Host-parasite interactions between whiteflies and their parasitoids

DB Gelman, D Gerling
Insect Biocontrol Lab, USDA, ARS, Bldg. 011A, Rm. 214, BARC West, 10300 Baltimore Ave., Beltsville, MD 20705, USA, gelmand@ba.ars.usda.gov

Host-parasite interactions that occur between lepidopterans and their parasitoids are well-documented, but little is known about similar interactions between whiteflies and their parasitoids. Currently, there is no evidence to support the existence of wasp-associated polydnaviruses or venom in redirecting whitefly metabolism, including interference with the immune response. The production of teratocytes by whitefly parasitoids (may play a role in protecting the parasitoid) has been observed for Encarsia berlesei and E. citrina. Manipulation of hormone titers, so common in parasitized lepidopterans, also occur in parasitized whiteflies. In the Eretmocerus-Bemisia system, ecdysteroid titers decrease upon parasitization. However, Encarsia formosa developing in both the greenhouse whitefly (Trialeurodes vaporariorum) and the sweet potato whitefly (Bemisia tabaci, biotype B) will not molt to its 3rd (last) instar until the whitefly has initiated adult development, a time when host ecdysteroid titers are known to peak. In the Trialeurodes lauri-Encarsia. scapeata system in which host and parasitoid enter diapause in May-June, it appears that E. scapeata is able to prematurely trigger the initiation of its host’s development. These and other host-parasite interactions will be discussed.