Blood Agar and *Mycobacterium tuberculosis*: the End of a Dogma

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Incidental blood agar-based recovery of *Mycobacterium tuberculosis* led us to further investigate this routine medium for primary isolation and culture of *M. tuberculosis*. Fifteen respiratory tract and eight lymph node Ziehl-Neelsen-positive specimens were inoculated in parallel into tubes containing egg-based medium and 5% sheep blood agar. Colonies appeared sooner on this medium than on the egg-based medium, but this difference was not significant (P = 0.11, analysis of variance [ANOVA] test). Further experiments compared the growth of 38 respiratory and lymph node *M. tuberculosis* isolates when subcultured on the two media. After 6 days of incubation, 21 of 38 isolates had grown on blood agar, and the mean number of colonies was significantly greater on blood agar than on the egg-based medium (P < 0.001, ANOVA test). These results demonstrate that *M. tuberculosis* grows easily on blood agar within 1 to 2 weeks, indicating that this basic medium is suitable for laboratory diagnosis of tuberculosis in addition to other media. Laboratories that routinely use prolonged incubations of blood plates, for example, for the recovery of *Bartonella* species, should consider the potential safety implications of encountering this highly infectious pathogen.

*Mycobacterium tuberculosis* is a slow-growing bacterium that is the etiological agent of tuberculosis. Agar-based and egg-based media incorporating green malachite and Middlebrook broths or solid media are recommended as the “gold standard” for isolation, culture, and definite diagnosis of *M. tuberculosis* (6). Although there has been one anecdotal report of the isolation of *M. tuberculosis* from a parasitic lung parasite (1), this was not significant (P = 0.11, analysis of variance [ANOVA] test). Further experiments compared the growth of 38 respiratory and lymph node *M. tuberculosis* isolates when subcultured on the two media. After 6 days of incubation, 21 of 38 isolates had grown on blood agar, and the mean number of colonies was significantly greater on blood agar than on the egg-based medium (P < 0.001, ANOVA test). These results demonstrate that *M. tuberculosis* grows easily on blood agar within 1 to 2 weeks, indicating that this basic medium is suitable for laboratory diagnosis of tuberculosis in addition to other media. Laboratories that routinely use prolonged incubations of blood plates, for example, for the recovery of *Bartonella* species, should consider the potential safety implications of encountering this highly infectious pathogen.

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izing the egg-based medium (2). To our knowledge, no com-
parative study comparing the efficacy of blood-based agars and
egg-based agars has been carried out, and even the ability of
blood agar to support growth of *M. tuberculosis* was forgotten.
In this report, we demonstrated that primary isolation of *M.
tuberculosis* was achieved 10 to 15 days after of inoculation of
clinical samples, and that subculture in the same medium was
achieved within 6 days. Our results show that when desiccation
is prevented by use of tubes instead of plates, blood agar is a
suitable alternative for the primary isolation of *M. tuberculosis*
and may even be superior to egg-based agar for subculture of
the organism. Blood agar also facilitates the recovery of other
fastidious, slow-growing organisms that may be present in ad-
dition to *M. tuberculosis*, such as *Bartonella* spp. (6). However,
since blood agar is not a selective medium, it may be more
suitable for noncontaminated specimens. Inoculation of blood
agar could be done immediately in order to avoid a delay in
shipping clinical specimens to reference laboratories with spe-
cialized media. Since prolonged incubation of blood agar has
recently been advocated as a means of evaluating enlarged
lymph node specimens (3), our observations suggest that lab-
oratories could encounter *M. tuberculosis* in addition to *Bar-
tonella* spp. and other fastidious pathogens. Consequently, ap-
propriate microbiological safety measures should be in place to
counter the highly infectious nature of *M. tuberculosis*.

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