Introduction: Yellow Fever Virus (YFV) is the causative agent of the hemorrhagic disease yellow fever, which is widespread in Africa and South America. This disease has a high mortality rate and 900 million people live at risk areas. The disease symptoms include: fever, jaundice and acute thrombocytopenia. This last correlates with frequent hemorrhage, that may cause the patient's death. Platelets are derived from megakaryocytes. During differentiation, one megakaryoblast originates many megakaryocytes and one megakaryocyte originates about 5000-10000 platelets. Thus, alterations on megakaryoblasts have an important role in platelet counts.

Aim: To better clarify the processes in which YFV infection leads to thrombocytopenia, we aim to study the interaction between YFV and megakaryoblasts.

Materials and Methods: We infected MEG-01 cells (Human Megakaryoblastic cell line) with YFV 17DD in a multiplicity of infection 1 and followed infection by plaque assays and fluorescence confocal microscopy.

Results: We confirmed for the first time that YFV was capable of infecting MEG-01 cells, with increasing production of infectious particles until 96 hours post-infection (p.i.), followed by a decrease measures by plaque assay. Trypan blue exclusion, showed increased cell death in YFV-infected cells at 120 hours p.i. as compared to control. We also tried to unravel if apoptosis is triggered during YFV-induced cell death. Using TUNEL assay to detect apoptotic nuclear fragmentation we observed more TUNEL positive cells in YFV-infected cells 120 hours p.i. than in control. We also observed reduction on infected 4N cell population from 144 hours p.i. as compared to control by flow cytometry.

Conclusion: Our data suggest that YFV infects and replicates in MEG-01 cells, and induces cell death from 120 hours p.i. and apoptosis may be involved. Our results also suggest that YFV changes the differentiation profile by reducing the 4N cell population at 144 hours p.i.

Keywords: Yellow Fever, Megakaryocyte, Platelet, Apoptosis

Financial Support: CAPES, CNPq, FAPERJ, INEBEB/CNPq