

Abstract

Migratory locusts represent the most important crop pests in Africa and Asia. Because environmental damages are associated with the use of synthetic insecticides in locust and grasshopper control, new environmentally acceptable approaches are becoming increasingly important. The effects of gibberellic acid (GA₃), a plant growth regulator, was investigated by topical application and ingestion on the reproductive physiology and ecdysteroids production of the migratory locust *Locusta migratoria* at concentrations of 125, 625, 3125, 4125, 5125 and 6125 µg/mL. The treatment applied to adult females during the pre-ovipositional phase provokes a significant adverse influence on their reproductive potential. Indeed, GA₃ significantly reduced both fecundity and fertility. Gibberellic acid also caused disturbances in the incorporation of the hemolymph metabolites (proteins, carbohydrates and lipids) in the oocyte resulting in a significant reduction in their concentrations in the ovaries. Ecdysteroid production was measured by an enzyme-immunoassay. GA₃, administered by ingestion to the adult females, significantly reduced the ecdysteroid titers in ovaries and freshly laid eggs