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INSECTICIDE RESISTANCE CHARACTERIZATION, QUANTIFICATION, AND TRANSFERAL BETWEEN LIFE STAGES OF THE MALARIA VECTOR *ANOPHELES FUNESTUS* GILES (DIPTERA: CULICIDAE)

By

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ABSTRACT

Southern African pyrethroid resistant and insecticide susceptible laboratory colonies of the malaria vector *Anopheles funestus* were investigated to further understand the phenotypic expression of pyrethroid resistance and to establish at which life stage resistance was selected. Pyrethroid resistance levels of larvae and adults were assessed at the larval and adult life stages using WHO larval and CDC bottle bioassays. Subsequent resistance levels were then assessed following targeted selections at each life stage. Tests for an association between cuticle thickness and pyrethroid resistance were based on cuticle thickness measurements using scanning electron microscope imaging of prepared tissue sections. It is concluded that pyrethroid resistance in southern African *An. funestus* is only expressed in the adult life stage, and that selection for this phenotype can only be achieved by exposing adults. It also concluded that pyrethroid tolerant or resistant females are likely to have thicker cuticles than less tolerant or susceptible females.