Abstract:

Short tandem repeats (STRs) are traditionally analyzed on large polyacrylamide electrophoresis gels, having a common problem in the fragility of the gel due to low-level cross-linking of acrylamide polymers and low concentrations of acrylamide used for STR analysis. This makes it extremely difficult to handle the gel during staining. Although polyacrylamide gel provides the best resolution attainable in electrophoresis, preparing it is cumbersome, the gels are unstable and often variable, so that standardization of data within or between laboratories may be difficult. We demonstrate in this study that a polyacrylamide agarose composite gel that can increase the mechanical strength of polyacrylamide caused by addition of agarose to the gel has also been found to give a better resolution than gels prepared from acrylamide alone for DNA fingerprinting analysis. Using PCR conditions similar to those routinely used with sensitive detection systems, we found that direct staining of gels with silver staining, gave comparable results to methods using autoradiography or fluorescently tagged primers and was considerably easier. This procedure significantly simplifies STR analysis and is much faster than many standard protocols.

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