

# Evaluation of Epower™ E3 Strains for Quality Control of CompactDry™ Chromogenic Media

Kali Sorum RM(NRCM)

## INTRODUCTION

Reliable quality control (QC) methods are essential to ensure the accuracy and reproducibility of microbiological testing in food safety and environmental monitoring. CompactDry™ plates provide a convenient, ready-to-use medium for the enumeration of specific microorganisms, including *Escherichia coli*, *Staphylococcus aureus*, yeasts, and molds. To verify performance, standardized reference materials are required to challenge the growth-promoting, indicative, and inhibitory characteristics of each CompactDry™ formulation.

Microbiologics Epower™ E3 preparations are traceable, lyophilized reference microorganisms designed for quantitative quality control. When rehydrated, these preparations provide reproducible inocula at defined colony-forming unit (CFU) concentrations, supporting consistency across laboratories. Incorporating Epower™ strains into CompactDry™ testing ensures that critical parameters such as selectivity, recovery, and detection limits, are validated under controlled conditions.

This study evaluates the compatibility of Epower™ microorganisms with CompactDry™ EC and YM/YMR media by examining colony recovery, morphology, and incubation performance across multiple test organisms. The objective is to establish a standardized QC framework that confirms CompactDry™ reliability for routine laboratory use while meeting international quality assurance standards. By integrating Epower™ reference strains with CompactDry™ platforms, laboratories can strengthen confidence in test results, reduce variability, and support compliance with regulatory and accreditation requirements.

## METHODS

Reference microorganisms from the Microbiologics Epower™ E3 system were used as quality control strains, including *E. coli* derived from ATCC® 8739™\* (0483E3), *S. aureus* derived from ATCC® 6538™\* (0485E3), and *A. brasiliensis* derived from ATCC® 16404™\* (0392E3). CompactDry™ media evaluated in this study included EC and YM/YMR plates. See Table 1, for which strains were used for each CompactDry™ Media type.

For inoculum preparation, vials of Epower™ pellets were first equilibrated to room temperature for approximately 30 minutes. Individual pellets were then hydrated in 10 mL of pre-warmed (34–38 °C) phosphate buffer (pH 7.2) for 30 minutes, followed by vortexing to achieve a homogenous suspension containing approximately 10<sup>2</sup> CFU/mL. Serial 1:10 dilutions were performed to obtain working inocula of 10–100 CFU/mL and 1–10 CFU/mL.

From the final dilution, 1 mL aliquots were inoculated in duplicate onto CompactDry™ plates. Plates were incubated in the inverted position under the following conditions: EC at 35–37 °C for up to two days, and YM/YMR at 25–30 °C for up to four days.

Plates were examined at 24, 48, 72, and 120 hours. Colony counts, morphology, and growth characteristics were recorded, with photographic documentation at each time point. Each procedure was repeated in seven independent replicates to assess reproducibility and performance. Growth was also assessed at AOAC prescribed incubation conditions. See Table 2, for AOAC prescribed incubation conditions.

Table 1.

Organism (Strain)	Catalog Number	CompactDry™ Type(s)
<i>Escherichia coli</i> (ATCC 8739)	0483E3	EC, TC, TCR
<i>Staphylococcus aureus</i> (ATCC 6538)	0485E3	EC, TC, TCR
<i>Aspergillus brasiliensis</i> (ATCC 16404)	0392E3	YM, YMR

Table 2.

Test	AOAC Incubation Period (hours)	Temperature (°C)
Total Bacterial Plate Count (TC)	48 ± 3	35 - 37
Total Count Rapid (TCR)	24 ± 2	35 - 37
E. coli & Coliforms (EC)	24 ± 2	35 - 37
Yeast & Mold (YM)	72 - 168	25 - 30
Yeast & Mold Rapid (YMR)	72 ± 3	25 - 30

