Hytest

Veterinary

Antibodies and antigens

Introduction

Since 1994, we have developed and supplied immunological reagents for the IVD industry and research community. Today we provide products for several clinical and research areas, and are proud to be a leading provider of reagents for troponin I immunoassays as well as for certain infectious diseases.

For veterinary diagnostics, our antibody offering ranges from detecting infectious disease causing viruses to cardiac markers and hormones. With ongoing research and development, we will be expanding our veterinary product offering in the future in order to better serve the needs of the veterinary diagnostics field.

Our monoclonal antibodies are purified and provided in buffer solution. This minimizes lot-to-lot variation and reduces time needed for assay validation with each new lot.

Hytest monoclonal antibodies (MAbs) work with different types of immunoassays. We have usually several MAbs available for each specific biomarker or antigen. Please note that the performance of each MAb may vary depending on the assay platform.

More information and recommendations for capture-detection pairs (when available) can be found from our web site www.hytest.fi.

You may also contact our Sales Team directly at hytest@hytest.fi.

Canine

Canine C-reactive protein (cCRP)

Canine C-reactive protein (cCRP) is a major acute phase protein in dogs. Its concentration increases both rapidly and significantly during systemic inflammation and subsequently decreases quickly following the elimination of the source of inflammation. Several studies support the view that cCRP is a valuable diagnostic marker for the detection of the acute phase response in dogs. Its concentration has been shown to increase rapidly in various disorders including viral and bacterial infections, sepsis and pyometra, as well as in surgical trauma.

Measuring cCRP from serum can be used in routine canine medicine and it is a convenient marker for detecting sub-clinical infections as well as for monitoring the efficacy of treatment.

We offer monoclonal antibodies and a glycosylated recombinant canine CRP that can be used for the development of quantitative cCRP immunoassays. In addition, we also offer polyclonal antibodies specific to canine CRP.

Detection of cCRP in serum samples

Various antibody combinations enable quantitative detection of endogenous cCRP from dog serum. Figure 2 provides an example of measuring cCRP concentrations by using cCRP34 and cCRP1 as the capture and detection antibodies respectively. Serum samples from thirty-four dogs with an inflammation and from eight healthy dogs were measured. The results demonstrated that the concentration of cCRP in the group of animals with an inflammation was considerably higher as compared to that of healthy dogs.adiponectin (Figure 3) and can be used as a calibrator in all types of adiponectin immunoassays.

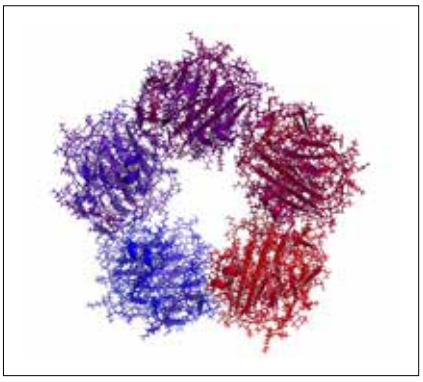


Figure 1.
CRP is a pentamer that is composed of five identical subunits that form a ring structure. In contrast to human CRP, canine CRP is partially glycosylated.

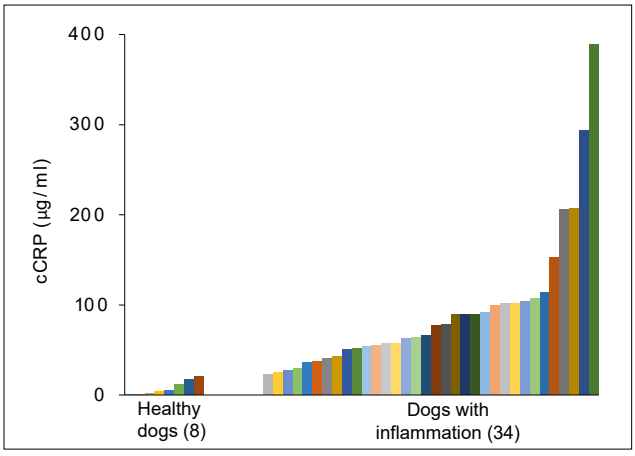


Figure 2.
cCRP levels in serum of healthy dogs or dogs with systemic inflammation. cCRP34 and Eu^{3+}-labeled cCRP1 were used as the capture and detection MAbs respectively.

Recombinant cCRP is partially glycosylated

In contrast to human CRP, canine CRP is a glycoprotein. It has been estimated that two of the five subunits are glycosylated. Our recombinant cCRP is produced in a eukaryotic system that allows for the glycosylation of the protein. In SDS-PAGE the denatured subunits migrate as two separate bands, in a similar manner to the endogenous cCRP. The glycosylation of the recombinant protein was confirmed by glycoprotein specific staining (see Figure 3).

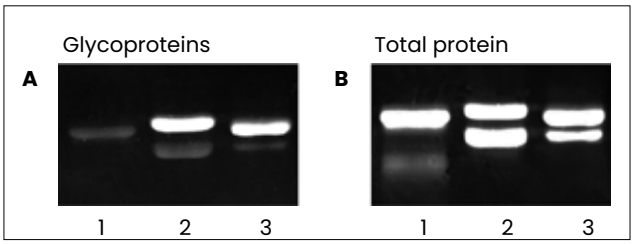


Figure 3.
Staining of the carbohydrate moieties of the native and recombinant cCRP. 3 µg of native cCRP (lane 2) and recombinant cCRP (lane 3) were run in a 12.5% SDS-PAGE under reducing conditions. The gel was first stained with Pro-Q emerald 300 to reveal glycoproteins (A) and then with SYPRO® Ruby for the visualization of total proteins (B). 3 µg of human CRP (Cat.# 8C72) was included as a reference (lane 1).

Recombinant cCRP compared to native cCRP in a sandwich immunoassay

The titration curves of the recombinant and native cCRP were identical when compared in our in-house DELFIA immunoassay (see Figure 4). We used cCRP11 and cCRP1 in this assay as the capture and detection antibodies respectively.

