

Can fingerprint be used as a reliable DNA source?

M. Viaznikova, T. Mussivand

A wide range of biological materials, including blood, soft tissues, saliva, etc. can be used as a DNA sources. It has been proven that DNA can be obtained even from a single fingerprint. However, there are several problems linked to a fingerprint sample as DNA source. One of the main problems associated with fingerprints is that only 30-35 % of fingerprints have been successfully amplified and typed.

To evaluate fingerprint as reliable DNA source. Materials and Methods: Four different DNA extraction methods have been compared at Cardiovascular Devices Division laboratory of Ottawa Heart Institute: 1. Phenol/Chloroform; 2. Magnetic beads; 3. Ballistic Motion technique; and 4. A new DNA extraction technique. All methods have been applied for fingerprint, saliva and blood samples. All samples have been collected from the same donors. 12 fingerprint samples and 12 saliva samples have been collected from 3 donors. Blood have been collected from 2 donors. Blood and saliva samples have been used as control samples. PCR amplification has been conducted and STR fragments have been detected using polyacrylamide gel.

1. DNA can be extracted from a single fingerprint. 2. DNA extracted from a fingerprint is a subject for a high level of contamination. 3. DNA profiling is highly dependent on the methods utilized for fingerprint collection and extraction (Ballistic motion technique have not shown any results with fingerprint samples). 4. A new DNA extraction technique has been developed, and 70 % of fingerprint samples have been successfully amplified by this technique. Conclusions: Fingerprints can be used as a source of DNA.