



CDV+CPV+ICH Ab

Contents

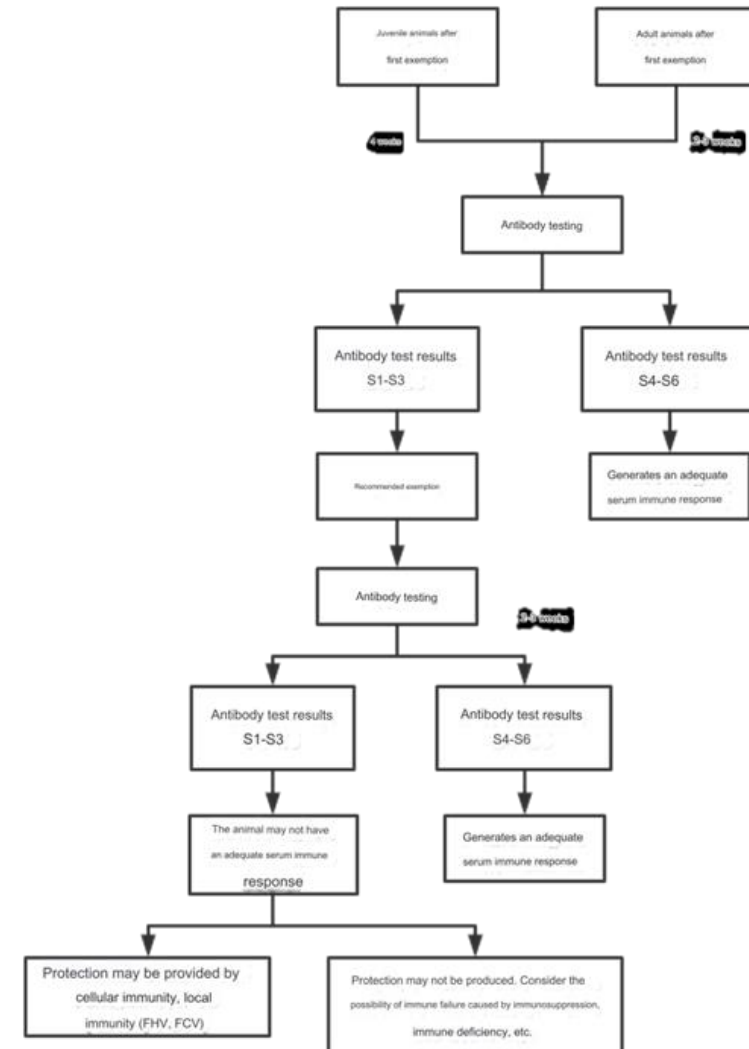
Section	Page
a. What are Antibodies and Canine Triple Antibodies?	3
b. Clinical Application of Pet Antibody Detection	4
c. Clinical Verification	6
d. Causes of Immune Failure	11
e. Conclusion	12

a. What are Antibodies and Canine Triple Antibodies?

- ❑ Antibodies refer to protective proteins produced by the body due to stimulation by antigens. It is not the vaccine itself that fights the virus but the antibodies that the vaccine stimulates the body to produce.
- ❑ Dogs will produce corresponding antibodies after being vaccinated. Only when the antibody level is sufficient (the antibody titre reaches a certain value) can they have the ability to resist the virus.
- ❑ Canine triple antibodies are canine distemper virus/canine parvovirus/canine infectious hepatitis virus antibodies (CDV/CPV/ICH Ab).

b. Immunisation Process

After an animal is immunised for the first time, whether it has protection against core vaccine infectious diseases and whether the protection is sufficient, needs to be judged by antibody testing to avoid immune failure. Canine distemper, canine parvovirus, and canine infectious hepatitis antibody levels have a strong positive correlation with protective power. Antibody levels S1-S3 are recommended for supplementary immunisation and antibody levels S4-S6 have produced sufficient serum immune responses; it is necessary to observe whether there is any correlation in the near future with clinical symptoms of infectious diseases. WSAVA guidelines now recommend dogs are vaccinated every 3 years.



b. Reference Range of Canine Triple Test

Item Name	Detection Range	Test Level	Signification
CDV Ab	<35U	S1	Not immunised or low in immunity
	35-50U	S2	Low antibody titre
	50-100U	S3	Medium antibody titre
	100-200U	S4	Relatively high antibody titre
	200-500U	S5	High antibody titre
	500-1000U	S6	Extremely high antibody titre
CPV Ab	<30U	S1	Not immunised or low in immunity
	30-60U	S2	Low antibody titre
	60-100U	S3	Medium antibody titre
	100-200U	S4	Relatively high antibody titre
	200-500U	S5	High antibody titre
	500-1000U	S6	Extremely high antibody titre
ICH Ab	<30U	S1	Not immunised or low in immunity
	30-60U	S2	Low antibody titre
	60-100U	S3	Medium antibody titre
	100-200U	S4	Relatively high antibody titre
	200-500U	S5	High antibody titre
	500-1000U	S6	Extremely high antibody titre

c. Clinical Verification

The following samples are all the antibody test results 21 days after the dog's first immunisation with the three-shot vaccine.