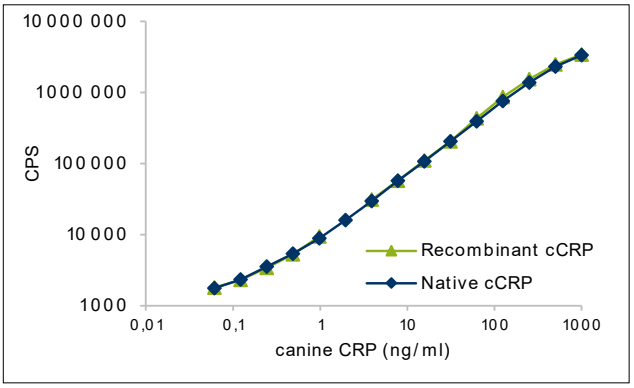


Figure 4.
Calibration curves of the native and recombinant cCRP in a sandwich fluoroimmunoassay. cCRP11 and Eu^{3+}-labeled cCRP1 were used as the capture and detection antibodies respectively.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4CC5*	Monoclonal mouse anti-canine C-reactive protein (cCRP)	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

POLYCLONAL ANTIBODIES

Cat.#	Product	Host	Tested applications
PRP4	Polyclonal anti-Canine C-reactive protein (cCRP)	Goat	Enzyme immunoassays

ANTIGEN

Cat.#	Product	Source	Purity
8CC5	Canine C-reactive protein (cCRP)	Recombinant	>95%

Canine serum amyloid A (SAA)

Serum amyloid A (SAA) is a major acute phase protein found in many species including dogs, cats and horses. Similarly to CRP, SAA can be used as a sensitive marker of systemic inflammation in dogs. The change in SAA concentration at the onset of inflammation is rapid and significant. Furthermore, due to its short half-life, the concentration of SAA decreases rapidly after inflammation has subsided.

SAA levels have been shown to be elevated in dogs with systemic inflammation of various origins, such as acute trauma, pyometra, snake bite, or surgery. SAA measurements could be used for the diagnosis of subclinical inflammation, the monitoring of treatment efficacy in dogs with infections or inflammatory conditions, as well as the monitoring of animals undergoing surgery.

We offer several monoclonal antibodies that can be used for the development of a quantitative canine SAA immunoassay. Furthermore, we offer a recombinant canine SAA protein.

Detection of SAA in canine serum samples

Several antibody combinations allow for the quantitative detection of SAA from dog serum. An example of this using the MAb combination VSA38–VSA43 is shown in Figure 5.

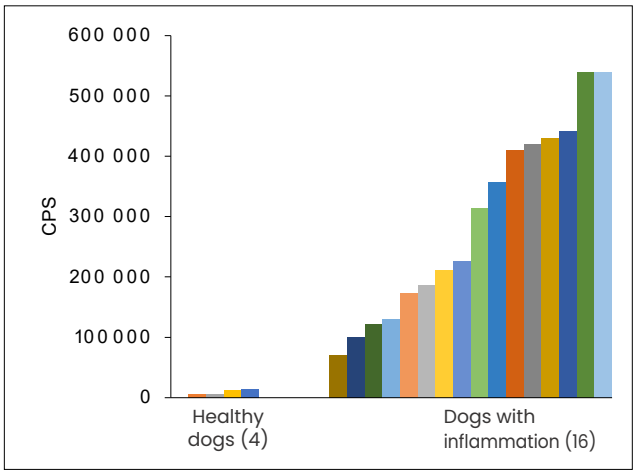


Figure 5.
Comparison of SAA immunoreactivity in serum samples obtained from healthy and diseased dogs. The signals obtained from serum of diseased dogs were considerably higher than those from healthy dogs. Samples were diluted 50-fold (for healthy dogs) or 2000-fold (for diseased dogs). The MAb combination VSA38-VSA43 was used in this experiment.

Detection of SAA in cats and horses and developing a single assay for dogs, cats and horses

Our antibodies against animal SAA proteins were selected from among over fifty monoclonal antibodies that have been raised against SAA. All of the selected antibodies recognize canine SAA, while most antibodies recognize equine and feline SAA with high sensitivity. Based on our results, the antibodies allow for the development of a single immunoassay for the detection of canine, feline and equine SAA.

For further information, please see:
• Pages 12–13 of this brochure
• Our Animal SAA TechNotes

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4VS4*	Monoclonal mouse anti-serum amyloid A (SAA), animal	Enzyme immunoassays Western blotting
4SA11*	Monoclonal mouse anti-serum amyloid A (SAA)	Enzyme immunoassays Western blotting

* Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

ANTIGEN

Cat.#	Product	Source	Purity
8CS4	Recombinant canine serum amyloid A (SAA)	Recombinant	>95%

Canine NT-proBNP

NT-proBNP levels are elevated in dogs with mitral valve disease and dilated cardiomyopathy. NT-proBNP measurement helps to separate congestive heart failure from primary respiratory tract disease as an underlying cause of respiratory problems in dogs. A growing number of studies have shown that NT-proBNP can be successfully used to diagnose cardiac disease in dogs in order to assess the severity of cardiac disease in dogs and to evaluate the prognosis of dogs with heart disease.

We offer monoclonal antibodies that are specific to different regions of canine NT-proBNP. Antibodies bind with high affinity to recombinant NT-proBNP that is expressed in *E. coli* (Cat.# 8CNT9) as well as to native NT-proBNP from canine plasma samples. The recombinant canine NT-proBNP can be used as a calibrator in immunoassays.

Apparent stability of NT-proBNP in samples

One of the main challenges for the reliable measurement of the concentration of NT-proBNP in samples is the degradation of the protein over time. The apparent stability of the analyte can be improved by using antibodies that are specific to a stable part of the protein.

Our preliminary data indicates that with our recommended antibody pairs, plasma could be stored at +4°C for at least 72 hours with little to no loss in the immunoreactivity of endogenous canine NT-proBNP. Whilst the signal decreased when stored at room temperature, the decrease was not dramatic during the first 24 hours (see Figure 6).

Choosing antibodies that are less sensitive to the degradation of NT-proBNP might allow for less stringent and complicated instructions for sample handling and storage. Such a robust assay would greatly improve the clinical utility of canine NT-proBNP assay.

