

A Sensitivity Comparison between Tetracore, New Horizons, and Alexeter tickets

Data publically available from tests funded by the U.S. and Great Britain governments show that both New Horizon and Alexeter bioassay tickets are equal or superior to those produced by Tetracore for anthrax spores.

These tests are shown in Tables 1 and 2. From Table 1, it can be seen that Alexeter Technologie's anthrax tickets showed a detection limit of less than 10,000 CFU/ml for a wide range of anthrax strains, while Tetracore's detection limit was between 100,000 and 100 million CFU/ml. In general, the Alexeter tickets have 10 to 100 times higher sensitivity for anthrax spores than the Tetracore tickets.

If public tests for anthrax spore detection are compared for New Horizons and Tetracore tickets, Table 2 shows that the New Horizon tickets had a detection limit less of than 100,000 CFU/ml, whereas the Tetracore ticket detection limits were between 100,000 and 100 million CFU/ml. Once again, the Tetracore tickets showed at least a 10 times lower sensitivity for anthrax spores.

Table 1: A Comparison of Lateral Flow Immunoassay Strips ('tickets') for <i>Bacillus anthracis</i> Spores		
<i>Alexeter and Tetracore</i>	Detection Limit (1000's of CFU/ml)	
Anthrax spore strain	Alexeter Technologies ⁽¹⁾	Tetracore ^(2,3)
Ames	<10	10,000-100,000
Vollum	10-100	
Turkey	<10	
Maputo	<10	
Pasteur	not tested	100-1000

Table 2		
<i>New Horizons and Tetracore</i>	Detection Limit (1000's of CFU/ml)	
Anthrax spore strain	New Horizons Diagnostics ⁽²⁾	Tetracore ^(2,3)
Ames	Not tested	10,000-100,000
Pasteur	<100	100-1000



Conclusion

While the U.S. government will not issue a statement comparing bioassay tickets, government-supported test results in the open literature support the conclusion that the New Horizon and Alexeter tickets are comparable or superior in sensitivity to Tetracore's tickets. The general trend for anthrax test results is that Tetracore's tickets are about 1/10 as sensitive as the other two company's products.

This lack of sensitivity is of no concern when examining powder samples, but aerosol samples are much more dilute and false negatives may result.

This is not an endorsement of a particular manufacturer's products, but is simply a finding on sensitivity made from available sources. Other factors that should be taken into consideration include non-specific responses (i.e. propensity for false positives), cross-sensitivity, storage life, and the method of ticket reading, either manual or machine.

A rule of thumb is that machine-readers can increase apparent ticket sensitivity by about 5-10X.

References

- 1) Test conducted for the Government of Great Britain. Test results shown in document "Test Study Anthrax BD Tests SNT 0708-1.pdf". Verification shown in previously submitted letter, "Contract Acceptance Letter-2.pdf." No further official notice is available from Great Britain due to the 'Restricted' nature of the work.
- 2) Test conducted by the Florida Department of Health and the USF Center for Biological Defense, University of South Florida: Funded by U.S. Department of Defense. Published in the Journal of Clinical Microbiology, Vol. 41, No. 7, pp3454-3455, 2003. Verification letter from Dr. Andrew Cannons, Scientific Director of USF Center for Biological Defense has been previously provided.
- 3) Environmental Technology Verification Program, U.S. Environmental Protection Agency, ETV Joint Verification Statement, "Detecting Anthrax, Botulinum Toxin and Ricin," September 2004. Tests were performed with Ames strain of *Bacillus anthracis*.



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