HOW TO EVALUATE DIFFERENT COMMERCIAL COLLECTION KITS FOR BIOLOGICAL TRACES ?
PROCEDURE USED BY THE FRENCH GENDARMERIE.

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Every 4 years, the French administration (*National Police/National Gendarmerie*) launches a call for a public tenders with the objective of acquiring human biological traces collection kit for DNA analysis.

Companies must provide the simplest and most efficient device in terms of biological trace collection, storage, DNA preservation and traceability of the sample. These requirements are controlled and evaluated in the laboratory and by the field specialists on a batch of 100 kits for each company.

Each commercial offer is supported by administrative documents (*technical report, certificate of conformity*) which are verified and taken into account for the award of the contract.

Below, there is the five-point evaluation method used to retain the best technical solution.

Manufacturing quality control process: The manufacturing and production of human biological traces collection kit must following ISO 18385 international recommendations (*DNAse/RNAse-free, guaranteed sterile)*.

Traceability: The device must meet the technical requirements of traceability by barcode to ensure its monitoring from collection until the result. Barcode must be present on the sampling device and on the transport envelope.

Handling facility for end users: Swabs must meet specific physical characteristics that allow facility in analytical processing (*laboratory controls*) and be compatible with swab handling by the field specialist (*adequacy with methods of biological trace collection on various supports*, contamination factors).

Capacity to collect and release biological materials: Swabs must have hydrophilic characteristics (*absorption of a drop of buffer solution*). The swab must guarantee the best yield in number of cells collected (*capacity to collect a trace of dried blood by visual control*) and released of DNA (*quantity measured by qPCR*). The quality of biological materials is also taken into account in the evaluation (*degradation index and genetic profiles quality*).

Capacity to preserve DNA over time: Devices must have an effective drying system (d*rying times measured*) and allow the determination of an exploitable DNA profile from human cells deposited directly on the swab. The DNA stability, stored at room temperature, is evaluated over a period of 90 days (*0, 45 and 90 days*) by evaluating the DNA quantity (*qPCR*), degradation index and genetic profile quality (*evaluation of the number of genetic markers for which a result is exploitable*).