



## **EFFECT OF QUALITY AND QUANTITY OF HUMAN DNA EXTRACTED FROM FORENSIC HAIR SAMPLES FOR SUCCESSFUL PCR AMPLIFICATION**

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The introduction of PCR to Forensic Science has significantly expanded the ability to analyse DNA from small and degraded biological samples. Forensic hair plays an important role in identifying individuals during criminal investigations. Since the amount of DNA present in hair samples are less, PCR has been frequently unsuccessful. Therefore, this study was conducted to identify the causes for failure of PCR amplification of DNA in forensic hair samples and to find a possible solution to overcome the problem. The study was conducted with 443 hair samples and analysed as DNA forensic evidence at GENETECH Colombo. Qualitative and quantitative data on the hair samples and their success in PCR were assessed. A comparative analysis of a set of samples were incorporated in order to suggest a better analysis method. The results of the study showed that extracts from hair with root contained 6.44 ng/μL of DNA and they produced a rate of 31.8% of successful PCR amplification while hair without root contained 8.47ng/μL of DNA, but produced only 18.0% rate of successful PCR amplification. There were no significant associations between the amount of DNA ( $p=0.433$ ), quality of DNA on the success of PCR. An increase in the number of PCR cycles caused an increase in the success rate by 16.67%. These results concluded that the amount of DNA in hair samples and quality of the extracted samples does not affected for the success rate of PCR amplification. The failure rate of PCR amplification of DNA from forensic hair can be overcome by increasing the number of amplification cycles in the PCR procedure.

**Keywords:** Forensic hair, Deoxyribonucleic Acid, Polymerase Chain Reaction

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