## RESULTS

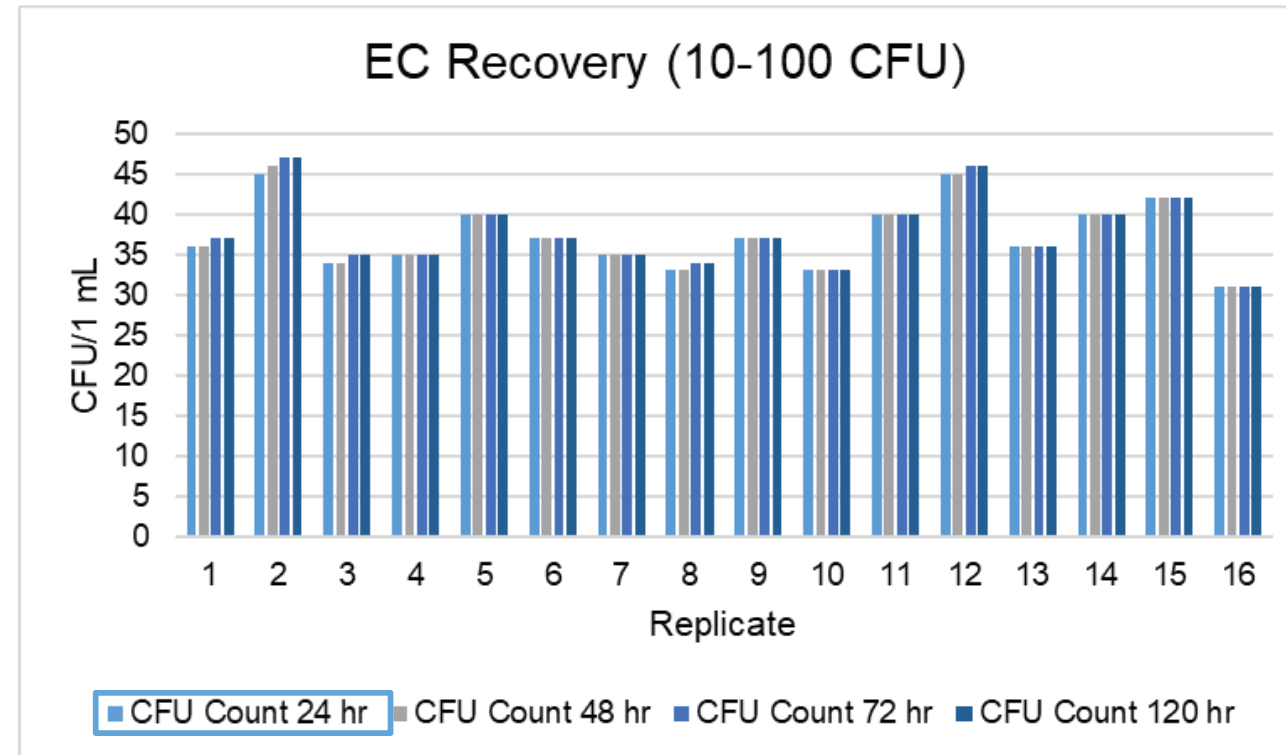


Figure 1. Recovery of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, on CompactDry™ EC. The target CFU range was 10-100 CFU/1 mL. An inhibitory control of *S. aureus* derived from ATCC® 6538™\*, catalog number 0485E3, was also plated at a target CFU range of 10-100 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

