

## APPLICATION OF NEW DNA PURIFICATION METHOD FOR FORENSIC EVIDENCE SAMPLES

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Since 1991, with the introduction of forensic DNA profiling techniques in Korea, the amount of samples used as criminal evidence has significantly increased. In fact, it has grown up to 20 times the amount. In addition, the number of items requested for assessment relating to crime scenes has been rapidly increasing for the last 2 years. Worldwide research studies are now being conducted into new DNA analysis techniques in order to deal with the increasing demand more easily, more speedily and more accurately. Also studies are being conducted into automation which could process large amounts of samples simultaneously.

A new reagent (**E-prep**; *Prepgene Co., LTD, Seoul, Korea*) was recently developed to help simplify DNA analysis process. We conducted this study to investigate the possibility of applying this reagent to actual practice. E-prep reagent has several advantages over existing ones. It makes it possible to reduce analysis time and man power by simplifying the process to only two steps. It does not discharge pollutants such as organic solvents and highly concentrated salts. Above all things, it reduces the cost by 80~90%. It is confirmed that the DNA extraction yield of blood samples were 2.5 times that of existing methods in a simple comparison. As there is no step for removal of contamination, however, it cannot be applied to contaminated samples such as cigarette butts, tissues, bones and teeth and is not thought adequate for contaminated bloodstains and decomposed blood.

In this study, however, we proved that this method would be of great help in the DNA analysis of various samples such as ordinary evidence (e.g. blood, hair roots, saliva etc.) as well as uncontaminated bloodstains, ultramicroscopic bloodstains and single hair strands. In conclusion, the advantages of **E-Prep** reagent can be summarized as:

- 1) Easy to carry out,
- 2) Lower Cost,
- 3) More Efficient,
- 4) Pose less danger to the environment

and we recommend it be adopted as a new DNA analysis method in the field of forensic science.