	23	166	1	1	1	1	1	1	1	1	1	0	4	13	1.18	C. albicans, C. tropicalis
SUBJECT 7	23	16	1	0	0	1	0	1	1	1	0	0	3	8	0.93	C. albicans
SUBJECT 8	50	0	1	2	1	0	2	0	1	1	0	0	1	9	0.82	C. albicans
SUBJECT 9	24	133	2	1	3	3	2	2	3	3	2	2	2	25	2.27	C. albicans
SUBJECT 10	51	0	1	0	0	0	1	0	0	0	0	0	0	2	0.18	C. tropicalis, C. parapsilosis, R. rubra
SUBJECT 11	45	66	3	4	1	0	0	0	2	2	0	0	3	15	1.36	C. albicans
SUBJECT 12	37	916	2	2	2	1	1	0	3	4	1	0	4	20	1.82	C. albicans, T. glabrata, C. species
SUBJECT 13	44	333	1	0	1	0	1	1	1	1	1	1	4	12	1.09	C. albicans
SUBJECT 14	21	0	0	0	0	0	1	0	0	0	0	0	0	1	0.09	C. parapsilosis
SUBJECT 15	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 16	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 17	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 18	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
SUBJECT 19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00	-
COUNT MARK			12	9	10	8	10	7	12	12	6	4	12			
TOTAL MARK			19	17	14	13	14	10	24	24	9	7	37			
MEAN			1.0	.89	.74	.68	.74	.53	1.3	1.3	.47	.37	1.95			

Table 6. Discovery of yeasts from various areas of oral mucosa in Group 3: Male

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	FL	D	SUM	MEAN	SPECIES FOUND
SUBJECT 1	29	0	1	0	0	0	1	0	0	1	0	0	4	7	0.64	<i>C. albicans</i>
SUBJECT 2	51	333	2	1	2	2	2	1	2	3	1	1	4	21	1.91	<i>C. albicans</i> , <i>T. glabrata</i>
SUBJECT 3	26	233	1	1	1	1	0	0	2	3	0	0	4	13	1.18	<i>C. albicans</i> , <i>C. tropicalis</i>
SUBJECT 4	72	30400	3	2	2	2	1	1	4	3	1	1	4	24	2.18	<i>C. albicans</i>
SUBJECT 5	26	2383	4	2	1	1	1	0	3	4	1	1	4	22	2.00	<i>C. tropicalis</i>
SUBJECT 6	31	5933	4	4	3	3	3	2	4	4	2	1	4	34	3.09	<i>C. albicans</i> , <i>C. tropicalis</i>
SUBJECT 7	45	5950	2	2	3	2	0	1	4	4	0	0	4	22	2.00	<i>C. albicans</i> , <i>C. krusei</i>
SUBJECT 8	29	166	3	2	0	3	0	0	2	1	0	0	4	15	1.36	<i>C. albicans</i>
SUBJECT 9	23	2900	4	4	3	2	2	2	4	4	2	1	4	32	2.91	<i>C. albicans</i> , <i>C. tropicalis</i>
SUBJECT 10	32	1316	4	3	0	1	0	0	3	2	0	1	4	18	1.64	<i>C. albicans</i> , <i>T. glabrata</i>
COUNT MARK			10	9	7	9	6	5	9	10	5	6	10			
TOTAL MARK			28	21	15	17	10	7	28	29	7	6	40			
MEAN			2.8	2.1	1.5	1.7	1.0	.70	2.8	2.9	.70	.60	4.0			

Table 7. Discovery of yeasts from various areas of oral mucosa in Group 3: Female

