

LABORATORY REARING OF MOSQUITOES USING A HEMOTEK FEEDING SYSTEM

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Mosquitoes required for testing chemical or biological products have been reared successfully using anaesthetised guinea pigs as a source of blood. In an attempt to eliminate the need for keeping and using live mammals to provide the blood meal, alternative methods have been investigated. Finally the Hemotek feeding system which can be used to provide liquid diets, including blood, to blood feeding insects via a membrane was chosen.

During the development of this system several types of membranes (Parafilm[®], Nescofilm[®], sheet collagen and sausage skin collagen), several types of liquid diets (artificial diet, goose blood and different mammalian blood types) and attractants/phagostimulants were evaluated.

The best results were obtained with stretched parafilm as a membrane and goose blood as the liquid diet.

Comparative tests between Hemotek bred mosquitoes and the standard strain (fed using anaesthetised guinea pigs) showed the following results:

Culex quinquefasciatus:

The Hemotek strain laid more eggs than the standard strain and was slightly more tolerant in knock-down tests, but the relative potency of esbiothrin (EBT) to pynamin forte (PNF) was similar.

Aedes aegypti:

The Hemotek strain fed in the same numbers and laid as much eggs as the standard strain if white vaseline was used as an attractance (parafilm treated with vaseline). Hemotek and standard *Aedes* performed similar in knockdown tests, and the relative potency between EBT/PNF was also similar.

Anopheles arabiensis:

The Hemotek strain fed in slightly reduced numbers compared with the standard strain. Because of the inherent variation in egg laying between different batches between the strains, no direct comparison was made. Susceptibility to deltamethrin in a residual test was similar for both strains.

The Hemotek feeding system has been used to successfully rear three species of mosquitoes. The system allows mosquitoes to feed over a longer period than the standard feeding with anaesthetised guinea pigs as a source of blood. It saves a lot of time because there is no need to maintain laboratory animals. The system also offers the possibility to develop test procedures such as bite inhibition, with a standard food source that does not require live animals or human volunteers.