Effect of collection tubes on synovial fluid bacterial culture.

Pablo Jimenez Rihuete¹, Carolynn Martin¹, Nicolas Villarino², and Luis M. Rubio Martinez¹

¹Sussex Equine Hospital Ltd
²Washington State University

November 7, 2023

Abstract

Introduction Silica sprayed tubes (SST) are often used to transport synovial fluid samples in equine practice. They promote coagulation of the sample. The objective of the study is to evaluate the effect of SST on bacterial culture. Materials & methods The study was divided into two parts: sterile saline (Part A), and synovial fluid (Part B). Four common bacteria associated with equine synovial sepsis were used: Streptococcus pyogenes, Escherichia coli, Staphylococcus aureus, and methicillin-resistant Staphylococcus aureus. Three collection-tubes were used: STT, plain (No-additives) and brain & heart infusion (BHI) broth. Bacteria were cultured in horse blood agar plates for 48h. Outcome variables were negative culture, positive culture, and total number of forming colony units (FCU). Statistical analysis was performed using Mann-Whitney U test, significance was set at p < 0.05. Results The total number of agar plates read was 1557. Total negative cultures were 24/779 on saline and 3/778 on synovial fluid. In broth maximum growth FCU was achieved after 8h for both saline and synovial fluid for all bacteria. Streptococcus pyogenes and Escherichia coli produced a significantly lower number of FCU when in SST compared to plain or broth after 4h. Staphylococcus aureus (ATCC & MRSA) only after 24h. Discussion Silica containing tubes reduced bacterial proliferation, whilst the use of a BHI broth provided the highest bacterial burden in the sample. Use of SST may have a negative effect on bacterial proliferation in samples obtained from clinical cases.

Hosted file