

Comparison of Two Transport Systems (Copan Liquid Stuart's and Starplex Transport Swab) for Maintenance of Fastidious Aerobic Organisms

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ABSTRACT

Proper specimen transport of infectious agents is critical. Because many samples are submitted to laboratories on swabs from distant sites, it is important that organism viability be maintained for 24 to 48 hrs. We compared two transport systems, the new Copan liquid Stuart's swab (Copan Diagnostics Inc., Corona, CA) and the Starplex liquid Stuart's swab (Starplex Scientific, Etobicoke, Ontario, Canada). The Copan swab incorporates a new applicator which is designed to significantly improve the release of bacteria onto culture plates. Duplicate swabs were seeded with 3 dilutions of 4 fastidious aerobic bacteria (*N. gonorrhoeae*, *N. meningitidis*, *H. influenzae* and *S. pneumoniae*). After being held at 4 or 23° C, the swabs were planted and incubated. The viability of each strain was calculated as a percentage of the bacterial counts at zero time and the value expressed as an average of the triplicate samples evaluated.

INTRODUCTION

The initial steps of selecting, collecting, and then transporting of clinical specimens are the most critical steps to providing useful information for diagnosis and successful treatment. Because many samples are submitted from distant sites, it is important to reliably maintain organism viability for 24 to 48 hours. In this study we compared two transport systems, a new Copan liquid Stuart swab and the Starplex liquid Stuart swab. The Copan system incorporates new Easy-Flow swab applicators, which are designed to significantly improve the release of bacteria onto culture plates.

METHODS AND MATERIALS

The reliability of the two transport swabs was analyzed at controlled room temperature and 4° C. Four fastidious ATCC strains of aerobic bacteria (*Neisseria gonorrhoeae* ATCC 43069, *Neisseria meningitidis* ATCC 13090, *Haemophilus influenzae* ATCC 10211, *Streptococcus pneumoniae* ATCC 6305) were tested using a direct swab/roll plate method. Duplicate swabs were seeded with three dilutions (1:100, 1:1000, and 1:10,000) of the four organisms. After being held at 4 or 23° C, the swabs were plated to chocolate agar and incubated 18-24 hours. The viability of each strain was calculated as a percentage of the bacterial counts at time zero and expressed as an average of the triplicate samples evaluated.

RESULTS

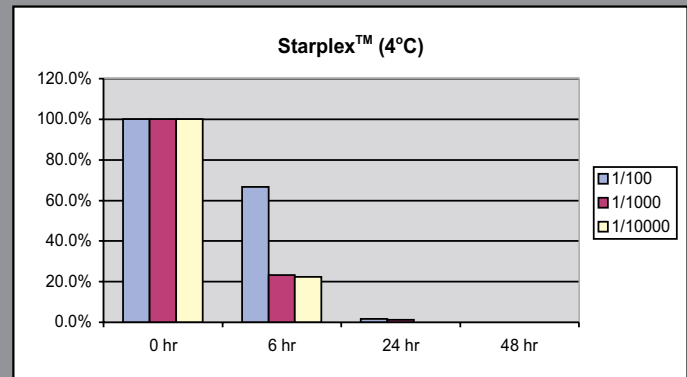
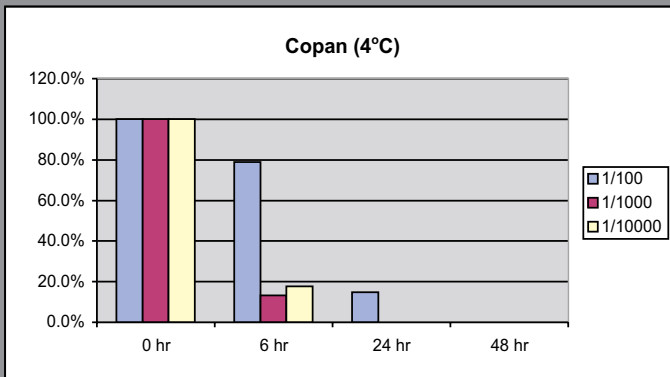
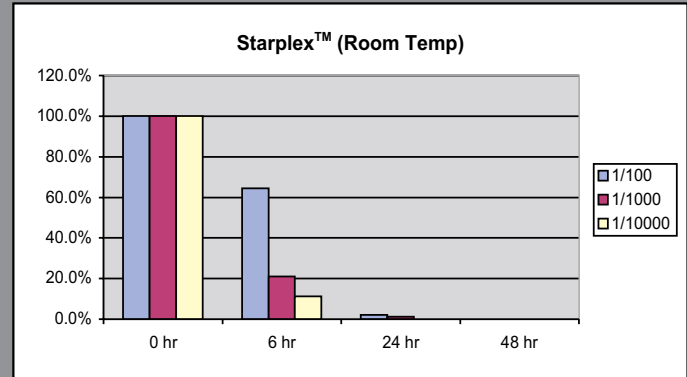
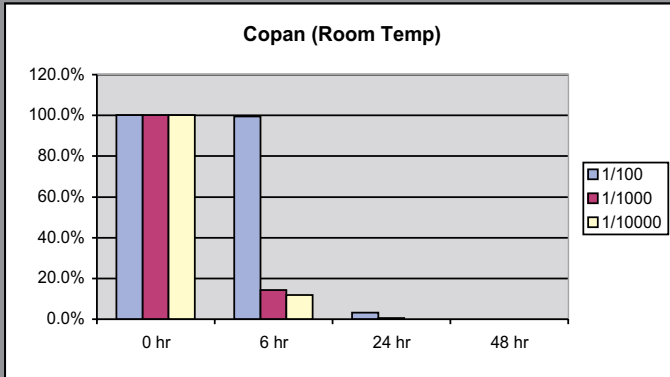
At 4° C: In general, the recovery of the test organisms was better with swabs held at 4° C. The recovery of *N. gonorrhoeae* was poor at 24 hours for both swabs evaluated; however, the Copan swab recovery was better with 15% recovered at 24 hours and <1% at 48 hours. At 48 hours, the recovery of *H. influenzae* was 21% in the Copan system and 4% in the Starplex. The two systems performed similarly when testing the *S. pneumoniae*, with Copan recovering 37% and Starplex 31% after 48 hours.