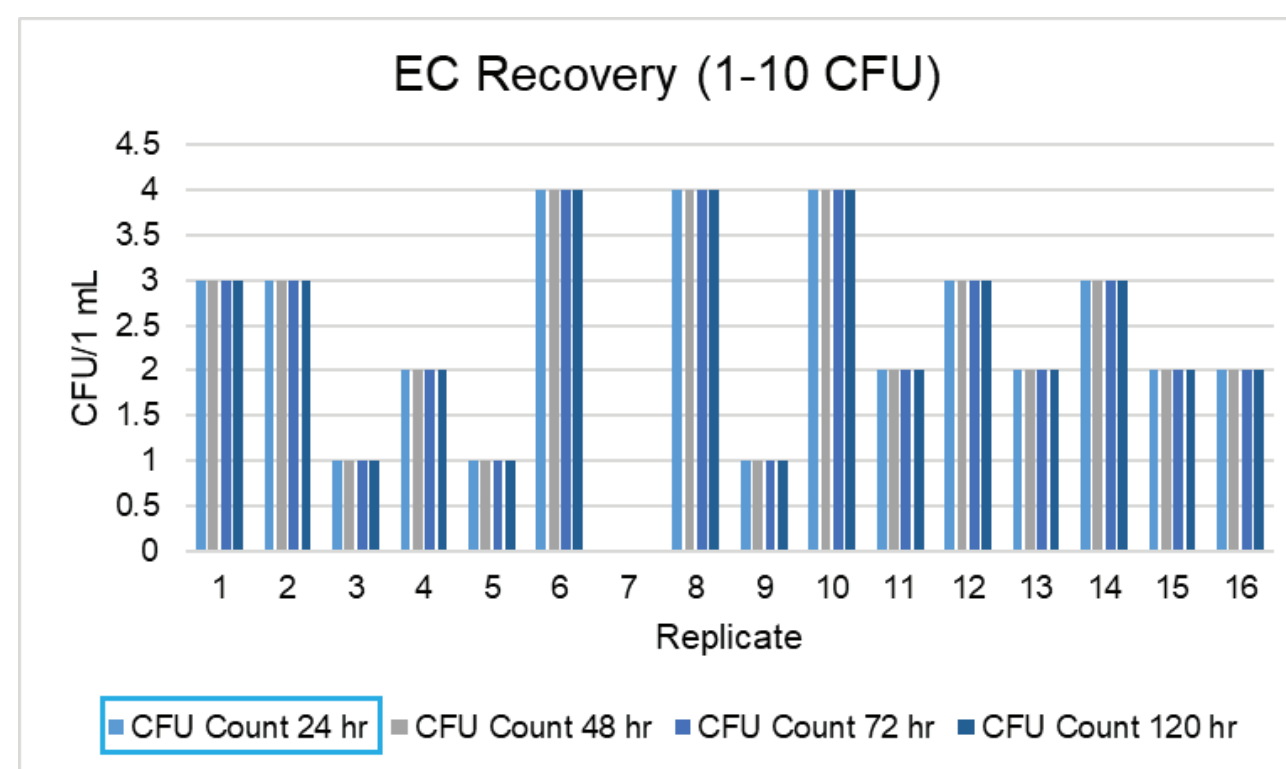


Figure 2. Recovery of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, on CompactDry™ EC. The target CFU range was 1-10 CFU/1 mL. Replicate 7 did not produce growth. An inhibitory control of *S. aureus* derived from ATCC® 6538™\*, catalog number 0485E3, was also plated at a target CFU range of 1-10 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

