

## ABSTRACT

Many mosquito species are parasitic on man and are vectors for many diseases. These insect blood meals can be a significant source of human DNA for forensic applications. Due to digestion, DNA degradation takes place within the gut of the mosquito. The purpose of this study was to determine the effect of post feeding interval on the success of obtaining a human DNA profile from a mosquito blood meal.

*Aedes aegypti* mosquitoes were reared up to adults in tropical environmental conditions in the insectary. Adult mosquitoes were starved overnight and allowed to take a blood feed from a human volunteer. Fully fed mosquitoes were freeze killed from 0 hrs up to 24 hours post feeding intervals. DNA extractions were performed on the blood meal squeezed out on to a filter paper, the empty abdomen and the full abdomen using Chelex® 100. The variation in the DNA concentration in each sample at different post-ingestion times was quantified using a spectrophotometer. PCR amplification targeting the human STR loci, CSF1PO, TPOX and TH01 was performed on the extracted DNA. Amplified PCR products were run on an Agarose gel to determine the success of PCR amplification. Polyacrylamide gel electrophoresis was carried out for genotyping of the respective STR loci.

DNA could be isolated from specimens up to 24 hours post ingestion and the post feeding time had no effect on the DNA quantity isolated from the blood meal. Positive PCR products and DNA profiles were obtained from blood meals digested up to 12 hrs post-feeding for the three human STR loci and thereby identify the source of the blood meal. It was not possible to DNA profile the 16 and 24 hour blood meals. Between the post ingestion time interval 0 and 24 hours, samples whose DNA was isolated from the blood meal on a filter paper showed an amplification success rate of 2.5%. While extractions of the empty abdomen showed an amplification success rate of 3.84%. The DNA profiles of

approximately 23% of the samples whose DNA was extracted from the whole abdomen was successfully amplified.

The findings of this study will facilitate the use of mosquitoes as biological evidence in forensic investigations.