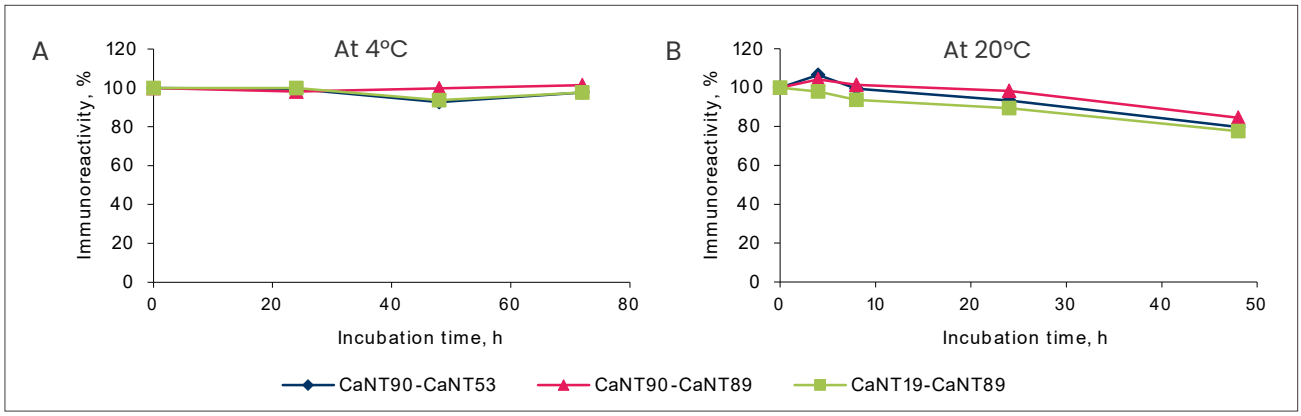


Figure 6.
Stability of endogenous canine NT-proBNP in pooled EDTA-plasma incubated at +4°C (A) or at +20°C (B).
The immunoreactivity of NT-proBNP was measured at different time points with three different antibody pairs. At +4°C, NT-proBNP remained stable for at least 72 hours (95–105% of the initial immunoreactivity was detected in samples). When plasma was incubated at +20°C, 89–98% of the initial immunoreactivity was detected in samples after 24 hours.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4CNT5*	Monoclonal mouse anti-canine N-terminal proBNP (NT-proBNP)	Enzyme immunoassays Western blotting

* Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.
Note. These products and some applications in which these products may be used could be covered by patents issued and applicable in certain countries. As the purchase of these products does not include a license to perform any patented application, users of these products may be required to obtain a patent license, depending on the specific application and country in which the product is used.

ANTIGEN

Cat.#	Product	Source	Purity
8CNT9	Canine NT-proBNP with tag, recombinant	*E. coli*	>95%

Canine parvovirus (CPV)

Canine parvovirus type 2 (CPV-2) causes severe and highly contagious disease in dogs. The symptoms include lethargy, loss of appetite, fever, vomiting, and severe (often bloody) diarrhea.

Parvoviral infection must be considered as a possible diagnosis in any young dog with vomiting and/or diarrhea. Puppies and dogs usually become infected when they ingest a virus that has been passed in the feces of an infected dog. Vomiting and diarrhea can cause rapid dehydration, and most deaths from parvovirus occur within 48 to 72 hours following onset of clinical signs.

The disease can be prevented by vaccination and CPV-2 vaccine is recommended as a core vaccine that should be given to all dogs.

Monoclonal antibodies and recombinant CPV VP2

We provide two MAbs and a recombinant CPV-2 capsid protein VP2. The MAbs have been tested e.g. in ELISA and Western blotting and they can be used to detect CPV from clinical samples. These MAbs also cross-react with the Mink enteritis virus and Feline panleukopenia (FPLV).

The recombinant VP2 is expressed in a eukaryotic cell line. It consists of 584 amino acid residues and it does not contain any affinity tags. The protein is able to assemble into virus-like particles (VLPs, see Figure 7). The protein could be used as a calibrator in immunoassays for the detection of CPV or as an antigen in CPV antibody titer analyses.

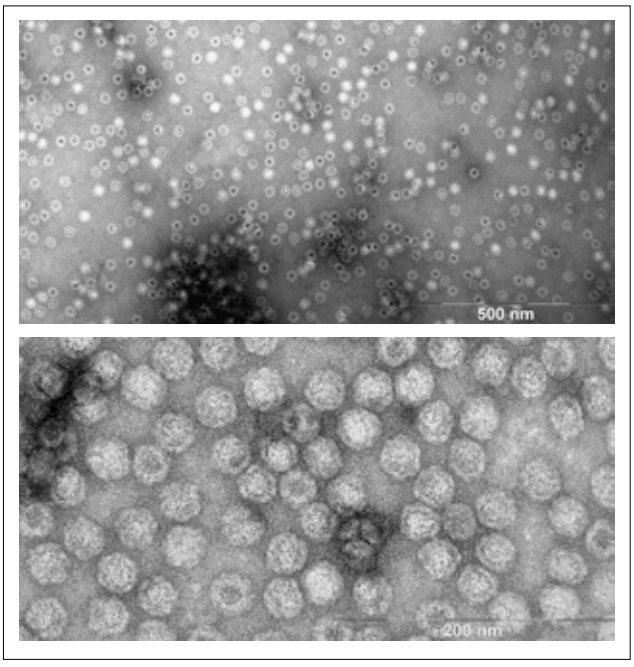


Figure 7.
Electron micrographs of CPV virus like particles produced by expression of the recombinant VP2 protein.

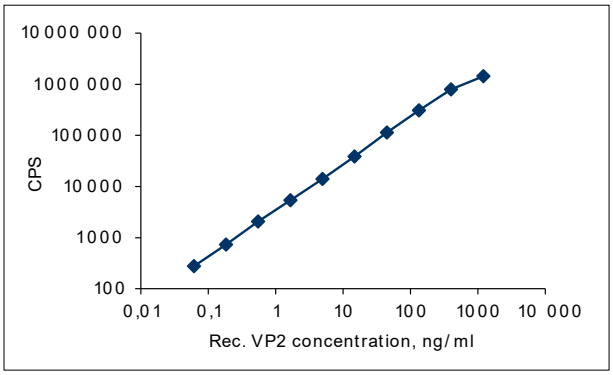


Figure 8.
The antigen is recognized by our anti-CPV antibodies (Cat. # 3PV16).
Calibration curve for the 5G7-8H7 immunoassay using recombinant CPV capsid protein VP2 as the antigen.

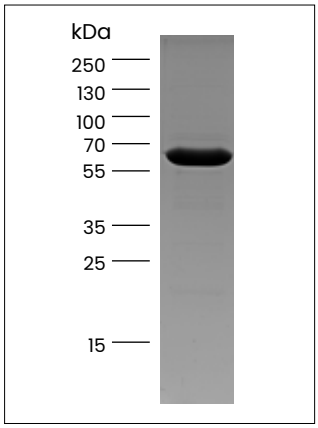


Figure 9.
SDS-PAGE of recombinant VP2.
Based on SDS-PAGE, the purity of the recombinant protein exceeds 90 %.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3PV16*	Monoclonal mouse anti-canine parvovirus (CPV)	Enzyme immunoassays Western blotting

*Note: A few MAbs available under one catalogue number. Please see www.hytest.fi for more information.