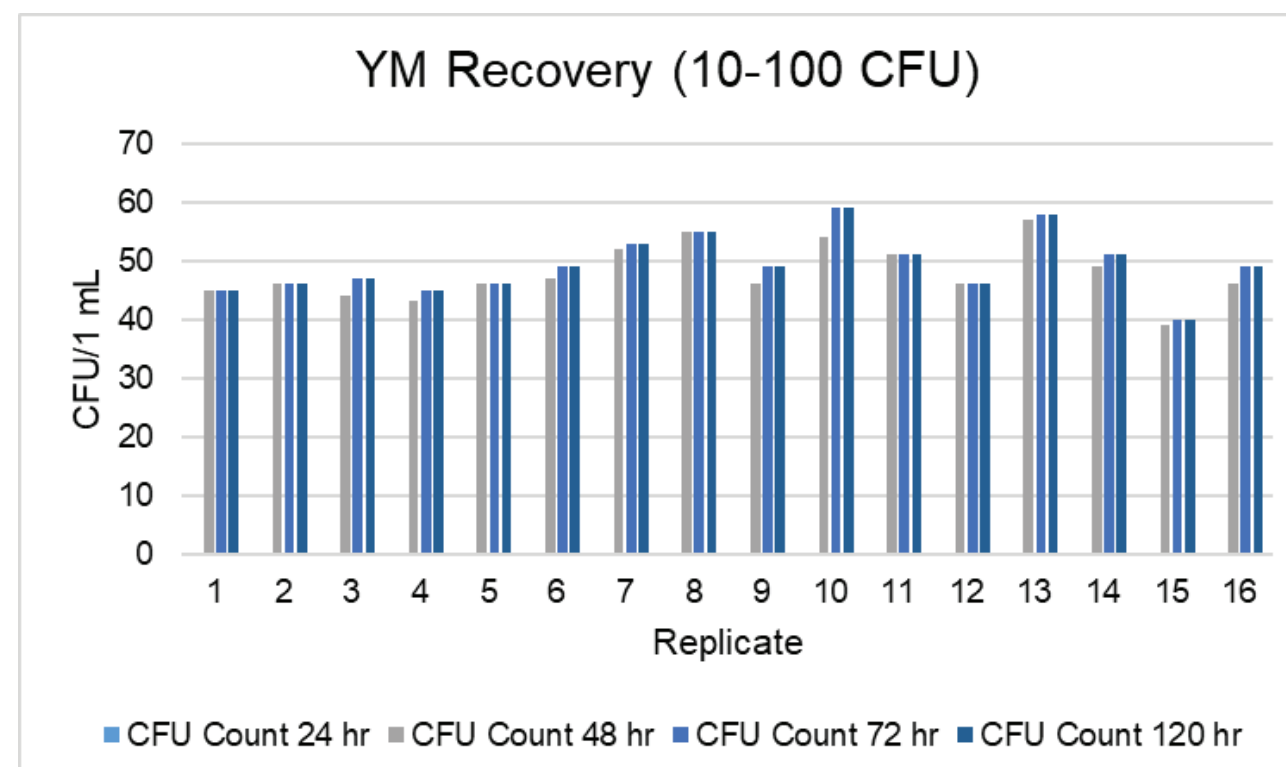


Figure 3. Recovery of *A. brasiliensis* derived from ATCC® 16404™\*, catalog number 0392E3, on CompactDry™ YM. The target CFU range was 10-100 CFU/1 mL. An inhibitory control of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, was also plated at a target CFU range of 10-100 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

