SOME DEEP STUDY OF BONE DNA ANALYSIS

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We have established and modified the method of bone DNA analysis for badly decomposed samples. DNA was extracted by the silica/guanidine thiocyanate method. The condition of the 96 bone samples that were successfully analyzed in our lab included cases of water decomposition, burying in the soil for more than 1 year, and varying stages of putrefication. Our practice verified the validity of this extraction method for forensic use.

The selection of bones, which were easy to extract DNA, was very important in bone DNA analysis. In our study, we found that gristle was the easiest to deal with. Nearly every gristle could get a STR result. If the time of death exceeded half or one year there was no gristle that could be found, femur became the first choice, and then rib. The yellow-white part of the bone was better than the brown-black part in DNA analysis because the latter was decomposed more seriously.

Ninety-six bones were successfully analyzed, however, there were 6 samples that couldn't obtain data. In bone analysis the exclusion conclusion must be made with great caution because most of the extracted bone DNA were LCN (low copy number) DNA. Among the 96 cases there were at least 4 samples where the STR results suggested an exclusion result (peak high: 100-900rfu; imbalance existed) but Mt-DNA sequencing gave the opposite conclusion.