ANTIGEN

Cat.#	Product	Source	Purity
8CP2	Recombinant canine parvovirus (CPV) VP2	Recombinant	> 90%

Canine distemper virus (CDV)

Canine distemper is a highly contagious, multi-systemic viral disease that affects the respiratory, gastrointestinal and central nervous systems. Distemper has a very high mortality rate. The disease is caused by the canine distemper virus (CDV) and is found in puppies and dogs that have not been vaccinated. Infected dogs shed the virus through bodily secretions and excretions, especially respiratory secretions. CDV is also fairly common in wildlife. The primary mode of transmission is airborne viral particles that dogs breathe in. CDV is also fairly common in wildlife.

Our anti-CDV MAbs have been tested e.g. in ELISA and they can be used to detect native CDV from clinical samples such as blood, saliva, tears and feces

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3CD10*	Monoclonal mouse anti-canine distemper virus (CDV)	Enzyme immunoassays

*Note: A few MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Rabies virus

Rabies is a zoonotic disease caused by a virus found in the saliva of infected animals. It is transmitted to pets and humans by bites, or possibly by an open cut. It infects the central nervous system, causing encephalopathy and ultimately death. Rabies causes over 50,000 human deaths annually in the world.

Our anti-rabies virus MAbs have been tested e.g. in ELISA and most of them are suitable for immunofluorescence studies. Several MAbs display neutralizing activity.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3R7*	Monoclonal mouse anti-rabies virus	Enzyme immunoassays Immunofluorescence Immunocytochemistry Western blotting

*Note: Several MAbs are available under one catalogue number. Please see www.hytest.fi for more information.

Canine thyroid stimulating hormone (TSH)

Hypothyroidsim is one of the most common canine endocrine disorders. It is a condition that is characterized by the deficiency of active T4 and T3 hormones which are produced by the thyroid gland.

In addition to presence of various clinical signs, a low concentration of circulating total T4 suggests hypothyroidism. In order to reliably evaluate canine thyroid function, the results of the total T4 measurement should be combined with measurements of free T4 and TSH. Dogs with primary hypothyroidism would be expected to have low total T4 and free T4 levels and high TSH concentrations.

Monoclonal antibodies and recombinant canine TSH

We provide three monoclonal antibodies that enable the development of a specific and sensitive canine TSH immunoassay. We also provide a recombinant canine TSH produced in a mammalian cell line with no tags.

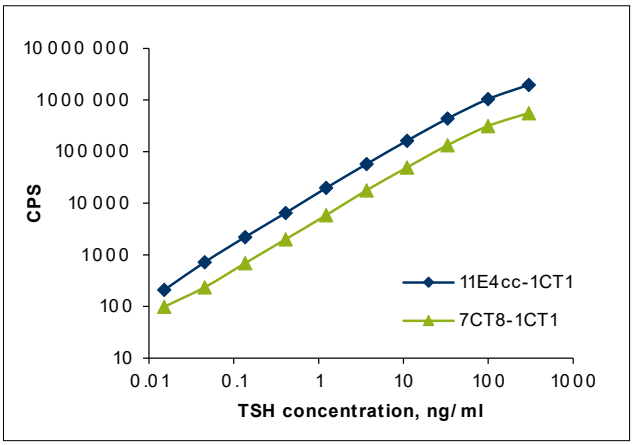


Figure 10.
Calibration curves for immunoassays 11E4cc-1CT1 and 7CT8-1CT1. The immunoassays were performed in 96-well microplates coated with streptavidin (PerkinElmer). The capture antibodies 11E4cc and 7CT8 were conjugated with biotin. The detection antibody 1CT1 was conjugated with stable Eu^{3+} chelate. Recombinant canine TSH was used as a calibrator.

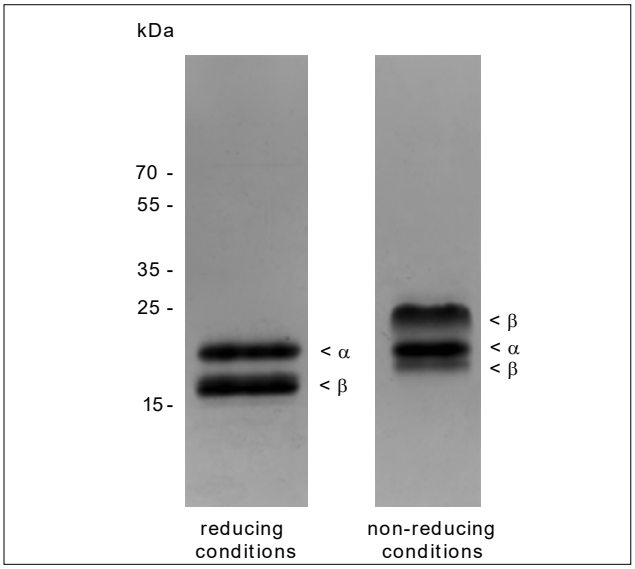


Figure 11.
SDS gel electrophoresis of recombinant canine TSH. 4 µg of purified TSH was analyzed by SDS gel electrophoresis in 10-20% gradient gel in reducing (lane 1) and non-reducing (lane 2) conditions. Protein bands were visualized by Coomassie Blue (R-250) gel staining.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
2TS11cc 2TS11*	Monoclonal mouse anti-thyroid stimulating hormone (TSH)	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Only a subset of them are specific to canine TSH. Please see www.hytest.fi for more information.

ANTIGEN

Cat.#	Product	Source	Purity
8CTS5	Recombinant canine thyroid-stimulating hormone (TSH)	Recombinant	> 90%

Canine thyroglobulin (Tg)

In dogs, primary hypothyroidism is the most common form of hypothyroidism. It results from the destruction of the thyroid gland following lymphocytic thyroiditis or idiopathic atrophy. In approximately one-half of the cases the destruction of the thyroid tissue results from lymphocytic (autoimmune) thyroiditis. Typical to this condition is the body developing antibodies that are specific to its own thyroid components — usually to thyroglobulin.

The disease develops slowly and it takes several years before the thyroid tissue is so damaged that it is no longer able to produce enough hormones. When the symptoms appear, autoantibodies may no longer be present in blood simply because there is neither any tissue nor thyroglobulin left that would maintain the inflammatory reaction. Therefore, it is suggested that the presence of thyroglobulin autoantibodies (TgAA) should be checked in younger dogs and this should be done before the symptoms appear.

There is strong evidence that some breeds are more susceptible to this disease than others. Furthermore, several studies support the view of a genetic background for lymphocytic thyroiditis. Consequently, screening for TgAA as part of the breeding strategy could help in terms of decreasing the prevalence of lymphocytic thyroiditis.