Number	Biogal	InSight V-IA (U)	Number	Biogal	InSight V-IA (U)
	CDV Ab	CDV Ab		CDV Ab	CDV Ab
1	S2(Weak pos.)	56.32(Positive)	26	S0(Negative)	20.94(Negative)
2	S3(Positive)	194.84(Positive)	27	S0(Negative)	16.77(Negative)
3	S3.5(Positive)	178.75(Positive)	28	S0(Negative)	15.97(Negative)
4	S1(Positive)	54.58(Positive)	29	S2(Weak pos.)	68.37(Positive)
5	S3(Positive)	24.54(Negative)	30	S1(Positive)	85.64(Positive)
6	S3(Positive)	158.67(Positive)	31	S1(Positive)	74.84(Positive)
7	S3(Positive)	184.4(Positive)	32	S0(Negative)	17.43(Negative)
8	S3.5(Positive)	165.64(Positive)	33	S2(Weak pos.)	76.58(Positive)
9	S1.5(Positive)	52.64(Positive)	34	S3(Positive)	155.62(Positive)
10	S1(Positive)	66.21(Positive)	35	S3(Positive)	165.75(Positive)
11	S0(Negative)	13.27(Negative)	36	S3(Positive)	131.67(Positive)
12	S0(Negative)	13.95(Negative)	37	S2(Weak pos.)	61.94(Positive)
13	S0(Negative)	14.66(Negative)	38	S1(Positive)	69.62(Positive)
14	S0(Negative)	13.59(Negative)	39	S3(Positive)	162.56(Positive)
15	S2(Weak pos.)	59.61(Positive)	40	S4(Positive)	112.59(Positive)
16	S2(Weak pos.)	68.27(Positive)	41	S5(High pos.)	512.55(High pos.)
17	S2(Weak pos.)	77.84(Positive)	42	S5(High pos.)	521.45(High pos.)
18	S2(Weak pos.)	69.42(Positive)	43	S3(Positive)	184.97(Positive)
19	S3(Positive)	109.94(Positive)	44	S6(High pos.)	558.55(High pos.)
20	S0(Negative)	12.74(Negative)	45	S3.5(Positive)	299.25(Positive)
21	S0(Negative)	11.68(Negative)	46	S3(Positive)	245.55(Positive)
22	S1(Positive)	120.48(Positive)	47	S1(Positive)	94.14(Positive)
23	S0(Negative)	12.57(Negative)	48	S5(High pos.)	505.45(High pos.)
24	S0(Negative)	15.64(Negative)	49	S6(High pos.)	500.14(High pos.)
25	S0(Negative)	18.76(Negative)	50	S4(Positive)	156.23(Positive)

CDV Ab		Biogal		
		Positive	Negative	Total
InSight V-IA	Positive	36	0	36
	Negative	1	13	14
	Total	37	13	50

Positive coincidence rate	97%
Negative coincidence rate	100%
The total coincidence rate	98%

c. Clinical Verification

The following samples are all the antibody test results 21 days after the dog's first immunisation with the three-shot vaccine.

