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Poster Presentation

STABILITY OF WNV VIRION RNA FROM TISSUE CULTURE AND BLOOD DONOR SAMPLES IN STORED BLOOD (SP424)

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Background:

The Procleix[®] WNV Assay, an investigational qualitative nucleic acid test (NAT), was used to compare the stability of RNA in West Nile virus (WNV) from tissue culture (TC) to the stability of RNA in WNV from a pool of 4 donor blood samples (DS) that were NAT positive and antibody (IgG and IgM) negative.

Methods:

Each blood sample was collected into 1 of 4 types of anticoagulant collection tubes: lithium heparin (LiH), Plasma Preparation Tubes (PPT), sodium citrate (NaC), and K₃EDTA (EDTA). Blood from 18 donors was spiked with WNV from TC and blood from 35 donors was spiked with DS at 750 copies/mL. After spiking, 1 aliquot of each sample was stored at -20°C (Day 0). Two additional aliquots were stored for 8 days as follows: 1 day 30°C, 2 days 25°C, and 5 days 8°C. After 8 days of storage, 1 aliquot was subjected to 3 freeze thaw cycles (F/T). On the day of testing, Day 0, Day 8, and F/T aliquots were diluted to 150 copies/mL and tested on the semi-automated Procleix System (eSAS) and Procleix TIGRIS[®] System (TIGRIS). Each aliquot spiked with either TC or DS virus was tested in 6 replicates on eSAS and 2 replicates on TIGRIS at each time-point.

Results:

Reactivity at Day 0 ranged from 99% to 100% across anticoagulant types. For eSAS testing of Day 8 aliquots with TC WNV, reactivities ranged from 65.7% to 99.1% and aliquots with DS WNV ranged from 97.6% to 100%. For TIGRIS testing of Day 8 aliquots with TC WNV, reactivities ranged from 58.3% to 100% and aliquots with DS WNV were 100% reactive. For eSAS testing of F/T aliquots with TC WNV, reactivities ranged from 65.7% to 97.2% and those with DS WNV ranged from 98.6% to 100% reactive. In TIGRIS testing of F/T aliquots with TC WNV, reactivities ranged from 58.3% to 100% and those with DS WNV were 99% or 100% reactive for all anticoagulant types.

Conclusions:

Whereas WNV RNA from DS was stable in all anticoagulants and at all time-points, WNV RNA from TC was found to be less stable in this study. The difference in stability was greatest in LiH tubes, and was observed with NaC and K₃EDTA tubes. PPT showed little difference in stability between WNV from TC and DS. Lower stability of RNA in TC-derived WNV may have implications for the manufacture and use of TC-derived control samples and analytical sensitivity panels.