

New Evidences Support the Proposition of a New Genus Comprising Arthropod Viruses in the Family *Totiviridae*

Dantas, M.D.A.¹; Cavalcante, G.H.O.¹; Oliveira, R.A.C.¹; Lanza, D.C.F.¹

¹Departamento de Bioquímica, Universidade Federal do Rio Grande do Norte,
Natal, Brazil.

INTRODUCTION: The *Totiviridae* family comprises viruses that infect protozoa, fungi, insects and shrimps, including organisms of medical, zootechnical and agricultural importance. The members of this family presenting double stranded RNA (dsRNA) genomes, organized in two Open Reading Frames (ORFs). ORF1 encodes the capsid protein (CP) and ORF2 encodes an RNA-dependent RNA polymerase (RdRp) that is highly conserved among all family species. Until now, the five arthropod totiviruses described has not an exact taxonomic classification, and some works suggested that these group is related but cannot be included in the *Giardavirus* genus. **OBJECTIVE:** Analyze the structural elements of the genomes of all *Totiviridae* species to determine and characterize the exclusive elements of the arthropod totiviruses. **METHODS:** A screening covering the available genomes of all *Totiviridae* species was realized using Blast and careful visual inspection. Alignments were achieved by MUSCLE and T-Coffee algorithms, and manually adjusted using the interface Jalview v.2.8. 3D protein models were generated using I-TASSER software, and *in silico* secondary structures predictions were performed using FoldIndex and Colis programs. **RESULTS AND DISCUSSION:** The positions of 2A-like polypeptide cleavage sites were identified in all arthropod totiviruses genomes and the limits of the ORF1 coding sequences were determined. Two coding regions previously predicted in infectious myonecrosis virus (IMNV) genome are exclusive in the arthropod totiviruses group. Their respective protein models generated using *ab initio* and threading approaches revealed conserved structures that are possibly related to the formation of viral protrusions and RNA packaging. A putative protein cleavage site upstream the major capsid protein was also identified only in these genomes. **CONCLUSION:** These data clarifying the mechanisms involved in the extracellular transmission and, appoints that the group formed by arthropod totiviruses are sufficient distinctive to be classified as a new genus in the *Totiviridae* family.

Palavras chave: IMNV, dsRNA viruses, 2A-like motifs

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