Behavioural responses of the male Oriental Fruit Fly, *Bactrocera dorsalis* (Hendel) to methyl eugenol in a horizontal wind tunnel

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Methyl eugenol (3,4 dimethoxyalyl benzene), which is an ingredient of citronella oil, is the most effective known lure attracting the male oriental fruit fly, *Bactrocera dorsalis*. Observations suggest that methyl eugenol may be intimately related to the pheromone communication system of the oriental fruit fly. The present study was therefore, carried out to study the behavioural responses of the male oriental fruit fly to methyl eugenol in a horizontal wind tunnel. Three aspects were investigated in the present study. Behavioural activities of males to methyl eugenol in relation to age were tested. Also, male responses to methyl eugenol at various times of the day were determined. Furthermore, effects of different concentrations of methyl eugenol on male responses were also tested. Three behavioural responses namely number of upwind anemotaxis, total number of landings on the odour source and number of flies in the 3rd section of the wind tunnel at the end of the observation period were monitored. Males responding to methyl eugenol showed straight and zig-zag flights towards the source. Male attraction to methyl eugenol was correlated with sexual maturation. Males, 3 days old or younger were not attracted to methyl eugenol. Highest attraction as measured by the three behavioural parameters, was observed when the males were 10 days old. The attraction was still high even when they were 25 days old. Male responses to methyl eugenol was not uniform throughout the day. Responses were highest during the morning (82% in the 3rd section), declined to a lower level in the afternoon (40%) and then dropped markedly at dusk (11.4%). The decline in response to methyl eugenol was inversely related to the time of peak mating activity in males. All the behavioural activities of males increased with the increase of concentration. The highest number of upwind anaemotaxis (19.5±0.9) was observed with a 10 µL dose. Also, the maximum number of flies moved into 3rd section (81.7%) and landed on the source (16.8±1.1) in response to 10 µL. According to the observations it can be suggested that methyl eugenol can be effectively incorporated into programmes of population detection and suppression of *Bactrocera dorsalis*.

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