

**Five-year surveillance of AcSBV prevalence in *Apis cerana* in Northern Taiwan explore the risk of co-cultured with *Apis mellifera***

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The sacbrood virus (SBV) presents a threat to *Apis cerana* larvae, resulting in high mortality rates and potential colony collapse. In Taiwan, outbreak of AcSBV was reported from 2015, when the SBV-like symptom was first found in the *A. cerana* colonies. Subsequent studies also indicated that AcSBV strains, which found in Taiwan, were closely related to the CSBV-FZ strain originating in China. Since then, AcSBV has rapidly spread throughout *A. cerana* colonies in Taiwan, and substantially impacted local *A. cerana* populations. Based on the infected honey bee host species, the virus is known as AmSBV (SBV infects *A. mellifera*) and AcSBV (SBV infects *A. cerana*). The cross-infection of AcSBV and AmSBV between *A. cerana* and *A. mellifera* in the co-cultured apiaries has been documented in Taiwan. A five-year monitoring program of *A. cerana* colonies in northern Taiwan from 2019 to 2023 was performed for assessing changes in AcSBV prevalence and investigating the impacts of *A. cerana* and *A. mellifera* co-culturing. The results revealed that AcSBV prevalence peaked in 2019, with infection rates of 66.47% in *A. cerana*-only apiaries and 56.51% in co-cultured apiaries. The prevalence of AcSBV in both types of apiaries were decreased in 2021. Furthermore, AcSBV prevalence was significantly higher in the *A. cerana*-only apiaries in the autumn in 2019 and co-cultured apiaries during the winter in 2023, indicated the cross-species infection of AcSBV, and the risk of SBV spillover from *A. mellifera*. The long-term surveillance data indicated the high risk of SBV cross-species infection during seasonal transitions in autumn and winter, which could provide the advice for beekeeping strategy to minimize the sacbrood disease in Taiwan.