Number	Biogal	InSight V-IA (U)	Number	Biogal	InSight V-IA (U)
	CPV Ab	CPV Ab		CPV Ab	CPV Ab
1	S5(High pos.)	512.79(High pos.)	26	S3(Positive)	165.79(Positive)
2	S4(Positive)	110.22(Positive)	27	S4(Positive)	132.16(Positive)
3	S4(Positive)	100.05(Positive)	28	S3(Positive)	18.43(Negative)
4	S4.5(Positive)	196.52(Positive)	29	S4(Positive)	131.07(Positive)
5	S4(Positive)	118.18(Positive)	30	S4(Positive)	126.87(Positive)
6	S4(Positive)	104.55(Positive)	31	S4.5(Positive)	194.28(Positive)
7	S4.5(Positive)	121.42(Positive)	32	S3(Positive)	109.87(Positive)
8	S5(High pos.)	514.53(High pos.)	33	S4(Positive)	107.48(Positive)
9	S4.5(Positive)	163.83(Positive)	34	S3(Positive)	177.78(Positive)
10	S0(Negative)	5.98(Negative)	35	S0(Negative)	12.03(Negative)
11	S0(Negative)	6.47(Negative)	36	S4.5(Positive)	158.6(Positive)
12	S3(Positive)	134.84(Positive)	37	S5(High pos.)	511.65(High pos.)
13	S0(Negative)	6.84(Negative)	38	S0(Negative)	10.9(Negative)
14	S0(Negative)	10.65(Negative)	39	S2(Weak pos.)	67.44(Positive)
15	S3(Positive)	115.71(Positive)	40	S4(Positive)	115.56(Positive)
16	S4(Positive)	145.63(Positive)	41	S4(Positive)	125.64(Positive)
17	S2(Weak pos.)	56.11(Positive)	42	S5(High pos.)	556.14(High pos.)
18	S2(Weak pos.)	69.26(Positive)	43	S3(Positive)	116.55(Positive)
19	S4(Positive)	100.09(Positive)	44	S6(High pos.)	505.12(High pos.)
20	S3(Positive)	118.11(Positive)	45	S3.5(Positive)	127.45(Positive)
21	S4(Positive)	142.75(Positive)	46	S3(Positive)	178.48(Positive)
22	S3(Positive)	20.98(Negative)	47	S3(Positive)	158.17(Positive)
23	S4(Positive)	100.83(Positive)	48	S5(High pos.)	538.14(High pos.)
24	S4(Positive)	105.46(Positive)	49	S5(High pos.)	554.55(High pos.)
25	S4(Positive)	114.19(Positive)	50	S4.5(Positive)	194.41(Positive)

CPV Ab		Biogal		
		Positive	Negative	Total
InSight V-IA	Positive	42	0	42
	Negative	2	6	8
	Total	44	6	50

Positive coincidence rate	95%
Negative coincidence rate	100%
The total coincidence rate	96%

c. Clinical Verification

The following samples are all the antibody test results 21 days after the dog's first immunisation with the three-shot vaccine.

Number	Biogal	InSight V-IA (U)	Number	Biogal	InSight V-IA (U)
	ICH Ab	ICH Ab		ICH Ab	ICH Ab
1	S4(Positive)	107.29(Positive)	26	S2(Weak pos.)	62.55(Positive)
2	S4.5(Positive)	140.7(Positive)	27	S4(Positive)	154.27(Positive)
3	S3.5(Positive)	101.33(Positive)	28	S3.5(Positive)	117.36(Positive)
4	S4.5(Positive)	188.18(Positive)	29	S2(Weak pos.)	21.95(Negative)
5	S4(Positive)	135.09(Positive)	30	S4(Positive)	129.73(Positive)
6	S4.5(Positive)	185.65(Positive)	31	S3(Positive)	105.34(Positive)
7	S4.5(Positive)	191.59(Positive)	32	S2(Weak pos.)	78.87(Positive)
8	S4.5(Positive)	182.88(Positive)	33	S2(Weak pos.)	87.2(Positive)
9	S4.5(Positive)	161.69(Positive)	34	S4.5(Positive)	167.64(Positive)
10	S1(Positive)	65.35(Positive)	35	S4(Positive)	131.85(Positive)
11	S1(Positive)	75.11(Positive)	36	S4.5(Positive)	187.34(Positive)
12	S0(Negative)	10.95(Negative)	37	S5(High pos.)	221.26(Positive)
13	S0(Negative)	12.73(Negative)	38	S4(Positive)	19.95(Negative)
14	S0(Negative)	18.55(Negative)	39	S4.5(Positive)	174.21(Positive)
15	S1(Positive)	74.06(Positive)	40	S4(Positive)	140.45(Positive)
16	S2(Weak pos.)	81.99(Positive)	41	S3(Positive)	129.12(Positive)
17	S2(Weak pos.)	70.59(Positive)	42	S5(High pos.)	250.16(Positive)
18	S2(Weak pos.)	65.82(Positive)	43	S4.5(Positive)	190.55(Positive)
19	S4(Positive)	105.76(Positive)	44	S6(High pos.)	512.01(High pos.)
20	S1(Positive)	61.48(Positive)	45	S4(Positive)	66.74(Positive)
21	S0(Negative)	16.63(Negative)	46	S4.5(Positive)	154.45(Positive)
22	S3(Positive)	114.21(Positive)	47	S4(Positive)	158.85(Positive)
23	S4(Positive)	127.83(Positive)	48	S5(High pos.)	541.45(High pos.)
24	S4(Positive)	135.21(Positive)	49	S5.5(High pos.)	651.15(High pos.)
25	S0(Negative)	21.92(Negative)	50	S5(High pos.)	551.26(High pos.)