NAME	AGE	SALIVA	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM	MEAN	SPECIES FOUND
SUBJECT 1	29	9566	4	4	2	3	1	2	4	3	2	2	4	31	2.82	C. albicans, C. tropicalis, C. krusei
SUBJECT 2	46	116	1	0	0	0	0	0	2	1	0	0	4	8	0.73	C. albicans, C. tropicalis
SUBJECT 3	36	2283	1	1	1	0	1	1	1	4	0	0	4	14	1.27	C. albicans, C. krusei
SUBJECT 4	61	70300	3	3	2	2	3	1	4	4	2	1	4	29	2.64	C. albicans, C. tropicalis, T. glabrata
SUBJECT 5	64	2800	3	2	3	3	2	2	4	3	3	3	4	32	2.91	C. albicans, C. tropicalis
SUBJECT 6	71	33	1	1	3	3	1	1	2	3	1	1	4	21	1.91	C. albicans
SUBJECT 7	22	3100	4	3	2	2	1	1	3	3	1	2	4	26	2.36	C. albicans, C. tropicalis
SUBJECT 8	24	13733	4	4	4	4	3	3	4	4	2	3	4	39	3.55	C. tropicalis, T. glabrata
SUBJECT 9	41	2266	2	1	2	1	1	1	2	3	1	1	2	17	1.55	C. albicans
SUBJECT 10	45	10866	4	3	2	1	1	1	4	4	1	2	4	27	2.45	C. albicans, C. tropicalis, C. parapsilosis
SUBJECT 11	40	1150	2	1	1	1	1	1	2	4	1	1	4	19	1.73	C. albicans, Tr. cutaneum
SUBJECT 12	34	33	0	0	0	0	0	0	1	1	0	0	0	2	0.18	C. tropicalis
SUBJECT 13	57	10866	4	2	3	3	4	3	4	4	4	2	4	37	3.36	C. albicans
SUBJECT 14	48	466	1	3	2	3	2	2	4	4	1	1	4	27	2.45	C. albicans, C. tropicalis, T. glabrata
SUBJECT 15	55	200	2	1	0	2	1	1	4	4	1	0	4	20	1.82	C. albicans, C. parapsilosis
SUBJECT 16	53	233	3	1	1	1	1	1	4	2	0	0	4	18	1.64	C. albicans, C. tropicalis, C. parapsilosis
SUBJECT 17	36	1166	3	3	1	2	1	1	2	3	0	1	4	21	1.91	C. albicans
SUBJECT 18	25	0	1	1	0	1	1	0	1	0	0	0	1	6	0.55	C. albicans, C. tropicalis, R. rubra
SUBJECT 19	20	1206	3	2	1	1	0	1	3	4	0	0	4	19	1.73	C. albicans
SUBJECT 20	22	175	2	1	1	1	0	0	3	2	0	0	4	14	1.27	C. albicans
SUBJECT 21	28	125	0	1	1	1	0	0	1	1	0	0	0	5	0.45	C. albicans
SUBJECT 22	24	200	1	0	0	1	0	1	1	1	0	1	1	7	0.64	C. albicans
SUBJECT 23	52	4500	2	2	1	1	1	1	3	3	1	1	4	20	1.82	C. albicans, C. tropicalis, C. parapsilosis, C. krusei
SUBJECT 24	52	12233	4	4	3	3	3	3	4	4	1	3	4	36	3.27	C. albicans, T. glabrata
SUBJECT 25	30	50	1	0	1	0	0	0	1	3	0	0	4	10	0.91	C. albicans, C. krusei
SUBJECT 26	26	83	4	4	1	0	2	2	4	4	1	3	4	29	2.64	C. albicans, C. krusei, Tr. cutaneum
SUBJECT 27	42	83	2	2	1	1	0	0	1	2	0	0	3	12	1.09	C. albicans
SUBJECT 28	23	766	2	2	3	3	1	2	3	3	1	0	3	23	2.09	C. albicans
SUBJECT 29	41	1233	2	1	1	1	1	1	3	2	1	0	4	17	1.55	C. albicans
SUBJECT 30	30	33	2	1	1	1	0	0	1	2	0	0	4	12	1.09	C. albicans
COUNT MARK			28	26	25	25	21	22	30	29	17	16	28			
TOTAL MARK			68	54	44	46	33	33	80	85	25	28	102			
MEAN			2.27	1.8	1.5	1.5	1.1	1.1	2.7	2.8	.83	.93	3.4			

Table 8 Incidence of oral yeasts in different groups

Group study	No. of Sample group (year)	Mean age group (year)	Sex		No. of sample with positive yeasts		Incidence in %	Species of Yeast Found
			male	female	male	female		
Group 1	76	24.15 ± 3.63	37	39	22	24	60.53	C. albicans C. tropicalis C. parapsilosis C. guilliermondii Tr. cutaneum
Group 2	27	33.26 ± 13.07	8	19	7	13	77.77	C. albicans C. tropicalis C. parapsilosis C. species T. glabrata R. rubra
Group 3	40	38.52 ± 14.35	10	30	10	30	100	C. albicans C. tropicalis C. parapsilosis C. krusei T. glabrata Tr. cutaneum R. rubra