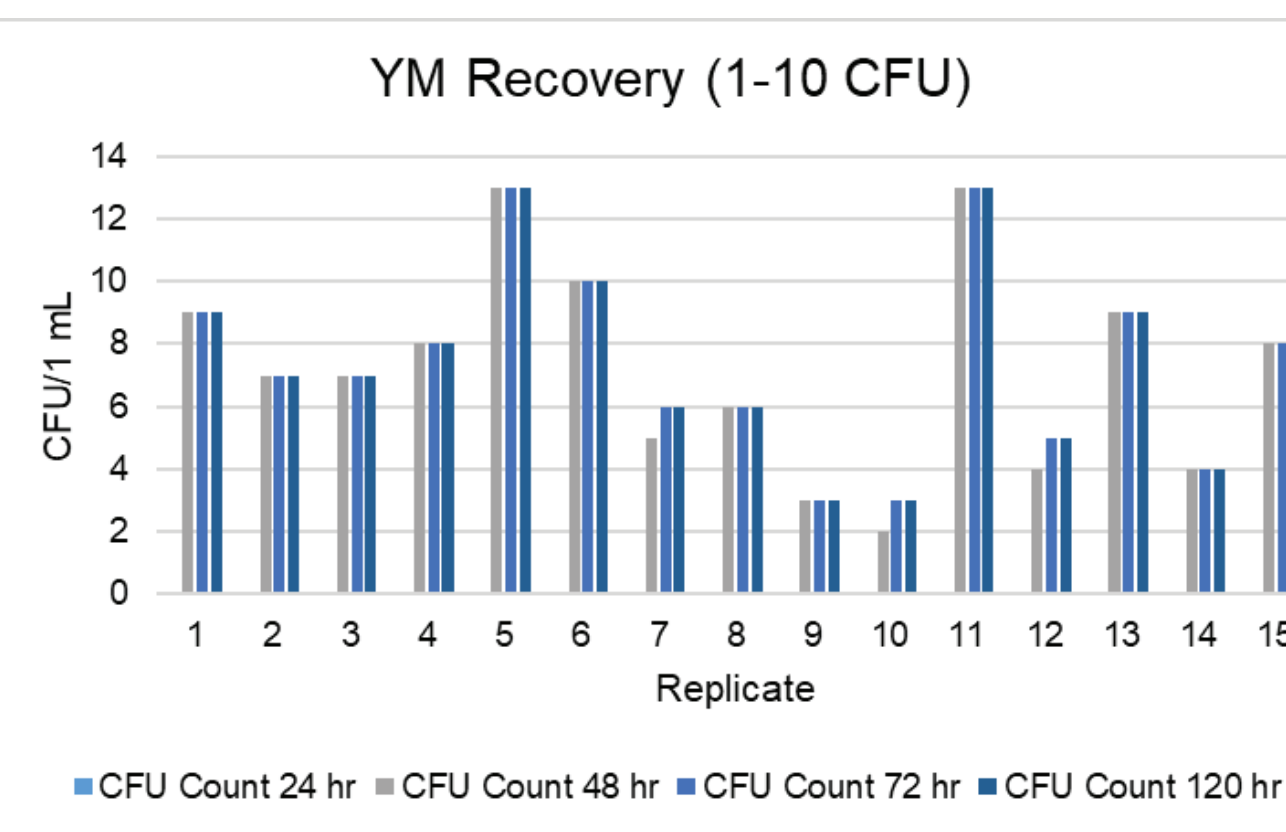


Figure 4. Recovery of *A. brasiliensis* derived from ATCC® 16404™\*, catalog number 0392E3, on CompactDry™ YM. The target CFU range was 1-10 CFU/1 mL. An inhibitory control of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, was also plated at a target CFU range of 1-10 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

