Title No evidence of substantial nicotine metabolism by *Lasioderma serricorne* (Fabricius) (Coleoptera: Anobiidae) reared on tobacco

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Abstract

The cigarette beetle, *Lasioderma serricorne* (Fabricius), is the most prevalent pest of stored tobacco and is responsible for substantial economic damage. Other than *L. serricorne*, few insects have been found to infest tobacco due to its low nutritional value and nicotine toxicity. Self, L.S., Guthrie, F.E., Hodgson, E. [1964a. Metabolism of nicotine by tobacco-feeding insects. Nature 204, 300–301] reported that *L. serricorne* metabolizes at least 70% of ingested nicotine to cotinine. This study re-examined nicotine metabolism by the *L. serricorne* using gas chromatography/flame ionization detection (GC/FID) and gas chromatography/thermal desorption with time-of-flight mass spectrometry (GC/TDS/ToF). Cigarette beetles reared on whole-wheat flour were compared with those reared on tobacco. Larvae, depurated larvae, frass, and both diets were analyzed to determine if nicotine was assimilated, sequestered, metabolized, and/or excreted. Contrary to previous findings, these data indicate that *L. serricorne* does not metabolize a significant amount of nicotine into cotinine. Nicotine is excreted unmodified. Older research involving nicotine metabolism by other insects should be reviewed in the light of these findings.