At 23° C: Better recovery of *N. meningitidis* was exhibited at 23° C; the Copan swab maintained 26% viability, the Starplex <1%. Although very few organisms were recovered at 48 hours when *N. gonorrhoeae* was tested with Copan, none were recovered in the Starplex system. See graphs.

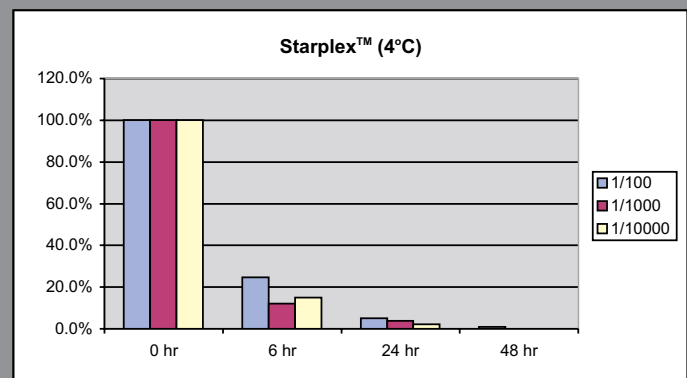
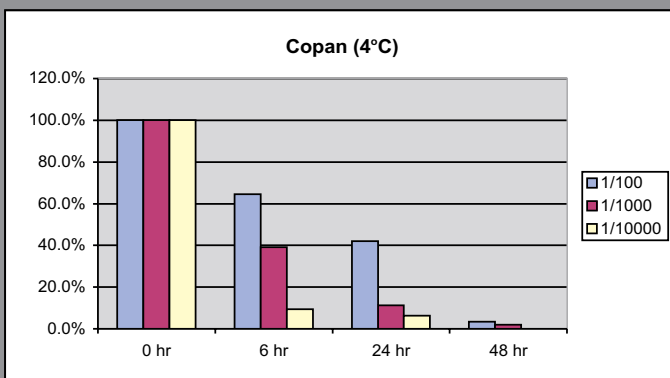
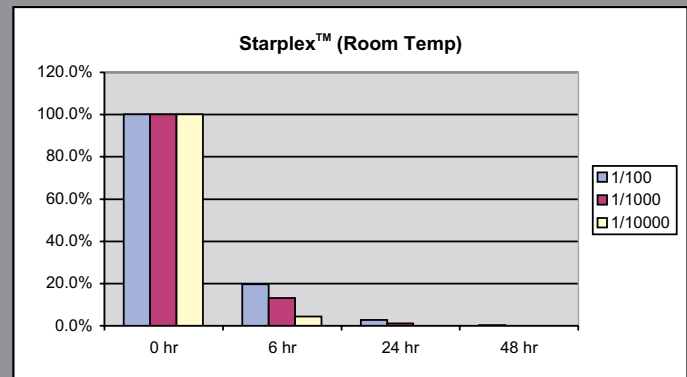
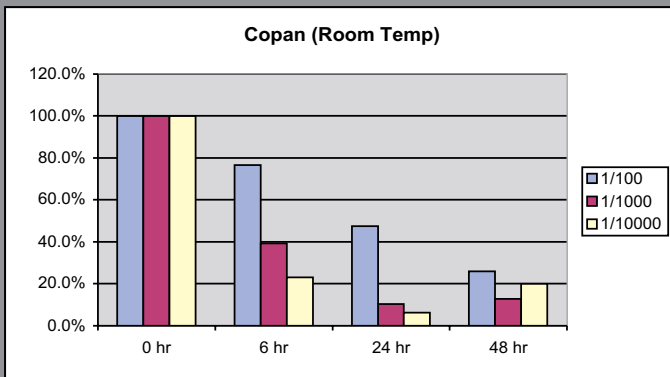
CONCLUSION

