



G33 Digestion Time of Human Mitochondrial DNA in Blowfly Larvae, *Calliphora vicina*

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The goals of this presentation are to determine the digestion time of human mitochondrial DNA after blowfly larvae have ceased feeding on human tissue.

This poster will display results obtained from a study measuring the digestion time of human mitochondria DNA in Blowfly larvae. The amount of time the blowfly larvae have been feeding on the human tissue will be measured over a 3-day period. Forensic entomologists

have developed a new technique that can be used to identify a corpse. This technique involves analysis of blood recovered from the digestive tract of an arthropod, which can help identify an individual host. From the blood extracted human mitochondrial DNA is recovered. Previous studies have shown that even if physical contact between the larvae and human corpse is not observed mtDNA analysis may be able to connect larvae with the corpse.

Blowfly larvae, *Calliphora vicina*, will be starved for one day before feeding on human tissue to remove previously eaten food from the larvae's digestive tract. Larvae will be placed in appropriate containers with human tissue. Three groups composed of three replicates each will feed on human tissue for varying amounts of time, 24-hours, 48-hours, and 72-hours respectively. Larvae will be placed in an incubator set at 36°C in the dark. This will help to mimic the environment of a human carcass. After being removed from the human tissue, a period of time will pass before each replicate of a group is preserved. The 3 replicates from each group will be immediately preserved, preserved after 36-hours, or preserved after 56-hour. The larvae will be preserved in 70% ethanol and stored at -20°C. An additional trial will be performed. Adhering to the protocols of the QIAamp DNA Blood Mini Kit from Qiagen, the Blowfly larvae will be analyzed to determine if human mtDNA is present in their digestive tracts.

These results will provide more adequate information for forensic investigators when determining the length of time human mtDNA remains in the larvae's digestive tract. The results of this study hold promise in enhancing the utilization of arthropods in forensic investigations, especially in the area of homicide.

Human Mitochondrial DNA, Blowfly Larvae, Digestion Time