

Use of *Dermestidae* in the Cleaning of Corpses: A Review

Walkis Ragnarsdottir*

Department of Forensics, University of Akala, Akala, India

Abstract

Insect activity is often found on corpses, degrading and feeding on tissues and potentially hindering the investigation or even destroying evidence. Although the action of arthropods can create problems, they can also be used by forensic scientists. *Dermestidae* are those necrophagous arthropods that can be used in the laboratory as a means of separating rotting tissue and skeleton, in particular *Dermestidae lucifera*.

Keywords: *Dermestidae* • Necrophagous • Skeleton • Forensic • Investigation

Introduction

This article discusses the use of insects in forensic science as a means of cleaning corpses found in specific conditions. The cleaning of corpses for subsequent anthropological analysis has been a challenge to overcome in many forensic laboratories, so research into new techniques is crucial to improve the resolution of cases without damaging existing evidence.

Numerous different techniques are now used to carry out this task so that evidence left behind by the perpetrator is not lost or tampered with in the process.

Case Presentation

On Thursday 2 July, a 38-year-old man was found dead in his home by his partner. The victim's husband had been away from home for a week, as he was attending a conference out of town, and when he arrived home, he found the body lying on the living room rug. There were no signs of violence in the house and the lock was not forced, so a possible assault or robbery could be ruled out.

The victim was on the floor, close to a window through which sunlight entered most of the day, which meant that the temperature in the house was close to 30°C for a long period of time. These conditions, and the fact that the air conditioning was turned on at a temperature of 25°C, favored the mummification process of the corpse, although the process was not completed. The mummification process was also possible due to the complexion and cause of death of the victim [1].

The subject was a white individual of slim build. The medical examiner who performed the autopsy determined the cause of death

to be a blunt force trauma to the parietal region which resulted in the loss of a great amount of blood.

In order to study the contusion, it was necessary to remove the tissues adhering to the skull, and for this purpose several techniques were considered, which will be discussed later.

The forensic investigation revealed that the victim suffered from narcolepsy and suffered a seizure while he was alone at home, which caused him to fall suddenly and hit his head on the top of the living room table, causing a contusion that resulted in severe hemorrhaging and bleeding to death.

Discussion

Numerous techniques can be used in the laboratory to remove epithelial and muscle tissues from bone, one of the most common is to macerate the corpse in an aqueous medium and wait for the bacteria to decompose it completely [2].

Although this is the most used technique, this review proposes a less abrasive and faster way to separate the bones from the remaining tissues. *Dermestidae lucifera* is an arthropod of the beetle family that has a great appetite for decaying flesh, especially in its adult stage and during the development of its larvae in the summer months, specifically in July and August.

Species of the same genus are already used in some natural history museums and perform a similar function, but with some notable disadvantages compared to the species presented in this article [3].

The advantages of *D. lucifera* over other species is that they are very efficient at room temperature, so it is not necessary to have a specific acclimatized room for them to live and eat. Under these

*Address for Correspondence: Walkis Ragnarsdottir, Department of Forensics, University of Akala, Akala, India, Tel: 831892832043; E-mail: walkragn009@unak.alo

Copyright: © 2023 Ragnarsdottir W. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Received: 18 October, 2022, Manuscript No. JFR-22-77728; Editor assigned: 21 October, 2022, PreQC No. JFR-22-77728 (PQ); Reviewed: 07 November, 2022, QC No. JFR-22-77728; Revised: 20 February, 2023, Manuscript No. JFR-22-77728 (R); Published: 27 February, 2023, DOI: 10.37421/2157-7145.2023.14.538

conditions the arthropod is unable to fly, so there is less risk of it escaping from the controlled area and infesting other corpses or food sources in the laboratory (Figure 1).

Furthermore, it has been proven that chelicerae do not leave marks on the bone, which is a great advantage in forensic investigations, as marks and evidence can be analyzed on the skeleton without external alterations hindering the investigation process [4,5].

The condition of the body described above facilitated the action of the insects and made it possible to clean the bones quickly and efficiently [6,7].



Figure 1. *Dermestidae* feeding on the remains of a corpse.

Conclusion

The study of the skeletal remains of a corpse involves a preliminary cleaning phase, for which numerous options are

available. The use of *D. lucifera* in the laboratory as a method of separating epithelial and muscular skeletal tissues offers highly satisfactory results compared to other methods. In the case reported in this article, arthropods are favored as a cleaning method due to the condition of the tissues.

References

1. Charabidze, Damien, Thomas Colard, Benoit Vincent, and Thierry Pasquerault, et al. "Involvement of larder beetles (Coleoptera: Dermestidae) on human cadavers: a review of 81 forensic cases." *Int J Legal Med* 128 (2014): 1021-1030.
2. Charabidze, Damien, Vincent Lavielle, and Thomas Colard. "Experimental evidence of bone lesions due to larder beetle *Dermestes maculatus* (Coleoptera: Dermestidae)." *Biol* 11 (2022): 1321.
3. Magni, Paola A, Sasha C Voss, Roberto Testi, and Matteo Borrini, et al. "A biological and procedural review of forensically significant *Dermestes* species (Coleoptera: Dermestidae)." *J Med Entomol* 52 (2015): 755-769.
4. Timm, Robert M, Suzanne B McLaren, and Hugh H Genoways. "Innovations that changed Mammalogy: dermestid beetles—the better way to clean skulls." *J Mammal* 101 (2020): 923-925.
5. Mazzarelli, Debora, Stefano Tambuzzi, Emanuela Maderna, and Giulia Caccia, et al. "Look before washing and cleaning: A caveat to pathologists and anthropologists." *J Forensic Leg Med* 79 (2021): 102137.
6. Hoverson, Kara, Wendi E Wohltmann, Richard J Pollack, and Daniel J Schissel, et al. "Dermestid dermatitis in a 2 years old girl: case report and review of the literature." *Pediatr Dermatol* 32 (2015): 228-233.
7. Erzinclioğlu, YZ. "The application of entomology to forensic medicine." *Med Sci Law* 23 (1983): 57-63.

How to cite this article: Ragnarsdottir, Walkis. "Use of *Dermestidae* in the Cleaning of Corpses: A Review." *J Forensic Res* 14 (2023):538.