D42 Recovery Of Human DNA Profiles From Poached Deer Remains

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After attending this presentation, attendees will have a new understanding of how wildlife crime can be investigated more efficiently with improved conviction results. The described method will also be applicable to other types of wildlife crime.

This presentation will impact the forensic science community by allowing wildlife crimes to be investigated and prosecuted, with the use of human DNA giving the described test wider usage and acceptance in court.

The role of forensic science in non-human crime, mainly wildlife crime, is underused. Crimes against animals have been demonstrated to be linked with other organized crime due to the high value of the crime combined with the low levels of prosecution. It is therefore important that new methods be developed that will maximize the recovery of evidence from wildlife crime as well as the probative value of that evidence for criminal investigations.

Poaching is a worldwide crime that can be difficult to investigate due to the nature of the evidence. Previous studies have focused on the identification of endangered species in cases of poaching. Difficulties arise if the poached animal is not endangered. In the United Kingdom (UK), deer have hunting seasons whereby they can legally be hunted. Therefore, identification of deer alone has little probative value as samples could have originated from legal hunting activities in season. After a deer is hunted, it is common practice to remove the innards, head, and lower limbs. The limbs are removed through manual force and represent a potential source of human "touch DNA."

The potential to recover and profile human autosomal DNA from poached deer remains was investigated. Samples from the legs of 20 culled deer were obtained using DNA minitapes. DNA from samples was extracted, quantified, and amplified to determine if it would be possible to recover human STR profiles.

Initial profiling required the use of Low Template (LT) analysis. This method is not accepted worldwide and a revised protocol was developed that did not require the use of LT analysis. The revised protocol involves combining the DNA extracts from all legs (or samples) relating to the same simulated poaching incident followed by concentration of the DNA sample. This allows the maximum amount of recovered DNA to be added to the human STR multiplex.

Near complete profiles that provided a high level of discrimination were obtained. The majority of the samples provided at least a partial profile. Incidents of drop-in were minimal considering the isolated location of the sample recovery.

This project demonstrates the recovery of human touch DNA from poached animal remains in a simulated study. This test is far superior to those targeting animal DNA due to the recognized validation of human STR testing as well as the potential for the results to be uploaded and searched against a human DNA database, for example, the UK National DNA Database. There is the potential for this test to be used in relation to other species of poached remains or other types of wildlife crimes. This is the first time that human STR profiling has been successfully applied to touch DNA in regard to wildlife crime.

Poaching, Wildlife Crime, Human STRs

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