ICH Ab		Biogal		
		Positive	Negative	Total
InSight V-IA	Positive	43	0	43
	Negative	2	5	7
	Total	45	5	50

Positive coincidence rate	95%
Negative coincidence rate	100%
The total coincidence rate	96%

c. Uses and Benefits of Canine Antibody Testing

- Perform an antibody test after vaccination to see if the vaccine was injected successfully and determine if the vaccine is revaccinated in time.
 - Antibody testing after vaccination must be done 15 days after the last injection of the vaccine. It should not be performed any sooner as the vaccine has a process of stimulating immunity, not immunity after injection.
- Antibody testing before vaccination is equivalent to a physical examination and can detect infectious diseases in advance because antibodies can detect infectious diseases earlier than antigens.
- At the same time, the content of maternal antibodies in puppies can be detected to determine the injection time of the first vaccine and improve the success rate of vaccination.
- Monitors serological status.
- Reduces vaccination failure.
- Prevents over/under vaccination.
- New WSAVA guidelines recommend a titre test once a year rather than routinely giving dogs a booster.

c. Inconsistent Test Results

Why is the antibody detection still low after another injection of the vaccine?

- ❑ First, immunity failure may have occurred. The reasons for the immunity failure need to be considered and whether vaccines from other manufacturers need to be tried. Secondly, it is possible that the animal is a non-responder or is immunodeficient, and cannot be protected by vaccination.

Why has the patient been diagnosed with an infectious disease when the antibody test level was high?

- ❑ Antibody testing cannot distinguish whether the detected antibodies are due to vaccination or natural infection. If the high-level antibodies detected are produced by natural infection, the patient may have been infected with the corresponding infectious disease before the antibody detection, but the corresponding clinical symptoms hadn't appeared yet (subclinical infection or early infection). If the high level of antibodies detected is caused by vaccination, consider whether there has been high-risk behaviour recently, because even if the infection rate of successful immunity decreases, the patient may still be infected with infectious diseases, and the prognosis is generally good.

d. Causes of Immune Failure

There are many reasons for immune failure (generally low levels of all three antibodies):

- ❑ Genetic Factors – The strength of the immune response is controlled by genetics to a certain extent
- ❑ Nutritional Status – The body's nutritional status, such as vitamins, trace elements and amino acid deficiencies, can cause a weakened immune response
- ❑ Environmental Factors – Hygiene, temperature, humidity and other stress reactions will affect immune response
- ❑ Impact of Disease – Parasites, viruses (leukaemia, AIDS), bacteria and other diseases can cause immune suppression
- ❑ Vaccine – Quality, storage and transportation, use (immunisation procedures, vaccination methods, etc.), safety (virulence is stronger)
- ❑ Serotype of Pathogen – Some pathogens have multiple serotypes and weak cross-protection (leptospira, calicivirus, etc.)
- ❑ Impact of Maternal Antibodies – The attenuated vaccine has a greater impact
- ❑ Interaction Between Pathogenic Microorganisms – Polyvalent vaccines often interfere with each other (the receptors for virus infection are similar and have a competitive effect, and the immune response produced after virus infection affects the replication of another virus)

e. Conclusion

Vaccination ≠ 100% production of protective antibodies!

- ❑ Veterinarians often encounter this situation in clinical practice. Some dogs and cats may still be infected with the infectious disease if their antibody titres are relatively low after being vaccinated against an infectious disease. This is generally called immune failure.
- ❑ Antibody levels higher than the reference value indicate successful immunity. If the antibody level is lower than the reference value, it means insufficient immunity. Timely vaccination is needed to increase the antibody titre.

References

- [1] Rao Jiangquan, Li Zhonglian. Diagnosis and treatment of mixed infection of canine distemper and canine parvovirus [J]. Today's Animal Husbandry and Veterinary Medicine, 2023, 39(09): 104-106.
- [2] Gong Chengyan, Chen Jie, Pan Hongjun, et al. Evaluation of immune efficacy of triple inactivated vaccine against rabies, canine distemper and canine parvovirus [J]. Chinese Journal of Animal Infectious Diseases, 2023, 31(03): 82-90. DOI:10.19958/j.cnki.cn31-2031/s.2023.03.001.
- [3] Mao Qianqian. Development of a canine parvovirus IgG antibody detection kit [D]. Nanyang Normal University, 2016.
- [4] Zhou Ling. Establishment of canine parvovirus antigen and antibody detection methods [D]. Jilin Agricultural University, 2019.
- [5] Wang Siying, Yang Wanlian, Sun Yanzheng, et al. Diagnosis and treatment cases of canine infectious hepatitis [J]. Chinese Veterinary Journal, 2017, 53(08): 68-70+53.