In conclusion, the new Copan transport system outperformed the Starplex swab. Clearly greater viability of all strains tested (with the exception of *S. pneumoniae* which was comparable) was observed with the New Copan Liquid Stuart Transport Swab as compared to the Starplex Liquid Stuart Swab.

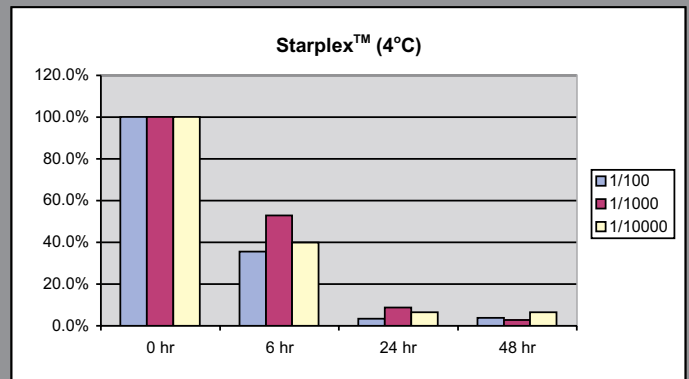
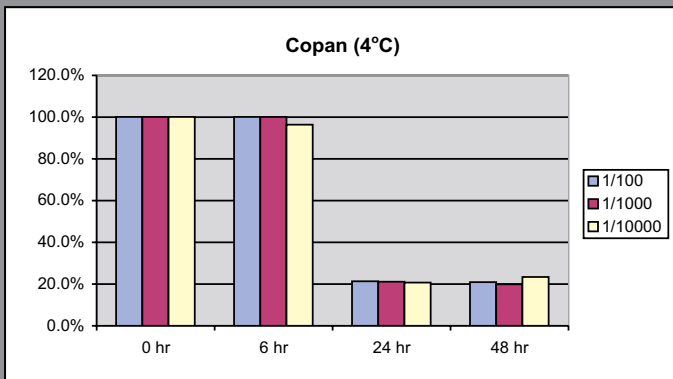
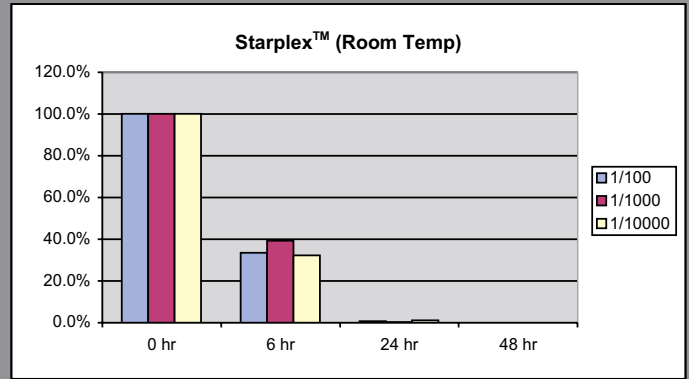
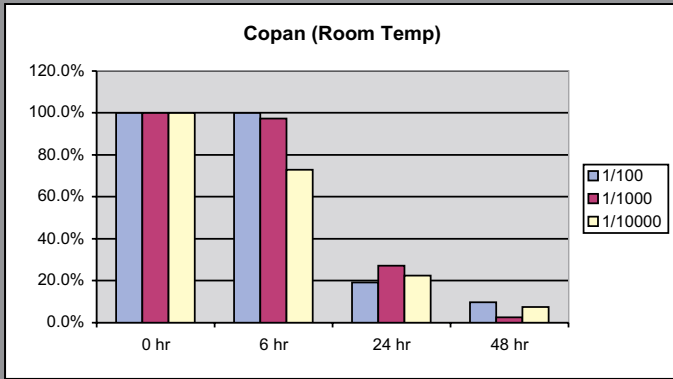
Neisseria gonorrhoeae



Neisseria meningitidis



Haemophilus influenzae



Streptococcus pneumoniae