Table 9 Comparison of yeast numbers detected by salivary samples and imprint cultures

	GROUP 1 per cent	GROUP 2 per cent	GROUP 3 per cent
Positive salivary sample	23.68 (18/76)	59.26 (16/27)	95 (38/40)
Positive imprint culture	60.53 (46/76)	77.77 (21/27)	100 (40/40)

Group 3 consisted of 40 denture wearers with denture stomatitis. The primary results for this group were as shown in Tables 6 and 7. The mean and standard deviation of the subjects' ages were 38.52 and 14.35 years, respectively. Everyone (100 per cent) of this group carried *Candida* in their oral cavities (Table 8). *C. albicans* was isolated in pure cultures for 33.33 per cent of the individuals and in mixed culture for 57.50 per cent. It appeared that candidal colonization was found in at least two of the eleven sites sampled, in all the denture stomatitis patients. Comparison of the of yeast numbers detected by salivary samples and imprint cultures can be seen from Table 9, which is derived from Tables 2 - 7. Table 9 indicates that imprint cultures apparently gave a greater number of subjects with *Candida* than did salivary samples. The difference is especially high for candidal samples (Group 1), but in the denture stomatitis (Group 3) the discovery rates of *Candida* from both techniques were nearly equal. Hence, the discrepancy might be explained by limit of the sensitivity of the salivary samples; the reliability was probably suitable for the higher titers group.

The use of imprint cultures was extended to assess the frequency and local density of candidal colonization on various regions of oral mucosa in all the three groups. Most subjects, 64 out of 143 (44.76 per cent), of the experiment had one type of yeast species



Table 10 Incidence of Yeasts in Group study

Species of yeasts	Number of isolated yeasts												Total subjects	
	Group 1				Group 2				Group 3					
	M n=37	P n=39	M+P n=76	%	M n=8	P n=19	M+P n=27	%	M n=10	P n=30	M+P n=40	%	Sum of yeasts	Incidence in % N=143
<i>C. albicans</i>	17	15	32	42.11	5	11	16	59.26	10	28	38	95	86	60.14
<i>C. tropicalis</i>	5	6	11	14.47	1	4	5	18.52	4	12	16	40	32	22.38
<i>C. parapsilosis</i>	5	6	11	14.47	4	4	8	29.62	0	4	4	10	23	16.08
<i>C. guilliermondii</i>	0	1	1	1.32	0	0	0	0	0	0	0	0	1	0.63
<i>C. krusei</i>	0	0	0	0	0	0	0	0	1	5	6	15	6	4.2
<i>C. species</i>	0	0	0	0	0	2	2	7.41	0	0	0	0	2	1.4
<i>T. glabrata</i>	0	0	0	0	0	2	2	7.41	2	4	6	15	8	5.59
<i>Tr. cutaneum</i>	0	1	1	1.32	0	0	0	0	0	2	2	5	3	2.1
<i>R. rubra</i>	0	0	0	0	0	1	1	3.7	0	1	1	2.5	2	1.4

M = Male

P = Female

N = Total number of subjects in 3 groups

n = number of subjects in each group



Table 11 Per Cent Distribution of Isolated Yeasts

Species of yeasts	Number of isolated yeasts												Total yeasts	
	Group 1				Group 2				Group 3					
	M	F	M+F	%	M	F	M+F	%	M	F	M+F	%	Sum of Yeasts	Percentage N=163
<i>C. albicans</i>	17	15	32	57.14	5	11	16	47.06	10	28	38	52.05	86	52.76
<i>C. tropicalis</i>	5	6	11	19.64	1	4	5	14.71	4	12	16	21.92	32	19.63
<i>C. parapsilosis</i>	5	6	11	19.64	4	4	8	23.53	0	4	4	5.48	23	14.11
<i>C. guilliermondii</i>	0	1	1	1.76	0	0	0	0	0	0	0	0	1	0.61
<i>C. krusei</i>	0	0	0	0	0	0	0	0	1	5	6	8.22	6	3.68
<i>C. species</i>	0	0	0	0	0	2	2	5.88	0	0	0	0	2	1.23
<i>T. glabrata</i>	0	0	0	0	0	2	2	5.88	2	4	6	8.22	8	4.91
<i>Tr. cutaneum</i>	0	1	1	1.76	0	0	0	0	0	2	2	2.74	3	1.84
<i>R. rubra</i>	0	0	0	0	0	1	1	2.94	0	1	1	1.37	2	1.23

