RECOVERY OF DNA FROM INSUFFICIENT SAMPLES IN BLOOD SPOTS AND HAIR

ANDRADE L., D.R.
Laboratorio de ADN. Instituto Nacional de Medicina Legal y Ciencias Forenses, Bogotá D.C. Colombia

In this work are presented two sexual assault cases with very little evidence in which it was possible to achieve results thanks to an unusual treatment given at the moment of DNA extraction. The results obtained allowed us to prosecute the suspects.

In the first rape case the victim was a minor. The evidence analyzed by the Biology laboratory were clothes and vaginal swabs taken from the victim. This evidence was negative for spermatozoa. We therefore, analyzed a blood spot found in the suspect's underwear to determine if it came from the victim. The blood spot was processed using Chelex 100 as a chelating resin. The usual extraction procedure is that the blood spots be left in sterile water for half an hour so that the present cells are freed in the water, centrifuged and the pellet is taken to cellular lisis at 56^{o}C. The result obtained with this procedure was the suspect's profile.

Nevertheless, during the extraction procedure the initial supernatant was not discard and was kept at 4^{o}C after the centrifugation of the sample. This sample was concentrated and processed in an attempt to recover cells from the victim. In this fraction a mixture between the suspect and the victim was found. The Likelihood ratio was 5 billion times more probable that the cells found in the suspect's underwear came from the victim and the suspect.

In the second rape and homicide case, the victim was an adult woman, the evidence processed initially were the nails from the victim. The result obtained was the victim's profile only. Later we found a pubic hair with small adhesions in the right hand of the victim. This evidence was processed in order to find cells of the suspect. the initial washing with ethanol and water was very gently to avoid losing the adhesions. In this evidence a mixture between the suspect and the victim was found The Likelihood ratio was 13 billion times more probable that the cells found in this evidence came from the victim and the suspect.

According to the results obtained using this alternative procedure it is important to apply a method that permits recovery of cells in smaller proportion from insufficient samples.