HUMAN STR PROFILES FROM BLOOD-FED MOSQUITOS

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The ability to obtain human STR profiles from mosquitos that had fed on human blood was evaluated at time points ranging from 3 hours to 40 hours post feeding. Initially, dissected mid-gut sections and remaining mosquito carcasses were each evaluated independently to determine DNA yields and if STR profiles were able to be obtained from either/both of the sections. The mid-gut samples produced far superior DNA yields and STR profiles as compared to the remaining carcass sections. A total of 263 mosquito mid-gut samples were then systemically evaluated for DNA yields obtained and STR profiles achieved at time points of 6 hours, 9 hours, 12 hours, 15 hours, 18 hours, 24 hours, and 40 hours post blood feeding (each time point n=30-39).

Time points of 6 hours, 9 hours, and 12 hours post feeing all produced mean DNA recoveries of approximately 50ng of human DNA for each sample in addition to full 16 loci STR profiles. DNA yields began dropping at 15 hours post feeing (28% reduction in yield as compared to earlier time points) and continued to steadily decline though the 40 hours post feeing time point. Even with the steady decline of DNA yields over time, full 16 loci STR profiles were still able to be obtained at all time points including 16 of the 30 mosquitos at the 40 hour post-feeding time point. Based on these results, blood fed mosquitos can be a non-conventional vector of human DNA with the ability to achieve full STR profiles 40+ hours post-feeding.