One Health
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ORAL PRESENTATIONS

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0088

Ehrlichia ruminantium detection using efficient high-throughput molecular method

ORAL 28th August Epidemiology & Diagnostics 1 16:45-17:00 Ballroom 2

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In order to improve sample screening capacity and *E. ruminantium* molecular diagnostics, an automated DNA extraction method for *Amblyomma* ticks and a new qPCR targeting the pCS20 gene region were successfully developed. A comparison between the new pCS20 Sol1 qPCR (both Sybergreen and Taqman chemistries (^{TqM})), a previously published pCS20 Cow^{TqM} qPCR and the pCS20 nested PCR was carried out. pCS20 Sol1^{TqM} qPCR was found to be as specific as the nested PCR with limited sample contamination and significant gain of time. Concerning the specificity, it did not detect *Rickettsia*, *Anaplasma* and *Babesia* species nor Panola Mountain *Ehrlichia*, *E. chaffeensis* and *E. canis*. In parallel, a tick 16S^{SG} rDNA qPCR was developed for DNA extraction control, showing a good reproducibility of the automatic extraction. The whole method, including the automated DNA extraction and pCS20 Sol1^{TqM} qPCR, demonstrated to be sensitive, specific and highly reproducible with the same limit of detection as the manual DNA extraction and nested PCR. Finally, it allows for 96 samples to be tested in one day compared to four days for manual DNA extraction and nested PCR. The development of a new automated DNA extraction using a DNA/RNA viral extraction kit and qPCR enhances the accuracy of *E. ruminantium* epidemiological studies, as well as allowing for the improvement of diagnostic capabilities and enhanced turn-over time for heartwater surveillance. In addition, the new method opens new opportunities for large-scale screening of other bacteria and viruses in ticks as well as tick genetic characterization and co-evolution studies.