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ABSTRACT BOOK

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PS-82396-18 Sensitive and rapid tuberculosis culture diagnosis with disposable filters replacing the laboratory centrifuge

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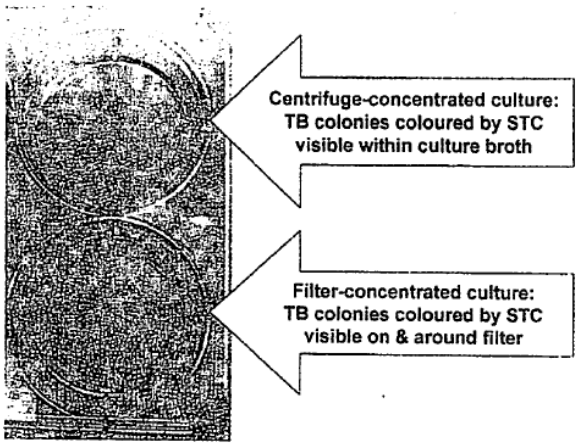
Background: Tuberculosis (TB) sensitive culture diagnosis usually requires centrifugation to concentrate mycobacteria and remove them from the inhibitory chemicals used for decontamination. However, centrifuges are an expensive barrier to the provision of sensitive diagnosis in field settings.
Objective: To evaluate filters for replacing centrifugation in TB culture diagnosis.
Method: Sputum samples (n = 111, 56% smear positive) were decontaminated with *N*-acetyl cysteine and NaOH for 20 min followed by addition of excess buffer to 14 ml volume. Half of the sample was then processed conventionally by centrifugation for 15 min at 17°C and inoculation into culture broth. The other half of the sample was aspirated with a 5 ml syringe through a disposable 0.4 μm polycarbonate filter that was then placed directly into culture broth. 7H9 broth was used with the indicator STC. Cultures were examined 3× weekly. Colony counts and days to positivity were determined with an inverted light microscope and days to colourimetric positivity by naked eye.
Results: Centrifugation and filtration had similar sensitivity (58% of samples were culture positive, 56% by decontamination and 53% by filtration; sensitivity 97% vs. 92%, respectively, P = 0.2). Centrifugation and filtration also had similar TB colony counts (P = 0.3), contamination rates (1.8% vs. 0%) and time to positivity (median 11 vs. 12 days by microscopy, P = 0.4; 13 vs. 14 days by naked eye, P = 0.2). Naked eye colorimetric TB detection was less labour intensive than repeated microscopic examination of cultures, but colour change indicated positivity an average of 2 days later than microscopy (P = 0.003).



Conclusions: Disposable filters may have the potential to replace centrifugation, providing rapid and sensitive TB culture without the expense of centrifuge purchase and maintenance. Ongoing research is evaluating filtration for enhancing the sensitivity of microscopy and for TB culture with concurrent drug-susceptibility testing.