## RESULTS

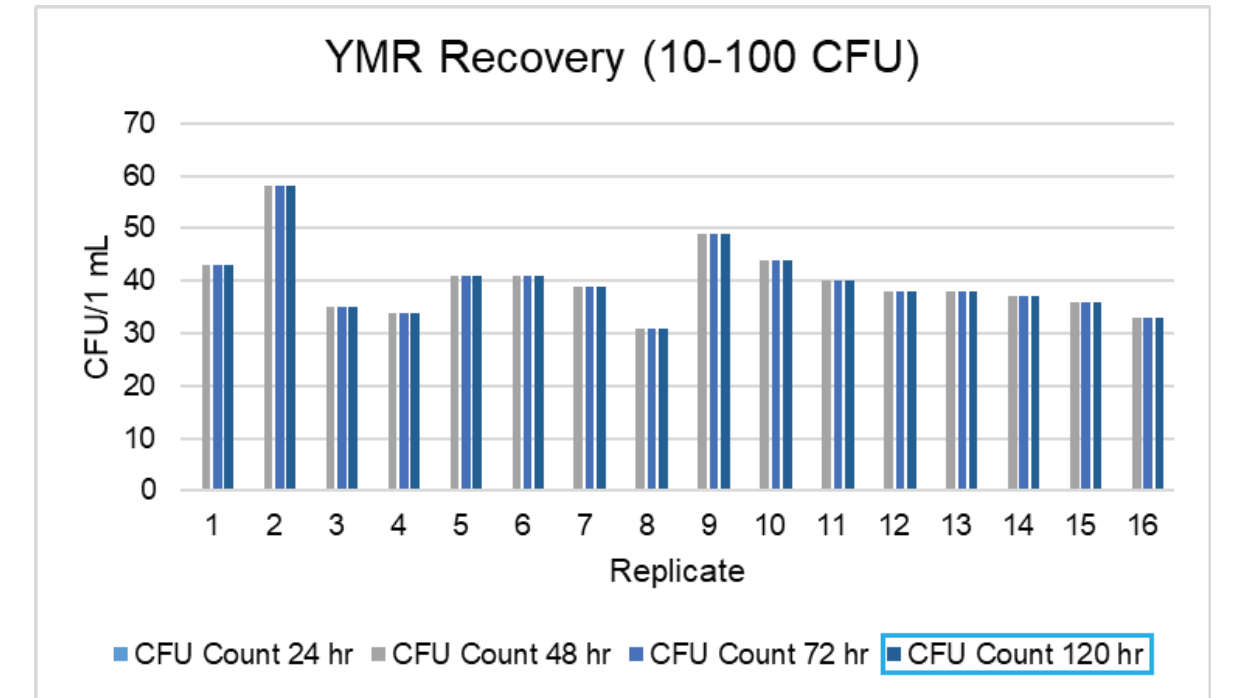


Figure 5. Recovery of *A. brasiliensis* derived from ATCC® 16404™\*, catalog number 0392E3, on CompactDry™ YMR. The target CFU range was 10-100 CFU/1 mL. An inhibitory control of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, was also plated at a target CFU range of 10-100 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

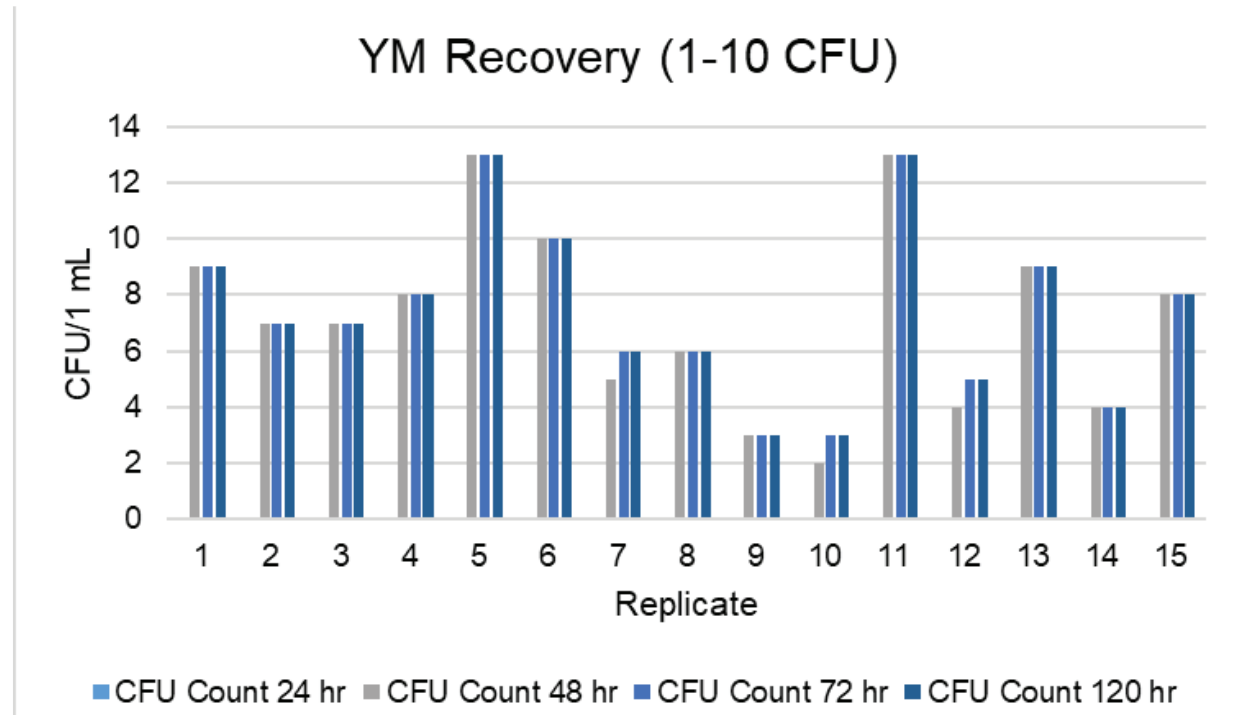
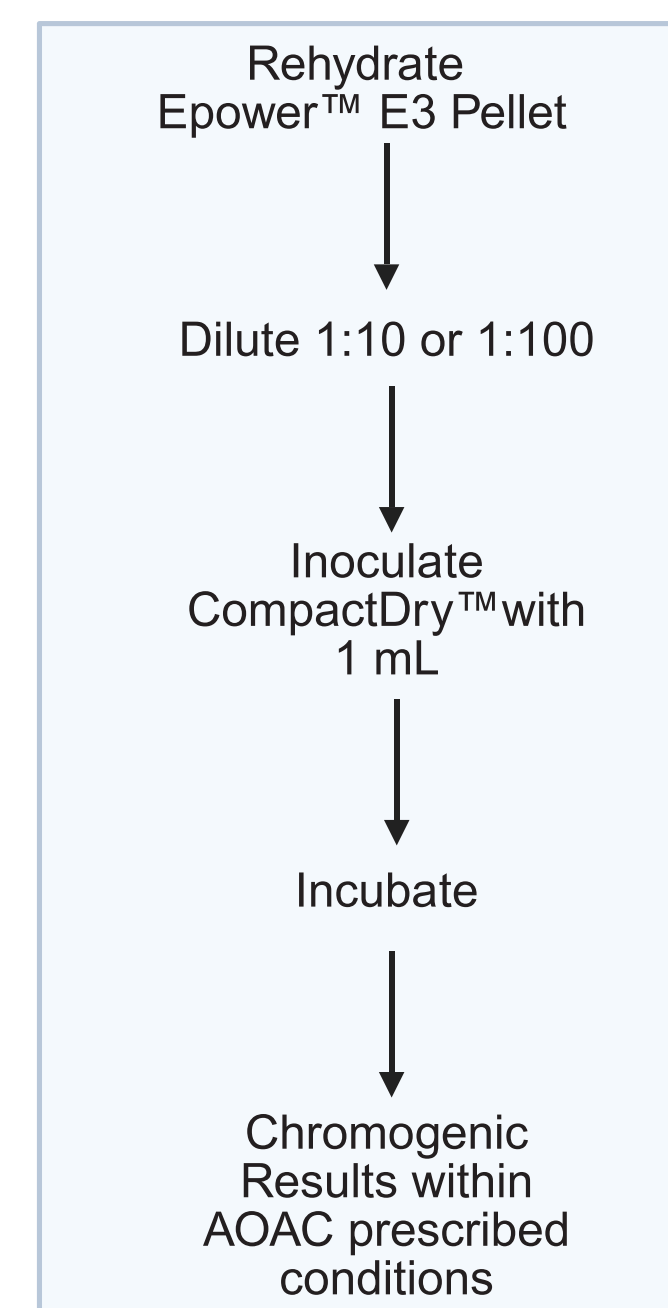


