

Comparative Evaluation of Capture and Release of Pathogenic Bacteria by Flocked Swabs

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The ability of clinical swabs to collect and release pathogenic bacteria efficiently is necessary to obtain diagnostic sensitivity for the benefit of patient care. To improve the survival of fastidious bacteria, swabs are often coated with proteinaceous material. In a comparative study, the water absorption and capture and release characteristics of coated and uncoated flocked swabs have been determined with suspensions of *Streptococcus pneumoniae*, *Hemophilus influenzae*, *Neisseria gonorrhoeae*, and *Peptostreptococcus anaerobius*. HydraFlock® and PurFlock® Ultra swabs of Puritan Medical Products (PMP) and uncoated nylon and coated Nylon (ESwab) swabs of Copan Diagnostics (CD) were compared.

Whole swabs or swab tip fibers were placed in water and their weight gain was determined to compute water absorption. Collection and release of pathogenic bacteria were studied by immersing swabs in bacterial suspensions and enumeration of bacteria released from swabs.

Water absorption of coated and uncoated swabs ranged from 13.2% to 21.6%, the highest and lowest being uncoated PurFlock® Ultra and ESwab, respectively. Swab tip material of uncoated PurFlock® Ultra swabs absorbed significantly less water than uncoated HydraFlock® and Nylon swabs. Compared to uncoated swabs of the same type, coated PurFlock® Ultra swab exhibited significantly higher recovery of *S. pneumoniae*, *N. gonorrhoeae*, and *P. anaerobius*. On the other hand, uncoated HydraFlock® swab gave higher recovery of *H. influenzae*, *N. gonorrhoeae*, and *S. pneumoniae* than coated swabs of the same type. No significant difference in recovery of test bacteria was evidenced between ESwab and Nylon swab.

Recovery of all bacteria by swab type revealed the lowest and the highest recovery by uncoated PurFlock® Ultra (54%) and uncoated HydraFlock® (93%) swabs, respectively. No significant difference in the recovery of bacteria was observed between Nylon (coated & uncoated), HydraFlock® (coated & uncoated), and coated PurFlock® Ultra swabs.

These results point to the fact that protein coating of swabs may not be beneficial for the recovery of all organisms and its utility depends on physicochemical properties of swab tip material.