

SENSITIVITY OF FORENSIC DNA MICROSATELLITE PROFILING

Rainer Schubert, Agnes Ertl, Wolfgang Hell, Nicole Kolper, Lina Paulenz
Eurofins Medigenomix GmbH, Martinsried, Germany

In our routine DNA analysis of scene of crime samples up to now we have performed two independent pretests in parallel:

PCR for microsatellite analysis with three markers (D3S1358, D21S11 and vWA), followed by capillary electrophoresis on ABI 3100 / 3130 Genetic analyser.

Quantification of human DNA with ABI Quantifiler[®] Kit on ABI 7900 SDS

In comparison to data from microsatellite analysis we found several cases where quantification lead to underestimated DNA concentrations. In single cases where quantification results suggested that less than one genome copy were present we were still able to generate complete high quality DNA profiles with multiplex microsatellite PCR using Promega PowerPlex[®] ES or ABI SeFiler+[®] Kits.

We then systematically compared sensitivity of Promega Plexor[®] HY, ABI Quantifiler[®] and ABI Quantifiler[®] Duo kits on a Roche 480 Lightcycler. In our study we used commercially available DNA, DNA from buccal swabs from voluntary donors as well as DNA from self assembled trace material (e.g. blood on leather, blood on denim, cigarette butts). Data from these analyses were finally compared with success rates of multiplex microsatellite PCR with respect to completeness and quality of generated profiles.