We offer native purified canine thyroglobulin that can be used as an antigen in immunoassays for the determination of thyroglobulin autoantibodies in dog serum.

ANTIGEN

Cat.#	Product	Source	Purity
8CT8	Canine thyroglobulin	Canine thyroid gland	> 90%

Feline

Feline serum amyloid A (SAA)

SAA is one of the major acute phase proteins in cats. Its levels in blood have been shown to increase in cats with systemic inflammation and SAA has been suggested to be a suitable marker for diagnosing inflammatory reactions in cats. Examples of its use include the detection of subclinical inflammations and monitoring the efficacy of treatment. In addition, it has been suggested that feline SAA might be a predictive marker of prognosis of diseased cats.

We offer several monoclonal antibodies that can be used for the development of a quantitative feline SAA immunoassay. We also offer a recombinant feline SAA protein.

Detection of feline SAA in plasma samples

Four prototype immunoassays were tested with EDTA samples of healthy cats and cats with inflammation included by surgery. Elevated SAA levels were observed in cats with inflammation (see Figure 12).

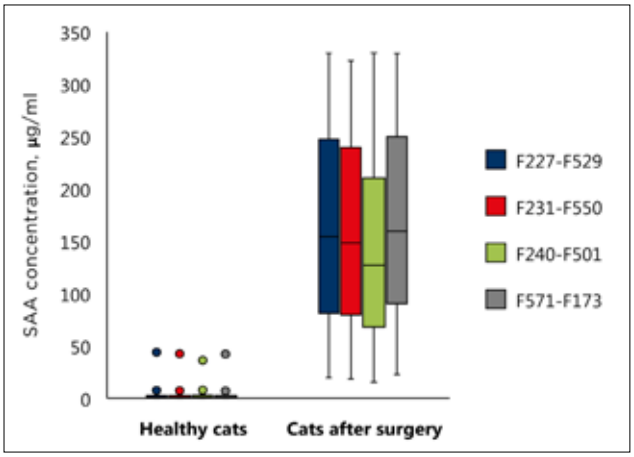


Figure 12.
SAA concentrations in plasma samples of healthy cats (n=22) and cats after surgery (n=21). Plasma samples from healthy cats were diluted in the range of 100-2500-fold before testing. Plasma samples from cats after surgery were diluted 8000-fold before testing.

Detection of SAA in dogs and horses and developing a single assay for dogs, cats and horses

Our antibodies against animal SAA proteins were selected from among over fifty monoclonal antibodies that have been raised against SAA. All of the selected antibodies recognize canine SAA, while most antibodies recognize equine and feline SAA with high sensitivity. Based on our results, the antibodies allow for the development of a single immunoassay for the detection of canine, feline and equine SAA.

For further information, please see:
• Pages 6 and 13 of this brochure
• Our Animal SAA TechNotes

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4VS4*	Monoclonal mouse anti-serum amyloid A (SAA), animal	Enzyme immunoassays Western blotting
4SA11*	Monoclonal mouse anti-serum amyloid A (SAA)	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

ANTIGENS

Cat.#	Product	Source	Purity
8FS5	Recombinant feline serum amyloid A (SAA)	Recombinant	>95%
8FT7	Recombinant feline serum amyloid A (SAA), non-tagged	Recombinant	>95%

Equine

Equine serum amyloid A (SAA)

SAA is the only major acute phase protein in horses. Elevated levels of SAA in horse serum indicate that the horse might be suffering from an inflammation even if the clinical signs are missing. Furthermore, due to the short half-life of SAA protein, monitoring this marker could be useful in terms of obtaining almost real-time information on the healing process and the efficacy of treatment.

We offer several monoclonal antibodies that can be used for the development of a quantitative equine SAA immunoassay. We also offer a recombinant equine SAA protein.

Detecting SAA from horse serum samples

Different antibody pair combinations could be used for the development of a quantitative equine SAA immunoassay. An example of this using the MAb combination VSA38–VSA43 is shown in Figure 13.

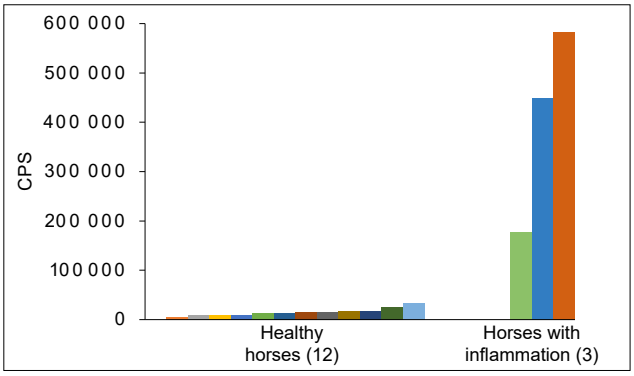


Figure 13.
Comparison of SAA immunoreactivity in serum samples obtained from healthy and diseased horses. The signals obtained from serum of diseased horses were considerably higher than those of healthy horses. Samples were diluted 50-fold (for healthy horses) or 2000-fold (for diseased horses). The MAb combination VSA38-VSA43 was used in this experiment.

Detection of SAA in dogs and cats and developing a single assay for dogs, cats and horses

Our antibodies against animal SAA proteins were selected from among over fifty monoclonal antibodies that have been raised against SAA. All of the selected antibodies recognize canine SAA, while most antibodies recognize equine and feline SAA with high sensitivity. Based on our results, the antibodies allow for the development of a single immunoassay for the detection of canine, feline and equine SAA.

For further information, please see:
- Pages 6 and 12 of this brochure
- Our Animal SAA TechNotes

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4VS4*	Monoclonal mouse anti-serum amyloid A (SAA), animal	Enzyme immunoassays Western blotting
4SA11*	Monoclonal mouse anti-serum amyloid A (SAA)	Enzyme immunoassays Western blotting

*Note: Several MAbs are available under one catalogue number. Please see www.hytest.fi for more information.

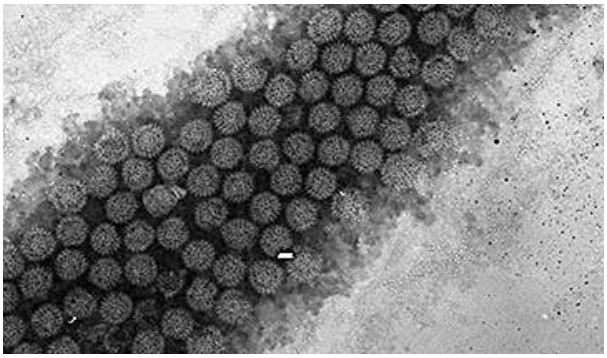
ANTIGEN

Cat.#	Product	Source	Purity
8ES6	Recombinant equine serum amyloid A (SAA)	Recombinant	>95%

Bovine

Rotavirus

Rotaviruses are the most common cause of diarrhea in young calves. Symptoms include watery diarrhea and reluctance to drink or eat. This can cause severe dehydration and even death. Rotavirus Group A causes significant economic loss to the dairy and beef cattle industry. The virus spreads primarily by fecaloral transmission.



