

# Techniques for collecting and breeding Diptera Muscomorpha in the laboratory

## Abstract

Some species of dipterous included in the infraorder Muscomorpha are of fundamental medical and veterinary importance, since they can produce myiasis and act towards transmission of pathogens to humans and animals. The purpose of this study is to demonstrate the importance of techniques for collecting and breeding Diptera Muscomorpha (flies) in the laboratory. The adults collected in the field were placed in a freezer for a period of 2 minutes, to be anesthetized by the cold facilitating the separation. After separation, the adults were transferred to a cage (30 cm long x 15 cm wide x 15 cm high) containing water-soaked gauze, a mixture of milk powder, brewer's yeast and sugar to feed them. For oviposition of adult females, minced meat (baits) was provided. This content with eggs and larvae was transferred to plastic cups containing fermented food for pupae development of larvae. The cups were later transferred to the adult cages for emergence. The fermented feed used as oviposition medium was the most attractive for females in the laboratory, but also maintained adequate humidity and temperature for egg development. The mixture of powdered milk, sugar and brewer's yeast was ideal for adult food. This substrate increased adult longevity and average egg productivity per female.

**Keywords:** flies, chicken, poultry, study, adults, eggs, larval

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## Introduction

Some species of dipterous included in the infraorder Muscomorpha are of fundamental medical and veterinary importance, since they can produce myiasis and act towards transmission of pathogens to humans and animals.<sup>1-3</sup> These dipterous are potential mechanical vectors for etiological agents such as viruses, bacteria, protozoan cysts and helminths eggs.<sup>1</sup> The purpose of this study is to demonstrate the importance of techniques for collecting and breeding Diptera Muscomorpha (flies) in the laboratory.

## Materials and methods

### Adult collection

The fly adults were collected at the chicken farm in Monte Mor, São Paulo, Brazil. For this we used a Puça that was passed in the manure to collect individuals. There were transferred to to cum bottle with its opening covered with gauze to breathing of specimens. The adults collected in the field were placed in a freezer for a period of 2 minutes, to be anesthetized by the cold facilitating the separation.<sup>4</sup>

### Creation technique

After separation, the adults were transferred to a cage (30 cm long x 15 cm wide x 15 cm high) (Figure 1) containing water-soaked gauze, a mixture of milk powder, brewer's yeast and sugar to feed them. For oviposition of adult females, minced meat (baits) was provided. This content with eggs and larvae was transferred to plastic cups containing fermented food for pupae development of larvae. The cups were later transferred to the adult cages for emergence.<sup>4</sup> The adults and their immature stages were kept in the rearing room at a temperature of 27 degrees Celsius, humidity of 60 + 5% and photoperiod of 12:12 (L:E). In winter the room temperature was maintained at this level using electric heaters.<sup>4</sup>



**Figure 1** Flies breeding cages in laboratory.

## Results and discussion

One of the best ways to study insects is to take excursions to observe their habits and collect them. Handling and collection reveal information through direct observation, which is often not recorded in scientific books or articles.<sup>5</sup> All collection techniques tend to be more or less selective. To remedy this difficulty, one must then use different techniques to collect greater diversity and quantity.<sup>5</sup>

To standardize collections, some common procedures are required, such as selecting areas in reserves or ecological stations or research stations, which have not yet been significantly altered by man and have minimal logistical infrastructure; have facilities for transportation of

material; use the same techniques, same number of equipment, same collection effort, and have a team of trained personnel to set up traps and sort material.<sup>6</sup>

The fermented feed used as oviposition medium was the most attractive for females in the laboratory, but also maintained adequate humidity and temperature for egg development. The mixture of powdered milk, sugar and brewer's yeast was ideal for adult food. This substrate increased adult longevity and average egg productivity per female. Feed also proved to be an excellent medium, as it contained the nutrients necessary for larval development, as well as maintaining adequate humidity and temperature. The major difficulties encountered in this type of maintenance were the contamination with several flies mainly of the family Phoridae, which fed and developed in the environment.

As their life cycle was shorter<sup>7</sup> they impaired the development of larvae. The phorid larvae were very voracious, using early on the food that would be used to feed the flies larvae. Depending on the amount of medium and the number of larvae present in the container, more substrate had to be provided to complete larval development, requiring more time to maintain the colony.<sup>7</sup> The importance of techniques for collecting and breeding Diptera Muscomorpha (flies) in the laboratory relates developing studies with controlled conditions such as: development of the mature stages, adult longevity, fecundity, life table, adult standard and emergency time and other works. This fly-making technique cannot be used for myiasis-causing, blood-feeding muscoids.

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## Conflicts of interest

The authors declare that there is no conflict of interest.

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