

INSECTS, COFFEE AND OCHRATOXIN A

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A problem with coffee consumption is the possible presence of ochratoxin A, a potent toxin produced by *Aspergillus ochraceus* Wilh. and *Penicillium viridicatum* Westl. Several studies have demonstrated the presence of this toxin in green coffee beans, roasted coffee, and coffee brews, including instant coffee (Levi et al. 1974, Tsubochi et al., 1984, Micco et al. 1989, Studer-Rohr et al. 1994, Patel et al. 1997). In the UK, out of 100 retail coffee samples tested for ochratoxin A, 81 tested positive (Patel et al. 1997). Coffee exported from Brazil to Greece and Lebanon must be tested for ochratoxin A and levels must be below 20 mg/kg (Milanez et al. 1995). After collecting coffee beans infected with the coffee berry borer (*Hypothenemus hampei* (Ferrari), Coleoptera: Scolytidae) in Uganda and Benin, as part of a project aimed at finding new biological control agents against this insect pest, we isolated *A. ochraceus* from adult insects emerging from the beans. In Uganda, of 636 insects emerging from coffee beans collected in 26 sites, 34 (5.3%) were infected with *A. ochraceus*. In Benin, out of 564 insects originating in one site, 98 (17.4%) were infected with *A. ochraceus*. *H. hampei* females lay eggs inside the coffee bean where both larval development and mating occur. If the mother is infected with *A. ochraceus* while entering the bean, it is likely that the adult progeny leaving the bean will also be infected, thereby disseminating the fungus. This insect, endemic to Africa, has now spread to most coffee growing regions in the world; therefore, its potential to serve as a vector for this cosmopolitan fungus is high. Other insects are known to serve as vectors for toxicogenic fungi, including *Aspergillus flavus* Link: Fr. to corn (Dowd 1998). Our finding indicates that *H. hampei*, in addition to being a direct pest of coffee, could also serve as a vector for *A. ochraceus*. Plans aimed at reducing ochratoxin contamination in coffee beans should take into consideration the presence of the insect in the field.

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SUMMARY

A search for natural enemies of the coffee berry borer *Hypothenemus hampei* (Ferrari) (Coleoptera: Scolytidae) in Uganda and Benin revealed that the insect serves as a carrier for *Aspergillus ochraceus* K. Wilh., a fungus known to produce ochratoxin A. Contamination with this toxin is a serious problem for the coffee industry. Plans aimed at reducing this problem should take into consideration the presence of this insect in the field.

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