Laboratory Identification of *Torulopsis glabrata*: Typical Appearance on Routine Bacteriological Media

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The colonial morphology of the yeast *Torulopsis glabrata* on sheep blood-agar is characteristic and was useful in the identification of 24% of clinical isolates.

*Torulopsis glabrata* (2) is a yeast of the family *Cryptococcaceae*, section *Cryptococcoideae* (7). There is adequate evidence in the literature (1, 3) and our own studies (manuscript in preparation) for the pathogenicity of this yeast in humans. The purpose of this communication is to alert the clinical microbiologist to the cultural appearance of this organism on routine bacteriological and mycological media and its identification. The typical appearance of tiny colonies on sheep blood, chocolate, bile, MacConkey, and Mueller-Hinton agar has not been previously reported.

### Table 1. Media on which *Torulopsis glabrata* were cultured

| Clinical specimen | No. of isolates | Sheep blood-agar | MacConkey | Blood culture | Sabouraud |
|-------------------|----------------|------------------|-----------|--------------|-----------|
| Blood             | 23             | 23               | 23        |              |           |
| Urine             | 39             | 17               | 2         | 20           |           |
| Sputum            | 22             | 2                |           | 20           |           |
| Stool             | 4              |                  |           | 4            |           |
| Wound             | 8              | 3                |           | 5            |           |
| Others            | 10             | 3                |           | 7            |           |
| Total             | 106            | 25               | 2         | 23           | 56        |

Over the past 14 months, *T. glabrata* has been identified in 56 of 1,420 clinical specimens cultured on Sabouraud dextrose-agar (BBL), and an additional 50 isolates were cultured on routine bacteriological media (Table 1). On 2.5% sheep blood [in Trypticase Soy Agar (Difco)]-agar (Fig. 1), growth is abundant and may appear in 1 to 3 days at 37 C both on primary inoculation and subculture. The colonies are tiny, white, raised, nonhemolytic, and remain small despite further incubation. The morphology of these colonies on sheep blood-agar, and subsequent microscopic confirmation as a yeast in an unstained or Gram-stained smear (Fig. 2 and 3), has been consistently diagnostic of *T. glabrata* in our experience. Very young colonies of *Candida* species and *Geotrichum* may have a similar appearance to the inexperienced observer, and further confirmation is, of course, mandatory.

![Fig. 1. Colonial morphology of *T. glabrata* on 2.5% sheep blood-agar after 3 days of incubation at 37 C. Actual size.](http://aem.asm.org/)

Similar colonial appearance has been noted on chocolate, bile, and Mueller-Hinton agar, and the yeast grows well in blood cultures (Hyland), thiglycolate broth, and routine mycological media such as Sabouraud dextrose (Fig. 4), potato, corn meal, and Levine EMB agar. We have noted this typical growth on MacConkey agar (Difco) as well, but only with urine as the primary inoculum.
Fig. 2. Microscopic appearance of T. glabrata in unstained wet smear. X 360.

Fig. 3. Microscopic appearance of T. glabrata. Gram stain. X 180.

Once these tiny yeast colonies are isolated, confirmation is relatively simple and can be done routinely in any mycology or bacteriology laboratory. As shown in Table 2, a pseudogerm tube test (4) or culture on cornmeal-Tween-agar (5) will identify most C. albicans; Torulopsis does not form mycelia or pseudomycelia. Final confirmation by sugars is simple, as T. glabrata ferments only dextrose and trehalose and does not assimilate any other sugars, including maltose, sucrose, or cellobiose; this is true of no other yeast (6).

T. glabrata can be pathogenic, and its laboratory identification is essential for the early diagnosis and therapy of clinical infections. Since it is either not mentioned or poorly described in most textbooks and laboratory manuals of mycology, we urge all laboratory personnel to become familiar with the appearance of this yeast on routine bacteriological and mycological media and with the simple means of species confirmation. A detailed report concerning the clinical and pathological expression of T. glabrata infection and its treatment is in preparation.

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