IDENTIFICATION OF BODIES THAT WERE SUBMERSED IN SULFURIC ACID USING THE STRs

Karla Nava[1], Claudio Lemus[2], Manuel Anaya[1], Daniel Domínguez[1]
[1]Forensic Genetic Laboratory of the Forensic Science Institute of Jalisco, Batalla Zacatecas 2395, Tlaquepaque, Jalisco, México
[2]Director General of the Forensic Science Institute of Jalisco

Introduction. One of the methods used by criminal organizations to disappear the bodies of their victims consists in diluting the bodies completely in sulfuric acid. They are trying to avoid the anthropometric identification of the victim as well as making the identification through the STRs analysis difficult because, many of the times all we are able to find at the crime scene are very few parts of tissue and bone still in the acid.

Case History. The investigating police searched a warehouse and found two containers in which small pieces of bones were found submerse in sulfuric acid. Also at the warehouse the clothes and identifications of two members of the armed forces were found. The investigation to identify the cadavers was directed towards the two soldiers that were disappeared. Samples of DNA from the family members' of the two disappeared men were taken.

Objective. To obtain enough genetic material from the bone fragments found submersed in sulfuric acid.

Methods and Materials. Because the containers had sulfuric acid, we added sodium hydroxide to inactivate the acid in the fragments of the bones. Then the bones were washed with a solution of 1:3 of detergent with sterile water, until we obtained a neutral pH. The excess water was vaporized with alcohol. The bones were cut in small pieces and pulverized until we obtained 50mg of fine bone dust. It was analyzed in the bone incubation buffer (Promega X176X), proteinase K (1.8mg/ml) and DTT (1M). For the purification of the DNA we used the DNA IQ System (cat: DC6700). For the PCR amplification we used the PowerPlex16HS Kit (Promega DC2101), a 9700 thermocycler (Applied Biosystems), and analysis of the STRs through a Hitachi 3130 analyzer.

Conclusion. The genetic profiles were obtained from the bone fragments of two males using the RFUs between 1200 - 1500. The genetic profiles obtained matched with the genetic profiles of people that identified the disappeared militaries.

Argument. The sulfuric acid causes necrosis to the tissues. When this acid is combined with heat the tissues, including osseous tissue, are dissolved and the extraction of biological material is more difficult. In the extraction of DNA, both the K proteinase with a range of activity of 7.5-12 as well as the DTT are inhibit to a pH lower than 4. Because of this, before doing any process of DNA extraction, the acid pH should be neutralized so that the enzymes are able to have an optimal activity and there is no inhibition in the process. Tools as PowerPlex16HS (cat DC2102) have allowed us to obtain great results in the analysis of DNA that is highly degraded because of its exposure to sulfuric acid. ⌘