M = Male

F = Female

N = Total number of yeasts from 3 groups

isolation; 31 out of 143 subjects (21.68 per cent) had two different species per individual oral cavity; and 11 out of 143 subjects (7.69 per cent) had three different species. There was only one denture stomatitis patient (0.7 per cent) who had four different species of *Candida* in her oral mucosa. The remaining subjects, 36 out of 143 (25.17 per cent), had no isolated yeasts (Tables 2 - 7). The number and type species of yeast isolates which were recovered from the imprint cultures are shown in Table 10. *C. albicans* was the most frequent isolate, accounting for 60.14 per cent of the population of all the three groups. Only *C. albicans* was seen regularly in pure culture, whereas most of the other species were isolated in mixed cultures. Of the other yeasts present, *C. tropicalis* accounted for 22.38 per cent and *C. parapsilosis* 16.08 per cent of the population sampled. From Table 11, it can be seen that the species which were infrequently found in the isolates were *C. krusei*, *C. guilliermondii*, *C. species*, *T. glabrata*, *Trichosporon*, and *Rhodotorula*. One isolate of *C. guilliermondii* from Group 1 amounted to 0.61 per cent of the total (163) isolated yeasts. *C. krusei* was found in 6 of the total isolates (3.68 per cent), only in Group 3; and *T. glabrata* was not found in Group 1. Where *Trichosporon* was present in both Group 1 and Group 3, *Rhodotorula* was found in Group 2 and Group 3 from the right commissure sites of two subjects.

Table 12 Analyse for Data of Sexes from 3 Studied Groups

	MALE	FEMALE	
AP	0.818	1.182	
PP	0.800	0.909	
RB	0.818	0.841	
LB	0.891	0.841	
RC	0.600	0.659	
LC	0.436	0.648	
AT	1.091	1.409	
PT	1.382	1.682	
LA	0.473	0.545	
FL	0.418	0.500	
D	2.833	2.837	
TOTAL	10.561	12.053	22.613
MEAN	0.960	1.096	1.028

Anova Table Treatment on Sex

Source	df	SS	Mean Square	VR.
Among sex	1	0.1012	0.1012	0.22
Within sex	20	9.4038	0.4702	
Total	21	9.5050		

Table 13 Chi Square Analysis for Frequency of Yeast Discovery in All Groups

	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM
Positive	70	65	65	62	60	57	80	97	46	40	54	696
Negative	37	42	42	45	47	50	27	10	61	67	7	435
Total	107	107	107	107	107	107	107	107	107	107	61	1131
Chi Square = 43.344												

Table 14 Chi Square Analysis for Frequency of Yeast Discovery in Group 1

	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM
Positive	16	16	19	17	19	19	24	40	15	11	-	196
Negative	30	30	27	29	27	27	22	6	31	35	-	264
Total	46	46	46	46	46	46	46	46	46	46	-	460
Chi Square = 28.796												

Table 15 Chi Square Analysis for Frequency of Yeast Discovery in Group 2

	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM
Positive	16	14	14	11	14	11	17	18	9	7	16	147
Negative	5	7	7	10	7	10	4	3	12	14	5	84
Total	21	21	21	21	21	21	21	21	21	21	21	231
Chi Square = 9.020												

Table 16 Chi Square Analysis for Frequency of Yeast Discovery in Group 3

	AP	PP	RB	LB	RC	LC	AT	PT	LA	PL	D	SUM
Positive	38	35	32	34	27	27	39	39	22	22	38	353
Negative	2	5	8	6	13	13	1	1	18	18	2	87
Total	40	40	40	40	40	40	40	40	40	40	40	440
Chi Square = 13.490												

Table 17 Analyse for Mean Density of Yeasts in Group Study

	Group 1	Group 2	Group 3	
AP	0.395	0.852	2.400	
PP	0.316	0.926	1.875	
RB	0.487	0.852	1.475	
LB	0.526	0.741	1.575	
RC	0.355	0.778	1.075	
LC	0.316	0.630	1.000	
AT	0.579	1.185	2.700	
PT	0.961	1.370	2.850	
LA	0.382	0.481	0.800	
FL	0.289	0.407	0.850	
D	-	1.778	3.550	
Total	4.605	10.000	20.150	34.76
Mean	0.461	0.909	1.832	1.09
SD	0.201	0.401	0.925	

