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Behavioral, Ultrastructural, and Chemical Studies on the 'Honeydew' Excretions in Nymphs and Adults of the Asian Citrus Psyllid

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The Asian citrus psyllid (ACP) *Diaphorina citri* (Hemiptera: Psyllidae) is the main vector of bacteria responsible for citrus huanglongbing (citrus greening), the most serious citrus disease worldwide. Behavioral and ultrastructural studies on 'honeydew' excretions by ACP indicated interesting differences between nymphs, males and females. The anal opening in ACP, near the posterior end of the abdomen, is on the ventral side in nymphs and on the dorsal side in adults. Video recordings showed that males produce clear sticky droplets of honeydew gently laid behind them on the leaf surface, whereas females powerfully expel whitish, different shaped pellets that travel away from the female, probably to get these sticky excretions away from eggs and newly-hatched nymphs. ACP nymphs produce long ribbons or tubes of honeydew excretions that frequently stay attached to the exuviae after molting. Honeydew excretions of both nymphs and adult females are covered with a thin layer of whitish wax-like material ultrastructurally composed of a convoluted network of thin filaments apparently produced by the "wax" glands underneath the anal ring, which is absent in males of this and other psyllid species. The chemical composition of these excretions is being investigated using infrared microscopy and gas chromatography/mass spectroscopy.