TOUCH DNA - THE FORENSIC USE OF SOLID AND POROUS MATRICES COATED WITH POLYANILINES IN THE SELECTIVE SEPARATION OF BIOPOLYMERS FROM NUCLEIC ACIDS.

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Selecting appropriate methods of collection and extraction of trace DNA samples from a crime scene could be relevant during the investigative process.

Actual extraction methods are based on DNA binding using different sorbents, which could cause significant loss of the starting material.

In the present work we performed comparative studies of a new non-binding separation method (Fingerprint DNA Finder Kit – FDF® Kit) that uses porous matrices associated with polyanilines nano-layers, which are able to retain selectively biopolymers and potential PCR inhibiting substances, while nucleic acids are never bound and remain in solution, collecting all DNA from nucleated cells, keratinocytes and even cell-free nucleic acids (basically free-floating DNA fragments not encapsulated in the cell nucleus).

Dealing with comparative studies of trace lift protocols implies the use of controlled samples. The preparation of control samples using dilutions of blood or saliva, and applied in liquid drops over different surfaces, does not reproduce exactly the conditions of epithelial cells or free DNA contained in the sweat. We use here real touched or manipulated objects as the only DNA source (touch DNA).

The FDF® Kit demonstrated being more effective, not only in DNA yield, but also in the quality of the profiles, which were always clear and devoid of artifacts. The use of this new kit associated with adhesive trace lifters was sensitive enough to be applied in real casework. ⌘