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Sodium Dodecyl Sulfate to inactivation Caprine Arthritis Encephalitis virus in DMEM

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The Caprine arthritis-encephalitis Virus (CAEV) is a lentivirus of goats with worldwide distribution. CAEV infection can result in synovitis, arthritis and mastitis in adult goats and encephalomyelitis in kid goats. In the majority of industrialized countries, CAE is considered one of the most devastating diseases in dairy goats and it represents an economic problem for goat farming in several European countries. The primary route of CAEV transmission in goats is from dam to kid through ingestion of colostrum/milk containing CAEV. Traditionally, prevention of CAEV transmission for eradication protocols include removal of kids from infected dams prior to consumption of colostrum, and the administration of heat inactivated colostrum/milk or feeding colostrum replacers and segregation. However, heat inactivation of colostrum/milk can be time consuming and not amicable for environments without electricity or heat source. Previously it was demonstrated that the antimicrobial effects of Sodium Dodecyl Sulfate (SDS) could be efficacious in inactivation of Human Immunodeficiency virus (HIV-1) in milk at 0.1 %. Moreover goats fed milk spiked with 1% SDS suffered no ill effects with regard to immune or nutritional status. Therefore we set up to determine if varying percentages of SDS could inactivate a known amount of CAEV spiked in to pooled goat colostrum. DMEM (Dulbecco's Modified Eagle Medium) was spiked with CAEV (10⁵TCID₅₀), then the DMEM was treated with varying amounts of SDS (1% solution) to a final concentration of SDS of 1%, 0.1%, 0.01% and 0.001%. Residual viral particles (TCID₅₀) were enumerated utilizing the virus titration assay on goat synovial membrane cells following removal of SDS utilizing centrifugation. At an SDS concentration of 1% and 0.1% resulted in 99.99% reduction of the virus input titer TCID₅₀, while a final concentration of 0.01% and 0.001% failed to provide significant reduction of the input titer. Preliminary results demonstrate that a concentration of 1% and 0.1% of SDS in DMEM spiked with CAEV results in effective inactivation of CAEV. Future studies include in colostrum assay and *in vivo* efficacy studies.