

Three In-House Tests for the Detection of Faecal Canine Parvoviral Antigen in Comparison with Electron Microscopy and Polymerase Chain Reaction

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Parvovirus infection is a common cause of canine infectious enteritis. It is highly contagious. Therefore, rapid and reliable diagnosis via in-house tests is important in a clinical setting. Different rapid in-house tests are available but their reliability has not been evaluated so far. The aims of this study were to evaluate three different in-house tests and to determine sensitivity and specificity compared to electron microscopy (EM) and polymerase chain reaction (PCR).

Faeces was collected via rectal swabs for in-house testing, EM and PCR from 3 groups of dogs: group A) 50 dogs with acute haemorrhagic diarrhoea with or without leukopenia and with an incomplete vaccination history, group B) 10 dogs with chronic diarrhoea and no suspicion of parvoviral infection and group C) 40 dogs with no history or clinical evidence of gastrointestinal illness that were presented for orthopaedic, neurological or oncological diseases.

The in-house tests (IDEXX Snap Test Parvo; MegaCor FASTest Parvo Strip ; Synbiotics Witness Parvo) were performed as per manufacturer's instructions. EM and PCR were performed as previously published.^{a,b} In group A, 32 of the 50 dogs had positive PCR results, 10 of which were also positive in EM. In group B, only one dog was PCR positive, no dog EM positive. In group C, 5 dogs had positive PCR results, no dog was EM positive. Sensitivity and specificity were calculated separately in comparison to EM and PCR for the Snap test, the FASTest and Witness card. Sensitivity in comparison to EM was 50%, 60% and 40%, respectively. Specificity in comparison to EM was 97.8%, 97.8% and 92.2%, respectively. In comparison to PCR, sensitivity was 18.4%, 15.8% and 26.3%, respectively. Specificity in comparison to PCR was 100%, 100% and 95.2%, respectively.

Whether the positive PCR results in healthy dogs are indeed a parvovirus infection or if this represents only intestinal passage remains unclear. This applies also to the dogs with haemorrhagic diarrhoea as only 27 of the 32 dogs with positive PCR were discharged with the diagnosis of Parvovirus infection, based on laboratory analysis. In conclusion, specificity of all in-house tests used is good to excellent, regardless if compared to EM or PCR; in contrast, sensitivity is poor. Thus, faecal in-house tests for parvovirus antigen detection cannot be recommended to exclude parvoviral enteritis in dogs, but a positive test result is very likely to be reliably true positive and appropriate management (quarantine, therapy) is necessary.

Literature:

A Hirasawa T et al. (1994) Vet Microbiology 41:135-145.

B. Extract of the standard examination directive, Institute for Virologie, JLU Giessen

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