**ABSTRACT**

The objective was to determine the capacity of the Copan Venturi Transystem and Starplex Starwab system maintain the viability of organisms such as *Klebsiella pneumoniae* (GC), *Streptococcus pneumoniae* (S), *Haemophilus influenzae* (HI), vancomycin-resistant Enterococcus (VRE), *Group A Staphylococcus* (SAG), methicillin-resistant *Staphylococcus aureus* (MRSA), anaerobes and yeast species. Suspensions of 38 isolates were prepared to match a 0.5 McFarland standard then diluted to produce a 3.0 x 10^7 CFU/mL density. From this 0.3 mL aliquot, swab was pipetted onto the tip of each swab. Two lots of Copan and Starplex swabs were set up in duplicate. After returning all swabs to their corresponding tubes, all transport devices were incubated at room temperature for 0, 24 and 48 hours. After the appropriate holding times, duplicate plates were inoculated and streaked using an automated plate streaker. All plates were read after 48 hours incubation.

Seven out of ten GC isolates were not recovered in either lot of Starplex system. Eleven out of twelve GC isolates were isolated from both lots of the Copan system. The Copan system yielded approximately twice the amount of growth of each aerobic at 48 hours incubation as compared to the Starplex system. The recovery of SAG isolates was enhanced in the Starplex system versus the Copan system. All other non-fastidious organisms and *H. influenzae* were produced comparable results in both systems. In general, the yield of all organisms was similar between both lots in each product line. The Copan system appear to be superior to the Starplex system for the recovery of GC. The recovery of anaerobes and SAG was enhanced in the Copan and Starplex systems, respectively. There were no significant differences in the recovery of *H. influenzae* and the other organisms studied.

**METHOD**

The following organisms were evaluated: 1) six wild strains and one ATCC strain of GAS, 2) three wild strains and one ATCC strain of S, 3) one ATCC strain of MRSA, 4) three wild strains and two ATCC strains of Enterococcus, 5) one ATCC strain of *C. albicans*, 6) one wild strain of *Cryptococcus albidus*, 7) two wild strains and one ATCC strain of *H. influenzae*, 8) eleven wild strains and one ATCC strain of GC, 9) one ATCC strain of *Streptococcus pneumoniae*, 10) one ATCC strain of *Candida albicans*, 11) one ATCC strain of *Bacteroides fragilis*, 12) one ATCC strain of *Bacteroides thetaiotaomicron*.

- All organisms were harvested from frozen stock cultures and subcultured three times prior to testing.
- Working suspensions were made from growth of 1.24 x 10^8 CFU/mL in the case of *S. pneumoniae* and adjusted to match 0.5 McFarland turbidity standard (1.5 x 10^8 CFU/mL) in 2.5% saline.
- Commercial swabs were dialyzed in Tris-saline buffer both prior to saline.
- A further 1:10 dilution was made of the original working suspensions.
- Using an eppendorf pipette, each swab tip was inoculated with the 0.1 ml of the adjusted suspension.
- Plates were read at 48 hours (bacterial strains) and 72 hours (yeast strains).
- All transport devices were incubated at room temperature for 0, 24 and 48 hours to simulate transport times.
- Duplicate plates were inoculated and streaked using the inoculator 80 and inoculated under appropriate atmosphere conditions at 35°C.
- Plates were read at 48 hours (bacterial strains) and 72 hours (yeast strains).
- Final growth scores were calculated for each isolate by averaging the growth scores of duplicate plates.

**RESULTS**

The capacity of the Copan Venturi Transystem and Starplex Starwab system maintain the viability of organisms such as *Klebsiella pneumoniae* (GC), *Streptococcus pneumoniae* (S), *Haemophilus influenzae* (HI), vancomycin-resistant Enterococcus (VRE), *Group A Staphylococcus* (SAG), methicillin-resistant *Staphylococcus aureus* (MRSA), anaerobes and yeast species. Suspensions of 38 isolates were prepared to match a 0.5 McFarland standard then diluted to produce a 3.0 x 10^7 CFU/mL density. From this 0.3 mL aliquot, swab was pipetted onto the tip of each swab. Two lots of Copan and Starplex swabs were set up in duplicate. After returning all swabs to their corresponding tubes, all transport devices were incubated at room temperature for 0, 24 and 48 hours. After the appropriate holding times, duplicate plates were inoculated and streaked using an automated plate streaker. All plates were read after 48 hours incubation.

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**CHARTED RESULTS**

When many strains from a diverse group of organisms were used to test the ability of the two transport systems to maintain their viability, the following was found:

- With the same formulation of charcoal Amies medium, (with the exception of agar content), the two systems did not produce identical results.
- The yield of all organisms was similar between both lots in each product line.
- The recovery differences between the two transport devices assessed include increased recovery of GC and anaerobes for Copan swabs and increased recovery of SAG for Starplex swabs.
- Differences in recovery of GC and anaerobes may be due to oxygen retarding technology utilized in the Copan system.
- In a large community based laboratory, the recovery of GC as much as possible is crucial.
- It is interesting to note that for SAG, the recovery from 48 hr swabs was greater than 24 hr swabs.

Since this study was performed, Copan’s ability to maintain organism viability has been validated using clinical samples rather than artificially seed swabs (B).

**REFERENCES**

3. Perry, J.L., 1997. Assessment of swab transport systems for aerobic and anaerobic organism recovery. 98th General Meeting of the American Society for Microbiology, Atlanta, Georgia.
6. Semple and Anusha Gandhi for the artwork and word-processing respectively.

**ACKNOWLEDGMENT**

We wish to thank Mr. Norman Shapiro from Copan Diagnostic Inc. for financially supporting this poster and for providing the Copan Venturi Transystem. We also thank Dr. Fred Parks for providing the Starplex Starwab system, Starplex Scientific Inc. We are also grateful to Pati Sampson and Anusha Gandhi for the artwork and world processing respectively.

**DISCUSSION / CONCLUSIONS**

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