ANALYSIS OF AMELOGENIN GENE TO IDENTIFY SEX FROM TOOTHBRUSH AS A FORENSIC EVIDENCE

Htet Htet Aung

ABSTRACT

Forensic evidence plays a critical role in court proceedings and the administration of justice. Toothbrushes evidence is a reasonable source of DNA profiling that can help in forensic identification when found at the scene of crime and sex determination is also a part of forensic biological evidence. The principal aim of this research was to study the analysis of amelogenin gene to identify sex from toothbrush as a forensic evidence. This study utilized the experimental laboratory design with the control group. 16 toothbrushes enrolled were extracted by DNAzol. The results of the average DNA concentration by using UV spectrophotometer from men for 1, 3, and 7 days were 943.3 µg/µl, 385 µg/µl, 530.3 µg/µl, while from women for 1, 3, 7 days were 922.3 µg/µl, 619.5 µg/µl, and 631.8 µg/µl, respectively. Statistical test Results Anova (Two Way Anova) shown that there was an influential relation between the sodium fluoride containing toothpaste effect on toothbrush and exposure time on day 1, 3 and 7 with a significance value = 0.044, there was no impact on DNA quality on toothbrush from the difference of men and women (sex) with a significance value = 0.389, and there was no interaction between the effect of long exposure and gender difference on DNA quality found in toothbrush with a significance value = 0.672 through amelogenin gene locus. The results of DNA purity measurements have met the requirements, namely 1.18 - 1.23 µg / µl allowing amplification. The visualization of electrophoresis at the Amelogenin gene locus XY (106,112 bp) for men and XX (106 bp) for women produce a band of 100% positive in the total sample. Conclusively, toothbrush can be used as one of the very valuable sources for gender identification for forensic evidence and personal identification.

Keywords: forensic evidence, toothbrush, Amelogenin gene, sex.