Proceedings of the
8th International Symposium
on Canine and Feline Reproduction
ISCFR

June 22-25, 2016
Paris, France

In a joint meeting with the XIX EVSSAR Congress

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Biofilm-forming potential of canine uropathogenic *Escherichia coli*
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Uropathogenic *Escherichia coli* (*E. coli*) are the most commonly isolated pathogens from canine pyometra. Recurrence of medically treated pyometra is a well-recognized problem. A possible explanation for this phenomenon is bacterial persistence in the bitch’s reproductive tract after treatment. In recent years, the potential of some equine uterine and canine cystitis *E. coli* isolates to form biofilms has been elucidated [1, 2]. Bacteria in a biofilm state produce a matrix of extracellular polymeric substances that not only facilitates evasion of the host’s immune response but also renders the bacteria resistant to antibiotic treatment. It was hypothesized that uterine *E. coli* strains isolated from canine pyometra cases have i) the potential to form biofilms and would ii) differ in their biofilm-related characteristics from *E. coli* strains isolated from faeces. Biofilm forming potential (BFP) was assessed in 23 uterine and 18 faecal *E. coli* isolates using a crystal violet (CV) assay. Additionally, nine paired samples (uterine and faecal isolates from the same animal) were assessed. Briefly, 96-well plates were filled with 100 μL of 1:100 dilutions of overnight cultures of *E. coli* (inoculated in LB enrichment broth), incubated for 24 h at 37°C in an orbiting incubator, washed, stained with CV and then re-washed. The optical density of each well at 570 nm was used to quantify the amount of any stained biofilm mass in each well. Furthermore, possession of *pgaA*, *pgaC*, *csgA* and *csgD*, which are associated with biofilm formation, were assessed in each strain using PCR assays. Clonal relationships between strains were assessed using Enterobacterial Repetitive Intergenic Consensus (ERIC) PCR. Overall 44% of the uterine *E. coli* strains showed BFP, compared with 37% of the faecal *E. coli* strains, which was not significantly different. Five of the 9 paired samples displayed the same BFP. All screened *E. coli* strains possessed at least two out of the four biofilm-associated genes. Several strains with all four genes present did not demonstrate BFP. None of the strains lacking *csgA* or *csgD* showed BFP, whereas some strains lacking *pgaA* and *pgaC* did. The ERIC fingerprinting revealed that not all paired samples had identical DNA profiles. However, two uterine strains from unrelated bitches did have the same DNA profile. Pulsed field gel electrophoresis will be undertaken on strains that have identical ERIC profiles. In conclusion, canine uropathogenic *E. coli* isolated from pyometra cases possess biofilm-associated genes and have the potential to form biofilms. Further research is warranted to determine if new prevention and treatment regimens in canine pyometra patients need to be advocated.