Anova Table Treatment on Group

Source	df	SS	Mean Square	VR
Among Groups	2	10.3751	5.1876	14.29
Within Group	29	10.5244	0.3629	
Total	31	20.8995		

Duncan's New Multiple Range Test for Group

Significant Studentized Ranges from Table

	P	2	3
SSR	df = 29	2.895	3.040

Pairs	$S_x$	$T_i - T_j$	LSR
Group 3 - Group 1	0.1861	1.37	> 0.57
Group 3 - Group 2	0.1861	0.92	> 0.53
Group 2 - Group 1	0.1861	0.45	< 0.54

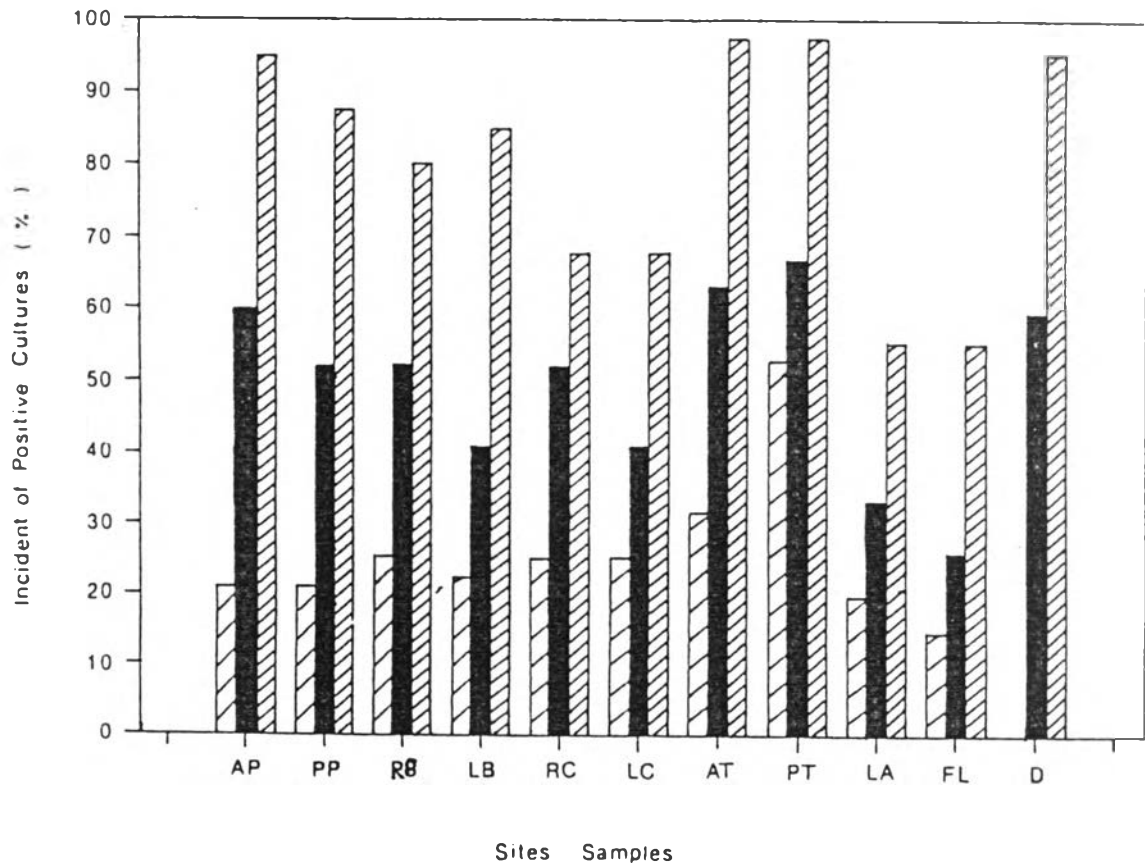


Figure 13 Frequency of detection of Candida in healthy subjects, denture wearers with normal palatal mucosa and denture stomatitis patients .



