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Characterization of the RNA Interference Response in the Asian Citrus Psyllid

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The Asian citrus psyllid (ACP), *Diaphorina citri*, is a major pest of citrus since it is the only known vector of '*Candidatus* Liberibactor' species, the bacterium associated with citrus greening disease. Since control of the psyllid is the only effective defense so far against citrus greening, and heavy reliance upon pesticides is not sustainable, an RNA interference (RNAi) strategy for ACP control was investigated. RNA interference is an innate immune response triggered by the cellular uptake of double stranded RNA (dsRNA) and studies were conducted to determine if ACP could be killed by oral uptake of dsRNA that target essential ACP transcripts. An artificial diet system was designed that facilitated the ingestion of dsRNA complementary to genes involved in digestion. Using this system, ACP mortality was observed as a result of oral uptake of dsRNAs targeting an apparent essential ACP gene and this mortality was shown to be dose responsive, reaching a maximum of 37% at high dsRNA concentrations. There was also what appeared to be sequence independent ACP toxicity of large doses of dsRNA, concentrations above 48 ng/uL in the diet. However, this sequence independent mortality was not as high as that observed for the targeted ACP gene, never rising above 17%. These results provide support for the concept that RNAi could be adapted for use as a control strategy for the ACP.