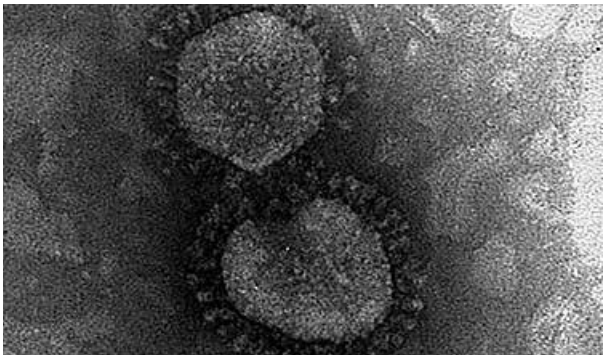
Our anti-rotavirus MAbs have been tested e.g. in ELISA. One antibody cross-reacts with monkey rotavirus (SA-11), porcine rotavirus (PP) and with numerous human rotaviruses.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3R10cc	Monoclonal mouse anti-rotavirus A	Enzyme immunoassays Western blotting Immunohistochemistry

Bovine coronavirus

Bovine coronavirus infects both calves and adult cows. Clinical signs can include diarrhea, weight loss and dehydration, as well as symptoms in the upper respiratory tract. In adult cows, the symptoms can be subclinical. In young calves, diarrhea can rapidly result in dehydration and acidosis.



Our anti-coronavirus MAbs have been tested e.g. in ELISA.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3BCV1	Monoclonal mouse anti-bovine corona virus peplomer	Enzyme immunoassays Haemagglutinin inhibition test

Foot-and-mouth disease (FMD)

Foot-and-mouth disease (FMD) is an acute infectious disease caused by an extremely contagious virus. There are seven different known serotypes, but serotypes O and A cause most of the outbreaks in the world. The disease causes severe illness in cattle and results in huge economic losses for the livestock industry.

Our anti-FMD MAbs have been tested e.g. in ELISA and can be used in analysis of field samples.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3FM2	Monoclonal mouse anti-Foot-and-mouth disease (FMDV)	Enzyme immunoassays Immunodiffusion

Avian

Newcastle disease virus (NDV)

Newcastle disease is a highly contagious and sometimes fatal illness that affects many domestic and wild bird species. Newcastle disease virus (NDV) affects the respiratory, nervous and digestive systems. Clinical signs are extremely variable depending on the strain of virus, the species and age of the bird, concurrent diseases, and pre-existing immunity. NDV is so virulent that many birds die without showing any clinical signs. Transmission occurs by exposure to fecal and other excretions from infected birds, or through contact with contaminated food, water, equipment and clothing. Exposure of humans to infected birds (for example in poultry processing plants) can cause mild conjunctivitis and influenza-like symptoms.

Our anti-NDV MAbs can be used e.g. in ELISA or Western blotting. Some MAbs are suitable for immunofluorescence and immunohistochemistry assays.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3ND5	Monoclonal mouse anti-Newcastle disease virus (NDV)	Enzyme immunoassays Western blotting Haemagglutinin inhibition test Immunohistochemistry

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Infectious bronchitis virus (IBV)

Avian infectious bronchitis is a highly contagious respiratory disease in chickens. Its economic impact on the poultry industry is significant. Infectious bronchitis virus (IBV) belongs to Group 3 of the Coronavirus genus of the Coronaviridae family. Like other coronaviruses, the IBV virus particle contains three major protein structures: the spike, membrane, and the nucleocapsid (N-protein).

Our anti-IBV MAb is specific to the N-protein. This antibody has been tested to recognize the nucleocapsid protein in Western blotting. It could be used as the capture antibody in sandwich immunoassays with polyclonal antibodies used for detection. In addition, it may be utilized as the capture antibody in whole virus based serology assays to increase sensitivity and specificity in case of low purity of the antigen.

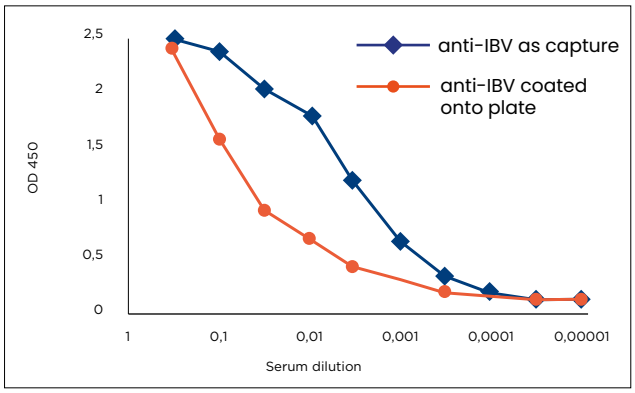


Figure 14.
Titration curve of a serum sample from an IBV-immunized chicken. Sandwich type immunoassay where the anti-IBV is used as a capture antibody provides better sensitivity as compared to direct surface adsorption of the virus. In both assays the semipurified virus was diluted to about 1 µg/ml of total protein.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3BN1	Monoclonal mouse anti-infectious bronchitis virus (IBV)	Enzyme immunoassays Western blotting

Avian influenza A, subtypes H5 and H7

Of the 16 different avian influenza A virus hemagglutinin (HA) subtypes, the H5 and H7 subtypes are classified as highly pathogenic avian influenza. They are extremely infectious and result in high mortality rates in bird flocks. In humans, infections caused by H5 and H7 vary from mild to highly severe and fatal illnesses.

Our anti-Influenza A virus MAbs have been tested in ELISA.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3H5N*	Monoclonal mouse anti-influenza A haemagglutinin H5	Enzyme immunoassays Haemagglutinin inhibition test Dot blot
3HI7*	Monoclonal mouse anti-influenza A haemagglutinin H7	Enzyme immunoassays Haemagglutinin inhibition test

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Additional products

Adenovirus

Adenoviruses are a large group (more than 80 types) of agents which induce respiratory infections in humans, animals and birds.

