

Abstract

Small RNAs Virome Characterization Reveals Arthropod-Associated Viruses in *Anopheles atroparvus* from the Ebro Delta, Spain [†]

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† Presented at Viruses 2020—Novel Concepts in Virology, Barcelona, Spain, 5–7 February 2020.

Published: 24 June 2020

Abstract: Even though malaria was eradicated from Europe after the mid-20th century, in 2017, more than 8000 imported cases were reported in the continent. Due to travel routes to endemic areas, climate change, and the presence of native vector mosquitoes (genus *Anopheles*), the re-establishment of autochthonous malaria transmission is a current concern. *Anopheles atroparvus* (Van Thiel, 1972) is one of the 11 sibling species within the Palearctic *Anopheles maculipennis* complex, which formerly were considered the main vectors of the disease in the European continent. The microbiota (bacteria and viruses) of vector species has been demonstrated to play a significant role in the biology of these organisms, including their infection susceptibility and their capacity to transmit disease-causing agents. Recently, with the improvement of metagenomics techniques, several viruses that naturally infect vector mosquitoes have been identified. The purpose of the present study was to characterize, for the first time, the virome present in *An. atroparvus* from the Ebro Delta and assess its evolution after ten generations in the laboratory. Small RNA sequencing was used to characterize the virome from wild-caught *An. atroparvus* females and from the tenth generation produced under controlled laboratory conditions. Through this approach, we were able to identify viral lineages previously reported in other invertebrates, such as Chaq virus and several Partiti-like viruses. A reduction in the viral composition was observed during the colonization process. The present study contributes to the understanding of the viral diversity of a medically relevant vector species in its natural setting and under confinement, and sets a baseline for further studies to assess the potential implications of these viruses in the transmission of pathogens.

Keywords: *Anopheles atroparvus*; small RNA; Chaq virus; Partiti-like viruses; arthropod; viruses; malaria; Spain



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