References

- [6] Bohm, M. , Thompson, H. , Weir, A. , *et al.* (2004) Serum antibody titres to canine parvovirus, adenovirus and distemper virus in dogs in the UK which had not been vaccinated for at least three years. *Veterinary Record* 154, 457-463
- [7] Bragg, R. F. , Duffy, A. L. , DeCecco, F. A. , *et al.* (2012) Clinical evaluation of a single dose of immune plasma for treatment of canine parvovirus infection. *Journal of the American Veterinary Medical Association* 240, 700-704
- [8] Day, M. J. , Horzinek, M. , Schultz, R. D. (2007) Guidelines for the vaccination of dogs and cats. *Journal of Small Animal Practice* 48, 528-541
- [9] Day, M. J. , Horzinek, M. , Schultz, R. D. (2010) Guidelines for the vaccination of dogs and cats. *Journal of Small Animal Practice* 51, 338-356
- [10] Day, M. J. & Schultz, R. D. (2014) *Vaccination. In: Veterinary Immunology: Principles and Practice.* Taylor and Francis, Boca Raton: p 224
- [11] Levy, J. K. , Crawford, P. C. , Kusuhara, H. , *et al.* (2008) Differentiation of feline immunodeficiency virus vaccination, infection, or vaccination and infection in cats. *Journal of Veterinary Internal Medicine* 22, 330-334
- [12] Hoare, C. M. , DeBouck, P. , Wiseman, A. (1997) Immunogenicity of a low-passage, high-titer modified live canine parvovirus vaccine in pups with maternally derived antibodies. *Vaccine* 15, 273-275

References

- [13] Mitchell, S. A. , Zwiijnenberg, R. J. , Huang, J. , *et al.* (2012) Duration of serological response to canine parvovirus-type 2, canine distemper virus, canine adenovirus-type 1 and canine parainfluenza virus in client-owned dogs in Australia. *Australian Veterinary Journal* 90, 468-473
- [14] Moore, G. E. , Guptill, L. F. , Ward, M. P. , *et al.* (2005) Adverse events diagnosed within three days of vaccine administration in dogs. *Journal of the American Veterinary Medical Association* 227, 1102-1108
- [15] Pollock, R. V. & Carmichael, L. E. (1982a) Maternally derived immunity to canine parvovirus infection: transfer, decline, and interference with vaccination. *Journal of the American Veterinary Medical Association* 180, 37-42
- [16] Schultz, R. D. (2006) Duration of immunity for canine and feline vaccines: a review. *Veterinary Microbiology* 117, 75-79
- [17] Schultz, R. D. (2006) Duration of immunity for canine and feline vaccines: a review. *Veterinary Microbiology* 117, 75-79
- [18] Welborn, L. V. , DeVries, J. G. , Ford, R. , *et al.* (2011) 2011 AAHA canine vaccination guidelines. *Journal of the American Animal Hospital Association* 47, 1-42

InSight V-IA[®]

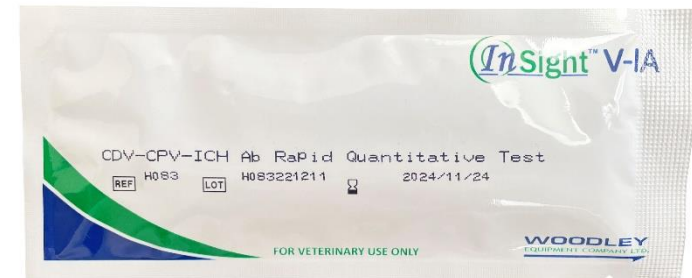
CDV-CPV-ICH Ab Rapid Quantitative Test

Woodley have developed a rapid, accurate, reliable and highly sensitive detection method for CDV/CPV/ICH in dogs.

The InSight V-IA CDV-CPV-ICH Ab Rapid Quantitative Test is a fluorescence immunoassay used with the InSight V-IA Veterinary Immunoassay Analyser for the quantitative determination of CDV, CPV & ICH Ab titre concentration in canine serum or plasma.

The test is used to detect antibody titre levels in dogs.

It can be stored at room temperature.





Thank You