Our anti-adenovirus MAbs react with the Hexon antigen of the adenovirus that infects several animal species including dogs, cows, monkeys and rats. The MAbs have been tested to work in ELISA and other immunoassays.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
3AV13*	Monoclonal mouse anti-adenovirus hexon	Enzyme immunoassays Immunodiffusion Immunohistochemistry

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Cortisol

Cortisol is a steroid hormone that is produced by the adrenal glands. It is released in response to stress and a low level of blood glucocorticoid. Cortisol helps to maintain constant blood sugar levels, it reduces inflammation and it helps the body manage stress.

Our anti-cortisol MAbs have been tested in ELISA.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
2C2cc 2C2*	Monoclonal mouse anti-cortisol	Enzyme immunoassays

*Note: A few MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Cardiac troponin I (cTnI)

Cardiac troponin I (cTnI) is considered to be the most important biomarker for diagnosing acute myocardial infarction. In animals, an elevated level of cTnI can also indicate, for example, heart attack or myocarditis. In addition, the effects of new therapeutic or surgery technologies on cardiac myocyte viability could be studied by cTnI measurements from animal blood.

Several of our anti-human cTnI MAbs could be used for immunodetection of cTnI in different animal species.

Table 1.
Cross-reactivity of anti-cTnI MAbs with antigens from different animal species in Western blotting.

MAb	Human	Bovine	Porcine	Goat	Canine	Rabbit	Cat	Rat	Mouse	Fish
4C2	++	++	++	++	++	++	+	++	++	-
19C7	++	++	+	++	+	++	++	++	+	++
8E10	+	+	+	+	+	+	+	-	-	-
16A11	+	+	+	+	+	+	+	-	-	-
C5	++	++	++	++	++	++	++	++	++	++
MF4	+	+	+	+	+	-	+	+	+	-
22B11	++	-	+	-	-	-	-	-	-	-
247	++	++	++	++	++	+	++	++	++	N/A
10F4	++	++	++	++	++	++	++	++	+	N/A

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4T21cc* 4T21*	Monoclonal mouse anti-troponin I	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Cardiac troponin T (cTnT)

Cardiac troponin T (cTnT) is used as a reliable marker for myocardial cell death in humans. Studies indicate that cTnT could also be used in animals as a cardiac biomarker. In addition, cTnT is used e.g. in preclinical studies of new drugs and in experimental cardiology on animals to demonstrate the effect of artificial intervention on the viability of myocardial cells.

Our cTnT MAbs are recommended for research purposes.

Table 2.
Cross-reactivity of anti-cTnT MAbs with antigens from different animal species in Western blotting.

MAb	Human	Bovine	Porcine	Goat	Canine	Rabbit	Cat	Rat	Mouse	Fish
7F4	++	N/A	++	N/A	-	-	-	N/A	N/A	-
7G7	+	+	-	-	-	-	-	-	-	-
2F3	++	+	++	++	+	+	+	+	+	+
1A11	++	++	++	++	+	+	+	+	++	+
1F11	++	++	++	++	+	+	+	+	+	+

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4T19cc 4T19*	Monoclonal mouse anti-troponin T	Western blotting, Affinity purification Immunohistochemistry Immunoprecipitation

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Retinol-binding protein 4 (RBP4)

Retinol-binding protein 4 (RBP4) belongs to the lipocalin family of proteins and functions as a carrier protein for vitamin A in serum. RBP4 is indicated to play an important role in insulin resistance and metabolic syndrome. Recently, several studies have suggested that RBP4 levels in blood may also be associated with cardiovascular diseases as well as metabolic syndrome.

Our anti-RBP4 antibodies have been shown to detect canine RBP4 from urine.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4RB2*	Monoclonal mouse anti-human retinol-binding protein 4 (RBP4)	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Cystatin C

In humans, cystatin C is a well-described serum biomarker of renal failure that is not dependent on age, sex or lean muscle mass. In addition, it is becoming acknowledged as a marker of elevated risk of death from cardiovascular complications.
A subset of our anti-cystatin C monoclonal antibodies cross-react with dog, cat and horse serum and can be used in sandwich type immunoassays to detect cystatin C from these species.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
4CC1*	Monoclonal mouse anti-cystatin C	Enzyme immunoassays Western blotting

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Progesterone

Progesterone is a steroid hormone produced by ovaries, adrenal glands and placenta. It has a role in the menstrual cycle and pregnancy.

Our anti-progesterone MAbs have been tested in ELISA.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
2P2*	Monoclonal mouse anti-progesterone	Enzyme immunoassays

*Note: Several MAbs available under one catalogue number. Please see www.hytest.fi for more information.

Thyroxine (T4)

Thyroxine (T4) is a tyrosine-based hormone produced by the thyroid gland. T4 concentration in blood gives information on thyroid function.

Our anti-T4 MAbs have been tested in ELISA.

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
2T6*	Monoclonal mouse anti-thyroxine	Enzyme immunoassays Radioimmunoassays

*Note: A few MAbs available under one catalogue number. Please see www.hytest.fi for more information.

