TOUCH DNA OBTAINED IN A SAFETY LEVER OF HAND GRENADE WITH A WATER RECONSTITUTION METHOD

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The technique to obtain of DNA touch from different objects is widely useful from many investigators around the world. Recently in our country, the utilization of hand grenade by criminal organizations, to commit attacks versus the police or other criminal organizations has been very common, in last year's.

To the necessity to link at the perpetrator with the evidence, we focus in the safety lever, which is the unique part of the hand grenade that is in contact with the perpetrator and is not destroyed by the blast.

Different DNA collection techniques have been proposed, to many crime scene investigators and crime labs. wet/dry swabbing method, tape lift method, this methods have limitations like loss of biological material, or very complex.

The aim of this study is introduce a very simple collection method, to obtain the enough DNA material to generate a complete profile, from a safety lever of a hand grenade.

Material and method

We use a hand grenade disable (without detonation mechanism). First, we clean the safety lever with DNA off (Promega) and methanol molecular grade. After that, we simulated wet conditions of the hand, and grab the item to different time lapses. 30 seconds, 1-2 minutes and we proceed with the water reconstitution method at three different recollection times; immediately, after 30 minutes, and 2 hours. The extraction of DNA we use DNA IQ™ Casework Pro Kit and Maxwell® Forensic 16.

Quantification method we use qPCR, Agilent Technologies Stratagene Mx3005P, with Plexor® HY System. PCR was made with kit PowerPlex® 16 HS (Promega DC2101).
Results.

The amount of DNA that is obtained in the three different grab times was 211ng/µl for 30 seconds and 528 ng/µl for 1- 2 minutes. For collection time (immediately, 30 minutes a 2 hours) do not show significantly changes.

The electropherogram for 30 seconds grab time, show that, for the marker D8S1179 it's between detection threshold and stochastic threshold, but the other markers are under detection threshold, even markers D16S539, FGA it’s under 40 RFUs. For the 1- 2 minutes grab time, the RFUs of all de markers are above of the stochastic threshold.

Discussion

This data show that is possible obtains enough quantity of DNA from a safety lever. therefore, to obtain a full genetic profile. Many factors should be considered, although, reconstitution method is simple, but could be easily contaminated with foreign DNA,

caution must be taken, by crime scene investigators and in the laboratory. A potential drawback it's an increase of the collection time versus other methodologies.

The grab time is important, as Williamson A. report in 2012 [ ], the amount of DNA increases accordingly if time grab also increases. Although, the grab time 30 seconds, is very short, a full profile is observed, like in LCN the potential stochastic effects, could be misinterpreted, how we observe in FGA and D16S539 to tried minimize this effect, some PCR repetitions should be made.

For the collection time, we don't observe any differences between the times, should consider, that was under laboratory conditions, in a real case, environmental conditions could affect, such as dust, humus, rain.

Conclusion

We describe a technique to obtain touch DNA from a safety lever with a water reconstitution method, This technique it’s a power full tool that could be use in different kind of objects, but must have flat surface, to not loss de water and the sample, We have implemented this method for a different objects like, knifes, fire arms, pull slider, successfully in our laboratory.