

COPAN NUCLEIC-CARD™ FOR STORAGE AND PRESERVATION OF BIOLOGICAL SAMPLES FOR DNA DATA BASE FOR FORENSIC HUMAN IDENTIFICATION.

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Background: Copan is producing the NUCLEIC-CARD™ (Copan Italia Spa) for long term storage of DNA from buccal swabs or blood samples for DNA data base for forensic human identification. Copan offers 2 different types of NUCLEIC-CARD™; the NUCLEIC-CARD™ WHITE, with 1, 2, 3, 4 circles or customized shapes and the NUCLEIC-CARD™ COLOR that can be placed in a plastic holder for better sample deposition, storage and transport and can contain cleaning zone, separated by cutting barriers, to prevent sample diffusion and to facilitate the use of the Copan automated card punchers.

Objectives: The objective of this study was to evaluate the ability of both the NUCLEIC-CARD™ COLOR and WHITE to preserve DNA stability and integrity after long term storages in different conditions.

Methods: In this study both Copan NUCLEIC-CARD™ types were validated with buccal and capillary blood samples from different donors. Blood samples were deposited on 2 lots of NUCLEIC-CARD™ WHITE, while buccal samples, collected with a LOLLIPOP 4N6FLOQSwabs™ device, were deposited on 2 lots of NUCLEIC-CARD™ COLOR stored in plastic holder. All card types were stored up to 30 months at three temperatures ($4\pm 2^{\circ}\text{C}$, $22\pm 2^{\circ}\text{C}$, $30\pm 2^{\circ}\text{C}$) with registered relative humidity, and for 803 days at $55\pm 2^{\circ}\text{C}$, for accelerated ageing tests. At zero-time and up to 30 months, at all storage conditions, two 1.2 mm *punches* were collected from each card and amplified with AmpF!STR® Identifiler® Direct PCR Amplification Kit.

Results: The analysis of the genetic profiles shows that all blood and buccal cell samples deposited on NUCLEIC-CARD™ WHITE and COLOR produced a full profile. At all storage times and conditions, the peak heights of the profiles were comparable to time 0, for both samples types. Differences in profile peak heights from buccal samples were due to donors' variability. In the accelerated stability data, the peak heights were slightly decreased after 803 days. The intralocus and intracolor mean value balances were above 60%.

Conclusions: The data obtained demonstrated good DNA stability up to 30 months, at all storage conditions, for both sample types spotted onto different lots of COPAN NUCLEIC-CARD™ WHITE and COLOR. The 4N6FLOQSwabs™ buccal collection device allows efficient sample transfer to the NUCLEIC-CARD™ COLOR. Full and high-quality profiles were obtained with both COPAN NUCLEIC-CARD™ COLOR for buccal samples and WHITE for blood samples.