Evaluation of a Hypertonic Sucrose Medium for the Detection of Fungi in Blood Cultures

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A comparison was made between biphasic brain heart infusion medium without and with 15% sucrose in vented blood culture bottles. A higher recovery rate ($P < 0.01$) of fungi was noted in the medium without sucrose.

Recent studies by Henrichsen and Bruun (2), Rosner (6), and Washington et al. (7) have dealt with the recovery of bacteria from blood culture media supplemented with sucrose. Since few reports concerning fungal blood culture media have been published (3-5), this prompted an evaluation of the effect of sucrose on the recovery of fungi from blood cultures.

Ten milliliters of blood from patients suspected of having fungemia was inoculated into each of two biphasic fungal blood culture media. One bottle contained brain heart infusion broth (BHI) and a BHI agar slant as described elsewhere (4). The second bottle contained a BHI agar slant and BHI broth supplemented with 15% sucrose. All cultures were vented with a sterile, cotton-plugged needle and incubated upright at 30°C for 30 days. Bottles were examined daily for visual evidence of growth, and after examination they were gently mixed so that the blood-broth mixture was spread over the agar slants. All fungal isolates were identified by procedures described elsewhere (1).

During the period from October 1973 to August 1974, 3,902 fungal blood cultures were inoculated. The numbers of isolates recovered from cultures in BHI with and without supplemental sucrose are presented in Table 1. Of the fungi isolated, the yeasts accounted for 44 (86%). *Histoplasma capsulatum*, isolated in seven instances, was responsible for the remaining 14% of the isolates.

Fungi were more frequently recovered in the absence of sucrose ($P < 0.01$). The time intervals to detection of positivity between the two media are shown in Table 2. In general, there was little difference in recovery times except for *Candida parapsilosis*, which was, on the average, detected 2.3 days earlier in the medium with sucrose.

It appears that the addition of sucrose to BHI neither enhances the recovery rate of fungi from blood cultures nor shortens the detection

TABLE 1. Numbers of isolates in blood cultures by medium

Organism	Both media	BHI only	BHI and sucrose only	Total positive	P
<i>Candida albicans</i>	5	9	1	15	<0.05
<i>Candida parapsilosis</i>	4	2	0	6	NS ^a
<i>Candida tropicalis</i>	3	10	5	18	NS
<i>Cryptococcus neoformans</i>	3	0	0	3	NS
<i>Histoplasma capsulatum</i>	5	1	1	7	NS
<i>Torulopsis glabrata</i>	0	2	0	2	NS
Total	20	24	7	51	<0.01

^a NS, Not statistically significant.

TABLE 2. Recovery time for fungi in blood culture media

Organism	BHI		BHI with sucrose	
	Avg (days)	Range (days)	Avg (days)	Range (days)
<i>Candida albicans</i>	3.2	2-5	3.9	2-6
<i>Candida parapsilosis</i>	5.3	3-11	3.0	3
<i>Candida tropicalis</i>	3.6	2-5	3.5	3-4
<i>Cryptococcus neoformans</i>	4.3	3-5	4.0	3-5
<i>Histoplasma capsulatum</i>	16.1	12-24	15.1	13-16
<i>Torulopsis glabrata</i>	11.6	8-14		

time of positivity. The biphasic BHI medium without sucrose is still the preferred medium.

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