Evaluation of Two Commercially Prepared Biphasic Media for Recovery of Fungi from Blood

L. M. CAPLAN† AND W. G. MERZ*

Microbiology Division, Department of Laboratory Medicine, The Johns Hopkins Medical Institutions, Baltimore, Maryland 21205

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Recovery of six yeast species from blood was comparable in commercially prepared brain heart infusion biphasic and Trypticase soy biphasic media. An increased recovery of 13% was noted when two bottles, each containing 5 ml of blood, were cultured, as compared to a 5-ml portion in a single culture bottle.

The increased incidence of opportunistic fungal infections, of which systemic candidiasis is the most frequently encountered, has been well documented (3). However, the development of improved diagnostic procedures has not kept pace with this problem. There is little information concerned with the development of a blood culture system that ensures the optimal recovery of fungi. Vented blood culture bottles have been shown to shorten the incubation time and increase the recovery of yeasts from blood specimens (1, 2). In a series of studies, vented brain heart infusion (BHI) biphasic medium was found to be superior to unvented bacterial blood culture bottles of Trypticase soy broth (TSB), thiol broth, thioglycolate broth, Columbia broth, and TSB with 15% sucrose (6). The addition of 15% sucrose to the vented biphasic BHI did not improve the recovery or reduce the time for detection (5); however, vented biphasic BHI decreased time of detection when compared to vented TSB (4). In the present study, we compared the recovery of yeasts from clinical blood specimens in vented biphasic BHI (BBL) to vented biphasic TSB (BBL). Both media contained 0.03% sodium polyanetholsulfonate with 3% carbon dioxide. Five milliliters of blood was used to inoculate each bottle, which was vented with a sterile needle and then incubated upright at 37°C for 30 days. The bottles were examined three times a week for visual evidence of growth in the broth and on the agar slants. At each examination, they were gently inverted to allow the blood-broth mixture to spread over the agar surface. Blind subcultures were not performed. All yeast isolates were identified by germ tube production, 6-carbon fermentation, morphology on corn meal agar with Tween 80, and auxanographic carbohydrate assimilation tests.

Of the 1,100 blood cultures evaluated, 34 (3.1%) were positive for yeasts. The number of yeasts recovered from each of the two fungal blood culture media was as follows: TSB only, 4; BHI only, 4; both, 26; total, 34. The 34 yeasts recovered from individual blood culture specimens represented 20 different patients. Twenty-six of the yeasts were recovered from both bottles; four were recovered from the TSB only; and four others were recovered from the BHI only. The time intervals for detection were approximately the same with both media. The individual yeast species recovered from these two media are shown in Table 1. *Candida albicans* was the most frequent isolate, but the media did not favor or inhibit any of these six species of yeasts; however other species might show a preference for one medium. Using either bottle alone, 30 of the 34 yeasts (88%) would be recovered. Since eight yeasts (22%) were recovered from only one blood culture bottle, we agree with the manufacturer's recommendation that two bottles be used to ensure maximum recovery. The 13% increased recovery from two bottles stresses the importance of culturing a sufficient volume of blood to insure maximum recovery of yeasts. Taking this into considera-

TABLE 1. Yeast species recovered from two blood culture media

Organism	No. recovered on:		
	Both media	TSB alone	BHI alone
<i>Candida albicans</i>	17	16	17
<i>C. guilliermondii</i>	4	2	2
<i>C. parapsilosis</i>	5	4	5
<i>C. tropicalis</i>	1	1	0
<i>Cryptococcus neoformans</i>	2	2	2
<i>Torulopsis glabrata</i>	5	5	4

† Present address: Clinical Microbiology, Children's Hospital National Medical Center, Washington, DC 20010.

tion, two bottles of the same medium would probably also be sufficient.

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