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DIPARTIMENTO DI SCIENZE VETERINARIE PER LA SALUTE, LA PRODUZIONE ANIMALE E LA SICUREZZA ALIMENTARE

The gut microbiota and mucosal defenses in cats with coronaviruses: a pilot study

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Abstract

Feline Infectious Peritonitis (FIP) develops from a mutation of enteric feline coronaviruses (FCoVs) and an imbalance of the host immune response. The wide polymorphism of FCoVs is associated with the viral replication rate (Licitra *et al*. 2013). Changes in the composition of the gut microbiota may induce quali-quantitative modifications in FCoVs and/or different immune profiles (Weese *et al*., 2015). Little information is available on feline gut microbiota and its relationship with systemic diseases (Ramadan *et al*., 2014).

The aim of this study is to provide preliminary data about the composition of gut microbiota in healthy cats compared with FCoV infected cats (with and without FIP), in order to evaluate whether changes of gut microbiota may induce changes in FCoV, in its genetic polymorphism and in the mucosal immunity.

Screening analyses have been performed on 22 cats:

- Routine hematology and biochemistry on EDTA and serum (included electrophoresis and alpha-1-acid glycoprotein measurement for cats suspected with FIP)
- Nested RT-PCR-3'UTR on frozen faeces
- Effusion evaluation
- FIV/FeLV serology

Due to strict inclusion criteria (cats younger than 2.5 years old, indoor and not treated with antibiotics in the previous two months) and based on the results obtained from the complete set of analyses, only 15 cats - specifically 5 cats for each of the following 3 groups: FIP- affected, healthy negative and positive for FCoV - have been recruited to perform the following analyses on frozen faeces:

- microbiota analysis through NGS of 16S rRNA gene (V4 region) amplicons followed by bioinformatic analysis
- evaluation of secretory IgA (ELISA kit)
- phylogenetic analysis of FCoVs S gene sequences

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The differences among microbial communities will be compared and associated with the presence and genetic polymorphisms of FCoV and mucosal defenses to establish possible significant correlations among these factors and susceptibility to FIP.

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