Evaluation of Low Temperature as Treatment Tool for Eradication of Mediterranean Fruit Fly (Ceratitis capitata) in Artificial Diet

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Abstract : Mediterranean fruit fly (Ceratitis capitata) is one of the most destructive pests of fruits and vegetables. Medfly originated from Africa and spread in many countries, and is currently an endemic pest in Western Australia. Medfly has been recorded from over 300 plant species including fruits, vegetables, nuts and its main hosts include blueberries, citrus, stone fruit, pome fruits, peppers, tomatoes, and figs. Global trade of fruits and other farm fresh products are suffering from the damages of this pest, which prompted towards the need to develop more effective ways to control these pests. The available quarantine treatment technologies mainly include chemical treatment (e.g., fumigation) and non-chemical treatments (e.g., cold, heat and irradiation). In recent years, with the loss of several chemicals, it has become even more important to rely on non-chemical postharvest control technologies (i.e., heat, cold and irradiation) to control fruit flies. Cold treatment is one of the most potential trends of focus in postharvest treatment because it is free of chemical residues, mitigates or kills the pest population, increases the strength of the fruits, and prolongs storage time. It can also be applied to fruits after packing and 'in transit' during lengthy transport by sea during their exports. However, limited systematic study on cold treatment of Medfly stages in artificial diets was reported, which is critical to provide a scientific basis to compare with previous research in plant products and design an effective cold treatment suitable for exported plant products. The overall purpose of this study was to evaluate and understand Medfly responses to cold treatments. Medfly stages were tested. The long-term goal was to optimize current postharvest treatments and develop more environmentally-friendly, cost-effective, and efficient treatments for controlling Medfly. Cold treatment with different exposure times is studied to evaluate cold eradication treatment of Mediterranean fruit fly (Ceratitis capitata), that reared on carrot diet. Mortality is important aspect was studied in this study. On the other hand, study effects of exposure time on mortality means of medfly stages.

Keywords : cold treatment, fruit fly, Ceratitis capitata, carrot diet, temperature effects

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