LETTER TO THE EDITOR

Amplification of genes codifying for VirB9, VirB10, conjugal transfer protein and elongation factor Tu in *Anaplasma marginale* Habana isolate

Amplificación de los genes que codifican para las proteínas VirB9, VirB10, proteína conjugal de transferencia y el factor de elongación -Tu en el aislamiento Habana de *Anaplasma marginale*

Dear editor:

Anaplasma marginale is a tick-transmitted, gram-negative intraerythrocytic bacterium in the class *Alphaproteobacteria* and order *Rickettsiales* causing dramatic weight loss, anemia, and often death during acute infection. Animals that control the infection remain persistently infected for life and serve as reservoirs for infection of native animals.

Recently, over 20 novel, subdominant and immunogenic membrane proteins were identified in the protective outer membrane fraction of *A. marginale*, among which there were several members of the type IV secretion system (T4SS) and the elongation factor Tu (EF-Tu).

Among the novel antigens , recognized by IgG2 from outer membrane vaccinates, type IV secretion system (TFSS) proteins VirB9, VirB10 and conjugal transfer protein (CTP) were included.

Amplification by polimerase chain reaction (PCR) of genes codifying for VirB9, VirB10, CTP and EF-Tu of *Anaplasma marginale* Habana isolates was developed and fragments of 840 bp, 1338 pb, 812 bp and 1118 bp, were respectively obtained.

The identification of these genes and the novel antigenic proteins markedly expands current understanding of the composition of the protective immunogen and provides new candidates for vaccine development.

Belkis Corona[I], D. Obregón[II], Siomara Martínez[I]

[I]Dirección de Microbiología, Centro Nacional de Sanidad Agropecuaria (CENSA), Apartado 10, San José de las Lajas, Mayabeque, Cuba. Correo electrónico: bcorona@censa.edu.cu;
[II]Universidad Agraria de La Habana, Mayabeque, Cuba