Figure 6. Recovery of *A. brasiliensis* derived from ATCC® 16404™\*, catalog number 0392E3, on CompactDry™ YM. The target CFU range was 1-10 CFU/1 mL. An inhibitory control of *E. coli* derived from ATCC® 8739™\*, catalog number 0483E3, was also plated at a target CFU range of 1-10 CFU/1 mL - no colonies were observed for all 16 replicates. The prescribed AOAC incubation time is indicated with the blue box.

## WORKFLOW

Streamlined QC With Epower™ E3 and CompactDry™



## CONCLUSION

The findings from this study highlight the effectiveness of integrating Epower™ reference strains with CompactDry™ media. The following key takeaways summarize the practical implications for laboratory quality control and routine microbiological testing.

- Epower™ E3 reference strains compatible as QC products for CompactDry™ EC and YM/YMR media.
- Reliable recovery and colony morphology were observed across all replicates.
- Standardized controls improved reproducibility and reduced variability.
- Integration of Epower™ into QC workflows supports regulatory compliance by detecting within prescribed AOAC timeframe
- CompactDry™ with Epower™ strengthens confidence in microbiological testing for food safety and environmental monitoring.

## ACKNOWLEDGEMENTS

The author gratefully acknowledges Hardy Diagnostics for providing third-party laboratory support and expertise in executing the experimental protocols. Their collaboration was essential to the successful completion of this study.

\*The ATCC Licensed Derivative Emblem, the ATCC Licensed Derivative word mark and the ATCC catalog marks are trademarks of ATCC Microbiologics, Inc. is licensed to use these trademarks and to sell products derived from ATCC® cultures. Look for the ATCC Licensed Derivative® Emblem for products derived from ATCC® cultures.