

Anigen Rapid CPV Ag

Comparison of Eight Commercially Available Fecal Point-of-Care Tests for Detection of Canine Parvovirus Antigen

INTRODUCTION

Canine parvovirus (CPV) is a common enteric virus in dogs. It emerged from a feline panleukopenia-like virus in the 1970s. CPV is highly contagious and often causes a fatal disease, especially in puppies. Clinical signs and laboratory findings include diarrhea, vomiting, dehydration, and leukopenia.

PURPOSE

The purpose of this study was to evaluate eight POCT products in comparison with qPCR. The eight POCT products evaluated in this study are Snap Parvo (IDEXX, POCT-A), Fassisi Parvo (Fassisi, POCT-B), Primagnost Parvo H+K (Dechra, POCT-C), FASTest PARVO Card (Megacor, POCT-D), Vetexpert Rapid Test CPV Ag (Vetexpert, POCT-E), **Anigen Rapid CPV Ag Test Kit (Bionote, POCT-F)**, ImmunoRun Parvovirus Antigen Detection Kit (Biogal, POCT-G), and WITNESS Parvo (Zoetis, POCT-H).

MATERIALS AND METHODS

A total of 150 fecal samples from dogs were collected from three groups. The age of the dogs ranged from 4 weeks to 13 years. (H: 50 client-owned healthy dogs, not vaccinated within the last four weeks; S: 50 shelter dogs, healthy, not vaccinated within the last four weeks, P: 50 dogs showing clinical signs of CPV infection)

All samples were tested using real-time polymerase chain reaction (qPCR) and eight different POCT products (A to H). Additionally, a decision threshold (in the number of virus copies/g feces) was calculated for each POCT.

RESULTS

Using qPCR as the gold standard, the sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy of eight different POCT products were evaluated using 150 fecal samples, as shown in **Table 1**. The Anigen Rapid CPV Ag Test kit demonstrated a sensitivity of 32.9% and a specificity of 100%, achieving the second-highest sensitivity while exhibiting excellent overall accuracy.

Furthermore, the decision threshold for the Anigen Rapid CPV Ag was 1.991×10^{12} virus copies/g feces, demonstrating the second-highest sensitivity among the eight different POCT products (**Figure 1**).

CONCLUSION

All POCT products, including the Anigen Rapid CPV Ag, were easy to perform and suitable as screening tests in veterinary practices and clinics. A positive POCT result confirmed CPV infection in unvaccinated dogs, whereas a negative POCT result did not definitively exclude infection due to the low sensitivity of all POCT products. In cases of a negative POCT result, a confirmatory PCR test should be performed in dogs showing clinical signs of CPV infection.

REFERENCE

Walter-Weingärtner, J.; Bergmann, M.; Weber, K.; Truyen, U.; Muresan, C.; Hartmann, K. Comparison of Eight Commercially Available Faecal Point-of-Care Tests for Detection of Canine Parvovirus Antigen. *Viruses* **2021**, *13*, 2080.

Table 1 : Statistic result of 8 different POCT product compared to qPCR

Tests	POCT -A	POCT -B	POCT -C	POCT -D	POCT -E	POCT -F	POCT -G	POCT -H
Tests difficult to interpret %	1.3	2.0	0.0	0.0	2.7	3.3	1.3	0.7
Sensitivity %	31.4	25.7	24.3	22.9	34.3	32.9	30.0	30.0
Specificity %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Positive predictive value %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Negative predictive value %	62.5	60.6	60.2	59.7	63.5	63.0	62.0	62.0
Overall accuracy %	68.0	65.3	64.7	64.0	69.3	68.7	67.3	67.3

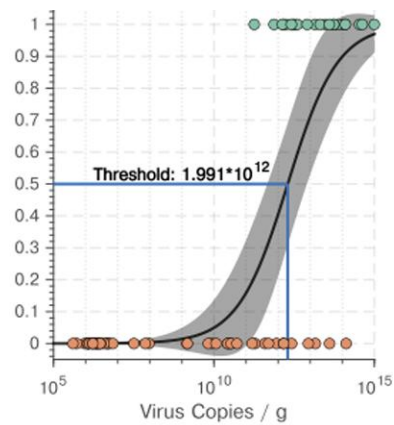


Figure 1. Regression analysis results showing detection probability dependence on virus load with 50% decision thresholds