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ABSTRACT

Pouched rats can detect Mycobacterium tuberculosis, which causes tuberculosis, in human sputum. Historically, a phosphate-buffered saline solution was added to sputum in the belief that doing so improved rats' detection of M. tuberculosis, but no relevant data were available. Experiment 1 evaluated rats' performance on samples with and without phosphate-buffered saline solution added. There was no difference in detection accuracy. Adding the solution slows sample processing and will not be done in future operational applications. Experiment 2 compared the performance of rats trained on sputum samples with low versus high concentrations of M. tuberculosis. Training on low-concentration samples improves sensitivity on that sample type. Unfortunately, it is impractical to arrange low-concentration training in the current operational setting, where the rats are used for the second-line screening of samples initially evaluated by microscopy.

Key words: African pouched rats, tuberculosis, olfactory discrimination, operant conditioning

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