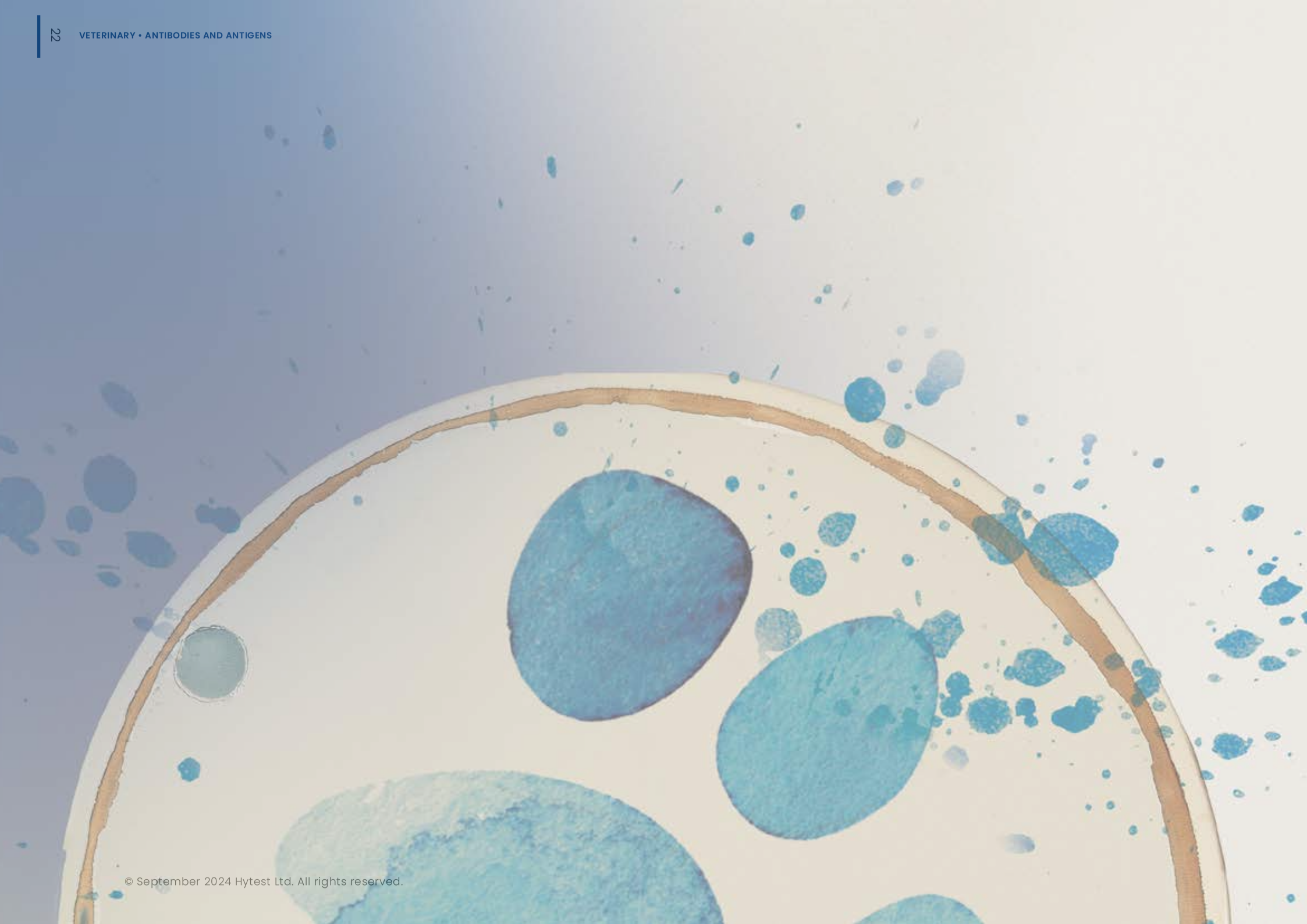
Triiodothyronine (T3)

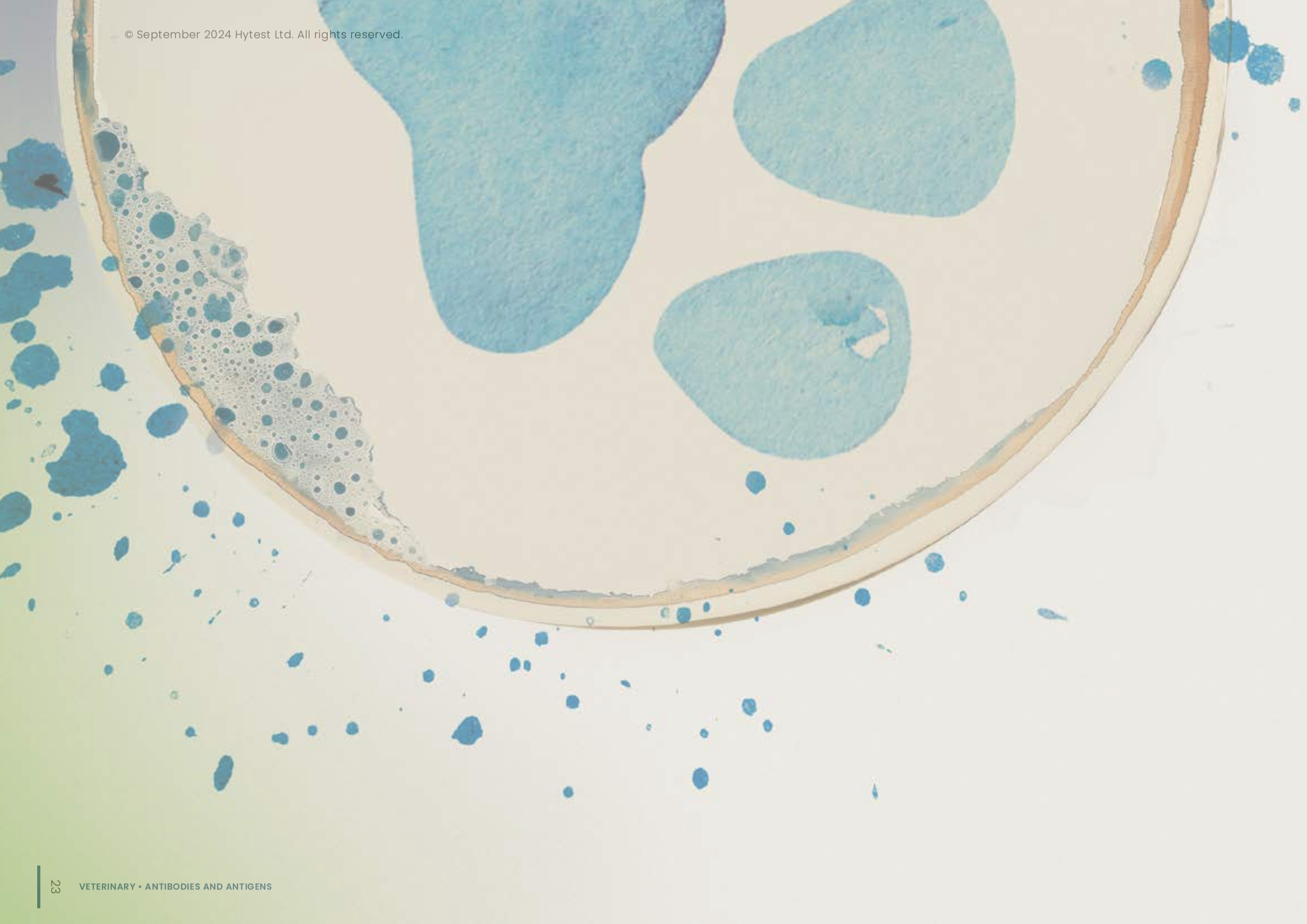
Triiodothyronine (T3) is a tyrosine-based hormone produced by thyroid gland. T3 concentration in blood gives information on thyroid function.

Our anti-T3 MAb has been tested in ELISA .

MONOCLONAL ANTIBODIES

Cat.#	Product	Tested applications
2T7	Monoclonal mouse anti-triiodothyronine	Enzyme immunoassays Radioimmunoassays





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Scientific excellence for IVD

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