

Evaluation of Stable Isotope in Life History and Mating Behaviour of Mediterranean Fruit Fly *Ceratitis capitata* (Diptera: Tephidae) in Laboratory Conditions

Authors : Hasan AL-Khshemawee, Manjree Agarwal, Xin Du, Yonglin Ren

Abstract : The possibility use of stable isotopes to study Medfly mating and life history were investigated in these experiments. ¹³C6 glucose was incorporated in the diet of the Mediterranean fruit fly *Ceratitis capitata* (Diptera: Tephidae). Treatments included labelling and unlabelled of either the media or adult sugar water. The measured started from egg hatching till the adults have died. After mating, the adults were analysed for ¹³C6 glucose ratio using Liquid chromatography-mass spectrometry LC-MS in two periods of time immediately and after three days of mating. Results showed that stable isotopes were used successfully for labelling Medfly in laboratory conditions, and there were significant differences between labelled and unlabelled treatment in eggs hatching, larval development, pupae emergence, survival of adults and mating behaviour. Labelling during larval development and combined labelling of larvae and adults resulted in detectable values. The label glucose in larvae stage did not effect on mating behaviour, however, the label glucose in adults' stage was affected by mating behaviour. We recommended that it is possible to label adults of Mediterranean fruit fly *C. capitata* and detected the label after mating. This method offers good tools to study mating behaviour in Medfly and other types of insects and could be providing useful tools in genetic studies, sterile insect technique (SIT) or agricultural pest management. Also, we recommended using this technique in the field.

Keywords : stable isotope, sterile insect technique (SIT), medfly, mating behaviour

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