

OPTIMIZING 4N6FLOQSWABS® GENETICS COLLECTION DEVICES WITH ACTIVE DRYING SYSTEM FOR THE FORENSIC INVESTIGATION TEAM

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Since 2011 Copan introduced two human DNA free swab lines for forensic investigation: The Genetics 4N6FLOQSwabs® line for buccal collection, available in short tube with Active Drying System (ADS), and the Crime Scene 4N6FLOQSwabs® line, for crime trace collection, treated with an antimicrobial agent to eliminate drying the swabs prior to storage. This latter swab cannot be used for sample collection from a living person. The availability of two 4N6FLOQSwabs® lines provides versatility to crime scene investigation teams, but two swab lines can create confusion on which to choose and often the end users prefer to use a unique code for all the applications. So, we performed studies to validate the performance of the 4N6FLOQSwabs® Genetic line for both genetic and crime scene applications.

The objective of this study was to validate the stability of human DNA from saliva and blood traces collected with Genetics 4N6FLOQSwabs® with ADS, by assessing the amount of human DNA and the degradation index up to one-year storage at room temperature (RT).

Dry traces were prepared on surfaces using aliquots of diluted buccal swab suspension and blood. Traces were collected using the Copan collection procedure for dry traces using a single swab. One side of the swab was moistened with molecular grade water (30 ul), the wet side of the swab was first rubbed on the trace, then the dry side of the swab was used to collect the entire surface of the trace, rotating the swab from wet to dry. The swab was then placed in its container, stored at RT and tested a time zero and after 4, 6, and 12 months. Swabs were processed for nucleic acid extraction using NAO baskets (Copan) to optimize DNA recovery, with PrepFiler Express kit on AutoMate Express, quantified with Quantifiler® Trio on 7500 Real Time PCR and profiled with the Identifiler Plus kit on the 3500 Genetic Analyzer (Thermo Fisher).

No DNA degradation was detected for blood and saliva traces at all testing times, based on the amplification data with Quantifiler Trio (in terms of quantification and Trio degradation index). Complete STR profiles were obtained from all swabs at each time point tested, with no signal of degradation, considering the peak height of the longer and the shorter loci.

Copan Genetics 4N6FLOQSwabs®, with Active Drying System (ADS) are suitable for long term storage of human DNA and can be used for both reference buccal and crime scene traces collection, eliminating confusion and the need for different collection devices for the forensic investigation team.