

RESUMO - OUTRAS ÁREAS TEMÁTICAS

**IMPACT OF ENERGY SUPPLEMENTATION ON MORTALITY AND
OVIPOSITION OF LUCILIA SP. IN LABORATORIAL CONDITIONS -
PRELIMINARY ANALYSIS**

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Introduction

The management of diptera colonies is useful in biological research, especially for public health and forensic entomology, as they provide effective models for understanding insect biology and solving forensic cases. Implementing rigorous management protocols and best rearing practices is essential to ensure the viability and stability of colonies, providing conditions that maximize specimen maintenance. Female survival during reproduction is often compromised due to insufficient energy resources. Studies suggest that oviposition under experimental conditions can be physiologically demanding, and energy supplementation may play a key role in reducing premature mortality. Although decomposing animal substrate as an artificial diet offers nutrients, it appears insufficient to meet energy demands during more intense phases, such as oviposition. This study aims to investigate the impact of energy supplementation on the mortality and oviposition of laboratory-reared Brachycera Diptera.

Objective:

To investigate the impact of glucose solution as an energy supplement on the viability and longevity of females (Diptera: Brachycera) under laboratory conditions.

Methods

The experiment was conducted in a dipteran colony maintained at the W. O. Neitz Parasitological Research Station, Federal Rural University of Rio de Janeiro. For the preliminary study, two cages were used, designated as G7 and G4, containing approximately 35 individuals in each one, under controlled conditions of temperature, humidity and photoperiod. Initially, the glucose solution substrate was removed, leaving the females exposed only to decomposing animal substrate. As female mortality increased during oviposition, an energy supplement was introduced: the glucose solution was added to cage G7 on October 18, 2024, and to cage G4 on October 20, 2024. After the supplementation was introduced, mortality rates were recorded daily to assess the potential effect of the glucose solution in reducing mortality associated with the reproductive process. The cages were monitored daily to count adult individuals and observe the phases of oviposition.

Results

In cage G7, before the glucose solution introduction, 10 deaths occurred on October 17, of which 8 took place during oviposition. After adding the glucose solution on October 18, only 2 deaths were recorded, both occurring after oviposition. In cage G4, before supplementation, 8 deaths were recorded on October 18, with 6 occurring during oviposition. After introducing the glucose solution on October 20, the number of deaths dropped to 3, all occurring post-oviposition. Necrophagous flies typically exhibit high mortality following oviposition; however, the present study revealed a considerable mortality rate during the previous phase, characterized by egg retention in females prior to oviposition and the introduction of the glucose solution. With energetic supplementation through the glucose solution, a significant reduction in deaths was observed, with specimens showing a contracted abdomen, indicating complete oviposition and natural death. Additionally, an increase in the number of deposited eggs was observed, suggesting that energetic supplementation positively contributed to oviposition. Studies highlight the importance of energetic substrates for the longevity of Brachycera dipterans, emphasizing the need for dietary adjustments.

Conclusion

The results suggest that the supply of decomposing substrate should be combined with energy supplementation for better use of the specimens, serving as a guide for future studies with expanded experimental repetitions and different nutritional sources.

Palavras-chave: female mortality; oviposition; adult feeding; dipteran colony; forensic entomology.