TITLE: EXPRESSION OF CHIKUNGUNYA VIRUS GLYCOPROTEIN IN INSECT CELLS FOR DIAGNOSIS PURPOSES AND VACCINE DEVELOPMENT

AUTORS: LIMA, A. A.[1]; FERREIRA, M. B.C.[1]; GUIMARÃES, D. K. S.C.[1]; ARAUJO, D. M. P. A.[2]; SILVA, L. A.[3] ; RIBEIRO, B. M.[3] .

INSTITUTION: 1. CENTRO UNIVERSITÁRIO DE BRASÍLIA - UNICEUB - BRASÍLIA - DF - BRASIL; 2. UNIVERSIDADE FEDERAL DE SANTA MARIA - UFSM.; 3. UNIVERSIDADE DE BRASÍLIA - UNB, BRASÍLIA - DF - BRASIL.

ABSTRACT

Aedes mosquitoes are important vectors for emerging diseases caused by arboviruses, such as chikungunya. These viruses' main transmitting species are *Ae. aegypti* and *Ae. albopictus*, which are present in tropical and temperate climatic areas all over the globe. According to the Brazilian Ministry of Health, public health in Brazil has reported an increased the incidence of emerging and reemerging "neglected" tropical diseases caused by arboviruses, such as the CHIKV has increased in Brazil. Responsible agency in Brazil have been showing great concern with all the epidemiological recent data associated with CHIKV, since there is no available specific treatment or vaccine for its immunization public programmes. CHIKV is a mosquito-borne arthritogenic pathogen, classified as an alphavirus of the Togaviridae family, which has an envelope and single strand RNA as nucleic acids. At this study, we analyzed the expression of specific proteins epitopes of CHIKV fused to the polyhedrin protein of the baculovirus *Autographa californica multiple nucleopolyhedrovirus* (AcMNPV), a expression vectors system for expression of recombinant proteins in insect cells whose expression model is already well established in literature. Therefore, recombinant DNA techniques were applied to build a recombinant baculovirus carrying the epitopes of CHIKV genes of interest E2 and NSP3 proteins, which were then checked by DNA sequencing. The recombinant virus was then used to infect insect cells for the expression of the recombinant protein. The recombinant virus (contains E2 and NSP3 genes) was used to infect insect cells (Tn5B) was successful using the bac-to-bac strategy. This same protein was then analyzed by SDS-PAGE and detected by western blot, which confirmed the expression presenting of the expected size of 37 kDa recombinant protein. It is well known that E2 and NSP3 gene regions of CHIKV have already been expressed in previous studies, however, none of them have used the same antigenic regions used repetitions as described in this work, which were showed a highly expressed on in insect cells of proteins with and was shown to be recognized by antiserum raised against CHIKV immunogenic properties. As main results, it was possible to develop a promising strategy, using immunogenic regions of CHIKV, that could an be used to produce a diagnostic kit, as well as a potential subunit vaccine other biotechnological applications.

Keywords: emerging infectious diseases; baculovirus; CHIKV.

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