H14 Alternative Food Sources for Entomological Evidence: A Practical Tool for Crime Laboratories

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After attending this presentation, attendees will have an appreciation of how entomological evidence can be used in forensic investigations. Attendees will also develop an understanding of suitable food sources for rearing forensically important larvae. This presentation will review factors affecting the employment of such methods, including approximate costs and protocols to implement these methods so as to successfully rear blow flies both in the field and in crime laboratories.

This presentation will impact the forensic science community by providing an overview of alternative food sources for rearing forensically important blow flies (Diptera: Calliphoridae), specifically in crime laboratories. In laboratory settings, blow flies are commonly reared on beef liver. Obtaining this substrate in a crime laboratory environment can pose several problems, including procuring the liver, thawing it (if previously frozen), and maintaining a fresh supply. Indeed, the difficulty in creating an ideal rearing situation for entomological evidence can be a deterrent in itself. Therefore, several food sources that are easily accessible, cost efficient, and have long shelf lives will be discussed in this presentation. This presentation seeks to provide a cost-efficient and simplistic approach for entomological rearing protocols and to increase the use of collecting entomological evidence in crime laboratories across the country.

Forensic entomology is a well-established tool for evaluating death, or abuse, of a person or companion animal.[1,2] Insect evidence provides valuable information as related to time of colonization and movement of remains from one location to another. Blow flies are commonly found on human remains throughout most stages of decomposition and, consequently, when entomological evidence is collected, these tend to be the most abundant taxa; however, very few crime laboratories across the country have established collection and rearing protocols for these forensically important insects. Some of the main challenges for collecting and rearing blow flies are likely that proper collection techniques are not always widely disseminated, and it can be difficult to have access to an appropriate food source. Further, the majority of crime laboratories are not equipped with a forensic entomologist on staff. Thus, when crime scene investigators or pathologists collect these insects, they are often mishandled (e.g., placed into containers with no air holes, no food, or a food source that is not sustainable for their development).

This study analyzed alternative food sources for blow flies that are easy accessible and cost efficient, including tuna, dry cat food, wet cat food, and beef liver as the control. Blow fly mortality, development, and dry mass were examined for each food source. This experiment will provide an overview of possible food alternatives that could be used as a sustainable food option in laboratories when immediate assistance from a forensic entomologist cannot be obtained.

Reference(s):

1. Amendt J., Krettek R., Zehner R. Forensic Entomology. *Naturwissenschaften*. 2004. 91: 51-65
2. Puvabanditsin S., Malik I., Weidner L.M., Jadhav S., Sanderman J., Mehta R.. Neonatal umbilical cord myiasis in New Jersey. *Journal of Perinatology*. 2014. 34 (9): 718-719.

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