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Detection of *Spiroplasma melliferum* in US



H. Q. Chen, J. P. Chen*

^a College of Animal Sciences, Zhejiang University, Hangzhou, Zhejiang 310058, PR China
^b USDA-ARS Bee Research Laboratory, Beltsville, MD 20705, USA

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ABSTRACT

Spiroplasma melliferum is a pathogen of honey bees (*Apis mellifera*) that causes a disease known as *Spiroplasma* syndrome. In this study, we used a PCR method to detect *S. melliferum* in honey bees from the United States. The results showed that *S. melliferum* was detected in 22% of the honey bees sampled. The prevalence of *S. melliferum* was significantly higher in honey bees from the Eastern United States (5%) compared to those from the Western United States (25%).

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1. Introduction

Spiroplasma melliferum is a pathogen of honey bees (*Apis mellifera*) that causes a disease known as *Spiroplasma* syndrome (Rosenblatt and Quesada, 2006). *Spiroplasma melliferum* and *Spiroplasma apis* are the two species of the genus *Spiroplasma* that infect honey bees.

S. melliferum was first reported in honey bees from Beltsville, MD, USA in 1976 (Chen, 1977, 1978; Chen et al., 1985). *S. apis* was first reported in honey bees from Beltsville, MD, USA in 1980 (Chen et al., 1982, 1984, 1983). *S. apis* strain B31 and *S. apis* strain B39 (Chen et al., 1982). *S. melliferum* was first reported in honey bees from Beltsville, MD, USA in 1978 (Chen, 1978). Honey bees infected with *S. melliferum* exhibit a variety of symptoms, including reduced fecundity, reduced survival, and reduced colony strength (Chen, 1978; Naranjo et al., 2010).

The purpose of this study was to determine the prevalence of *S. melliferum* in honey bees from the United States.

Spiroplasma melliferum is a pathogen of honey bees (*Apis mellifera*) that causes a disease known as *Spiroplasma* syndrome (Chen, 2007; Naranjo et al., 2010). In this study, we used a PCR method to detect *S. melliferum* in honey bees from the United States. The results showed that *S. melliferum* was detected in 22% of the honey bees sampled. The prevalence of *S. melliferum* was significantly higher in honey bees from the Eastern United States (5%) compared to those from the Western United States (25%).

2. Methods and materials

For this study, we collected honey bees from 12 different locations in the United States. The locations were: Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA; Beltsville, MD, USA.

* Corresponding author. Tel.: +1 301 504 8736.
E-mail address: chenjp@ars.ars.gov (J.P. Chen).

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As-636. T... *S. melliferum*, ... *S. apis* ... (G... , 1977; G... .., 1985). At, NC... .. *S. melliferum* 5% 68% T... .. M... .. J... .. (M... .., 1982). A... .. (M... .., 1981) T... .. S... .. H... .. S... .. *S. melliferum* (D... .., 2009; G... .., 2010; M... .., 2010), *Spiroplasmas* *S. melliferum* (A... .., 2012). H... .. T... .. *S. melliferum* T... .. *S. melliferum* KC3 (A... .., 2012).

Disclaimer
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I... .. D... .. H... .. L... .. Ms. M... ..

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G... .. *Spiroplasma melliferum* 35, 296–308.
C... .. *Spiroplasma melliferum* 318, 283–287.
D... .. *Spiroplasma* 40, 263–284.
G... .. *Spiroplasma* 87, 87–97.
H... .. *Apis mellifera* 50, 1366–1372.
L... .. *Spiroplasma* 39, 273–281.
M... .. *Spiroplasma apis* / *Spiroplasma melliferum* 109, 172–174.
M... .. *Spiroplasma* 8, 387–399.
M... .. *Spiroplasma apis* / *Apis mellifera* 134, 383–397.
M... .. *Spiroplasma apis* 135, 151–155.
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