GROUP 1 Normal subjects



GROUP 2 Denture wearers with clinically normal palatal mucosa



GROUP 3 Denture stomatitis patients

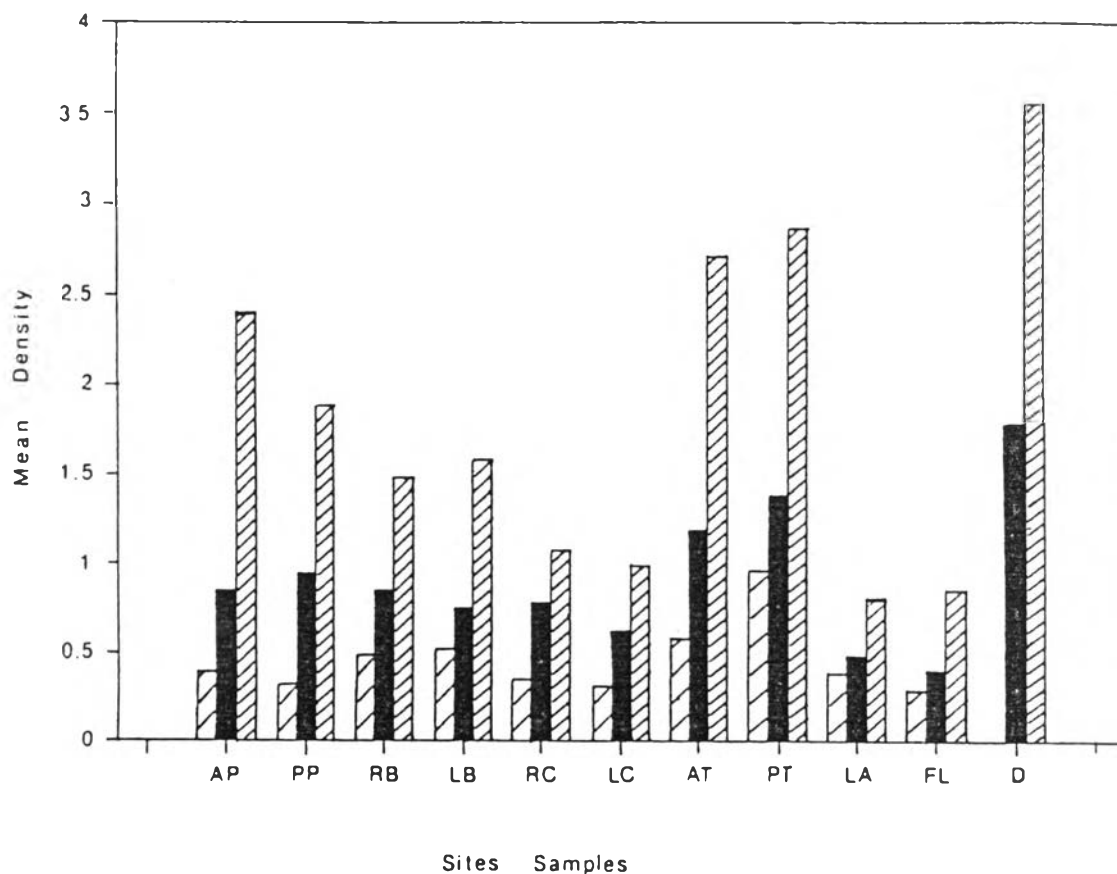


Figure 14 Mean candidal density by site in healthy subjects, denture wearers with normal palatal mucosa and denture stomatitis patients.



GROUP 1 Normal subjects



GROUP 2 Denture wearers with clinically normal palatal mucosa



GROUP 3 Denture stomatitis patients



As can be seen from Table 12, and the accompanying anova table treatment on sex, such calculations for candidal detection indicated no significant difference between male and female ( $p < 0.01$ ) in this investigation.

From this study, it was found that the distributions of *Candida* from various sites of the oral cavity were different (Table 13). The most frequently and densely colonized sites was the posterior dorsum of the tongue, [86.96 per cent in Group 1 (Table 14), 85.71 per cent in Group 2 (Table 15), and 97.5 per cent in Group 3 (Table 16)], followed by the anterior tongue, and palate (Fig 13).

The mean candidal density of these populations is shown in Fig. 14. The density of *Candida* is highest on the denture. Calculation of mean density of yeasts from Table 17, one-way analysis of the variance of Groups 1, 2 and 3, between mean density of yeasts, shows that the denture stomatitis patients (Group 3) significantly differed from normal control Group 1 and denture wearing control Group 2. In spite of the higher average density of Group 2 in comparison with Group 1, there was no significant difference between the normal dentate control group and denture wearing control group. The p-values from these calculation on the three groups were all 0.05, illustrating significance. This table also shows that

denture wearing subjects seemed especially associated with increasing frequency of *Candida* species. By both culture methods, a significantly higher concentration of yeasts was found in patients with denture stomatitis.

