**Analysis of RNA dependent RNA polymerase regarding to recognition of sub genomic promotor of Bustos virus**

**Abstract**

**Background:** Viral pathogenesis is dependent on the accurate and efficient synthesis of RNA during virus replication. RNA synthesis is directed by the RNA dependent RNA polymerase (RdRp an enzyme which catalyses transcription and replication. The RdRp recognizes and binds to specific non-coding regions just before the transcription initiation site (TSS), the promoter region, to initiate transcription. Since viral RNA synthesis occurs within enzyme complexes associated with modified cellular membrane compartments, the factors responsible for unique RNA recognition are not well understood. For example, although it’s been postulated, that phleboviruses may share segments of their genome, it is yet unknown if the RdRp of one single stranded RNA virus can initiate transcription of the genes of closely related viruses and the associated implications in arbovirus research. In this regard, this study focuses on determining the specificity or otherwise of the RdRp of three Negeviruses. (Bustos virus, Negevirus and Okushirivirus) previously isolated by our research group. This study has so far confirmed the promoter region of the Bustos virus using the luciferase assay. In this assay, the T7 polymerase was used in synthesizing RNA composed of the luciferase gene conjugated to multiple nucleotide sequences around the TSS of ORF 1, ORF 2 or ORF 3 of the Bustos virus genome. The synthesized RNA was conjugated with liposome and used in infecting C6/36 cells. The infected cells were exposed to the Bustos virus followed by the luciferase assay to replication of the synthesized RNA. We are currently determining whether or not exposure to Negevirus or Okushirivirus will result in RNA replication. This process will be repeated for Negevirus and Okushirivirus. This study is expected to provide essential information on the function of the RdRp of single stranded RNA viruses in general and Negeviruses in particular.