

## THE PRESENCE OF YEASTS IN URINE

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### SYNOPSIS

**100 isolates of yeast from urine specimens were identified and their association with various clinical factors analysed. *Candida albicans*, *Candida tropicalis* and *Torulopsis glabrata* were most commonly isolated from these specimens. Associated factors frequently encountered were urinary tract infection, diabetes mellitus, indwelling catheterization and post-operative infection. When data of isolates obtained from repeat urine specimens originating from the same patients were analysed, the same 3 species were found to predominate.**

The first part of this laboratory based study reports the isolation of various species of yeasts from urine specimens obtained from the General Hospital, Kuala Lumpur and the various factors that are associated with these isolates. The second part reports the isolation of different species of yeasts in association with various factors from repeat urine specimens in order to ascertain the significance of this isolation.

## METHODS AND MATERIALS

### Specimens

100 yeast isolates from urine specimens of cases which had indications of the various associated factors (noted according to the clinical histories written in the request forms) were studied. They had been isolated on Sabouraud Dextrose Agar after incubation at 30 C overnight and showing colony forming unit of more than 10<sup>5</sup>.

### Identification Procedures

These isolates were subjected to the germ-tube test, cultured on to Chlamydo-spore Agar (Difco) in plates and slide cultures for morphological studies and to determine the presence of chlamydo-spores. The non-*C. albicans* isolates were further identified with the API 20 C Auxanogramme.

Species of yeasts isolated from the same patient for more than once were also noted.

## RESULTS

From the germ-tube test, morphological studies and detection of chlamydo-spores, 49 out of 100 yeast isolated were found to be *C. albicans*. Other species encountered included *C. tropicalis* (22 isolates), *Torulopsis glabrata* (10), *Trichosporon cutaneum* (8), *C. parapsilosis* (3), *C. pseudotropicalis* (2), *Torulopsis candida* (2), *Trichosporon inkin* (1), *C. guilliermondii* (1) and *Trichosporon pullulans* (1). The various factors that were associated are as seen in Table 1.

Table 2 shows that 3 species namely *C. albicans*, *C. tropicalis* and *Torulopsis glabrata* predominating over other species when isolates obtained from repeat urine specimens from the same patient were considered.

## DISCUSSION

The commonest yeast found in urine specimens was *C. albicans*, followed by *C. tropicalis* and then *T. glabrata*. Our finding seems to be agreeable with that of other workers in other parts of the world (1, 6, 7, 12). When associated factors (considered according to the clinical histories written in the request forms) were analysed, it was found that urinary tract infection, diabetes mellitus, catheterization and post-operation infection appeared to frequently associated with isolation of yeast from urine. However, it is important to note that most of the other patients, besides those that are known to be on catheters, may well have been

TABLE 1  
PRESENCE OF DIFFERENT SPECIES OF YEASTS ASSOCIATED WITH VARIOUS FACTORS

Associated factors	Species/Number of isolates										Total
	a C. alb	b C. trop	c C. guill	d C. pseudo	e C. parap	f T. glab	g T. cand	h Tr. cut	i Tr. pull	j Tr. ink	
UTI	8	9	1	1	—	3	1	3	1	—	27
Diabetes mellitus	9	5	—	1	—	3	—	—	—	—	18
Indwelling catheter	10	1	—	—	—	1	—	3	—	—	15
Post-ops	6	3	—	—	1	1	—	—	—	—	11
Renal disorder	3	1	—	—	1	—	—	—	—	2	7
Acute lym. leukaemia	4	—	—	—	1	—	1	—	—	—	6
Paraplegia (with catheter)	2	—	—	—	—	1	—	2	—	—	5
Burns	1	1	—	—	—	1	—	—	—	—	3
Hepatic disorder	3	—	—	—	—	—	—	—	—	—	3
SLE	1	1	—	—	—	—	—	—	—	—	2
Hydrocephalus	1	1	—	—	—	—	—	—	—	—	2
Abnormal UT	1	—	—	—	—	—	—	—	—	—	1
Total	49	22	1	2	3	10	2	8	1	2	100

a — *Candida albicans*  
b — *Candida tropicalis*  
c — *Candida guilliermondii*  
d — *Candida pseudotropicalis*  
e — *Candida parapsilosis*

f — *Torulopsis glabrata*  
g — *Torulopsis candida*  
h — *Trichosporon cutaneum*  
i — *Trichosporon pullulans*  
j — *Trichosporon inkin*

TABLE 2  
ISOLATION OF DIFFERENT SPECIES OF YEASTS ASSOCIATED WITH  
VARIOUS FACTORS FROM REPEAT URINE SPECIMENS

Associated factors	Patient No.	Sex	No. of specimens	Types of isolates		
				<i>C. alb</i>	<i>C. trop</i>	<i>T. glab</i>
UTI	1	M	3	+	—	—
	2	M	3	—	+	—
	3	F	2	—	+	—
Diabetes mellitus	4	F	3	—	+	—
	5	F	2	—	—	+
Burns	6	F	2	+	—	—
	7	M	2	+	—	—
Acute lym. leukaemia	8	M	5	+	—	—
	9	M	2	+	—	—
indwelling catheter	10	F	3	+	—	—
	11	F	2	+	—	—
Hydrocephalous	12	M	5	—	+	—
Renal disorder	13	F	2	+	—	—

treated by indwelling or intermittent urethral catheterization and/or have also undergone anti-bacterial treatment.

In an attempt to assess the significance of these isolates, isolation of yeasts from the same patients repeatedly was analysed. Again we found that the 3 species mentioned above being involved (Table 2) and hence reaffirming the likelihood of these species being implicated. However, repeated isolation is only one of the steps usually taken to ascertain significant funguria in the laboratory. The other is to do a semi-quantitative count and yeasts which are genuinely present in bladder urine are rarely seen in counts below 10 colonies per ml. Other factors that need to be considered include as to whether a cleanly collected mid-stream specimen is obtained and also if patients have overt vaginal or perineal infection. When catheter specimens are taken, usually there should not be any difficulty. However, one has to be careful as prolonged use of catheters *in situ* may give rise to colonization of the catheter itself with yeasts.

It is hoped that future work to assess significance of yeasts in urine in the laboratories will include these various considerations for a more meaningful result.

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