Ultrastructure of Zika virus particles in cell cultures

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Zika virus (ZIKV) infected thousands of Brazilian people and spread to other American countries since 2015. The introduction of ZIKV brought a strong impact to public health in Brazil. It is of utmost importance to identify a susceptible cell line which will enable the virus isolation and identification from patient samples, viral mass production and drug and vaccine candidates testing. Beside real time reverse transcriptase polimerase chain reaction (real time RT-PCR) diagnosis detecting the viral genome, virus isolation in cell lines was useful to study the viral particle structure and behavior inside cells. This tool was achieved using transmission electron microscopy (TEM) of ZIKV infected cell lines. In the present study, human blood was obtained from a Brazilian patient during the first days presenting signs of disease, and ZIKV was isolated in the Aedes albopictus mosquito cell line (C6/36 cells). Than the viral suspension was inoculated in Vero and C6/36 cells monolayer and few hours later (24, 48 and 72 hours) were fixed, embedded in polymers, ultrathin cut and analyzed by TEM. The studies of cell monolayers by TEM, showing clusters of viral particles inside cytoplasm. The virus particles diameter averaged 50 nm. Besides the enveloped virus particles, nucleocapsids were observed also indicating viral replication that was confirmed by real time RT-PCR assay. This study proves the susceptibility of the Vero and C6/36 cell lines to ZIKV replication.

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