



CHW Ag/Anaplasma Ab/E.canis Ab/LSH Ab Test Kit

Canine Heartworm Ag/Anaplasma Ab/*Ehrlichia canis* Ab/Leishmania Ab test kit

AI39



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CHW Ag/Anaplasma Ab/E.canis Ab/LSH Ab Test Kit

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Catalog number	AI39
Summary	Detection of Canine <i>Dirofilaria immitis</i> antigens, Anaplasma antibodies, <i>E. canis</i> antibodies and LSH antibodies within 10 minutes
Principle	One-step immunochromatographic assay
Detection Targets	CHW Ag : <i>Dirofilaria immitis</i> antigens Anaplasma Ab : Anaplasma antibodies E. canis Ab : <i>E. canis</i> antibodies LSH Ab : <i>L. chagasi</i> , <i>L. infantum</i> , and <i>L. donovani</i> antibodies
Sample	Canine Whole Blood, Plasma or Serum
Reading time	10 minutes

Test kit	Sensitivity	Specificity	Detection Limit
CHW Ag	99.0 % vs. PCR	100.0 % vs. PCR	Heartworm Ag 0.1ng/ml
Anaplasma Ab	100.0 % vs. IFA	100.0 % vs. IFA	IFA Titer 1/16
E. canis Ab	97.7 % vs. IFA	100.0 % vs. IFA	IFA Titer 1/16
LSH Ab	100.0 % vs. IFA	100.0 % vs. IFA	IFA Titer 1/32

Quantity	1 box (kit) = 10 devices (Individual packing)
Contents	Test kit, Buffer bottle, and Disposable dropper
Storage	Room Temperature (at 2 ~ 30°C)
Expiration	24 months after manufacturing
Caution	Use within 10 minutes after opening Use appropriate amount of sample (0.01 ml of a dropper) Use after 15~30 minutes at RT if they are stored under cold circumstances Consider the test results as invalid after 10 minutes

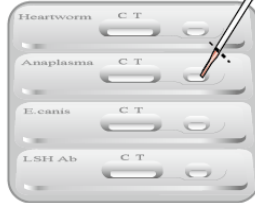
Instruction for CHW Ag/Anaplasma Ab/E.canis Ab/LSH Ab test



Sample fill line (black line) : 1 drop (10 μ l)

1

Sampling & loading



1 drop of sample
 ●● Do not overload the sample !!

2

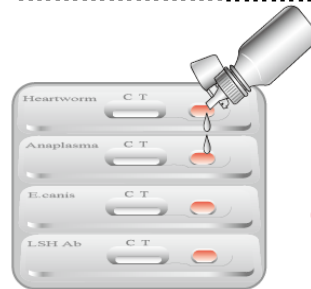
Absorption



Wait for complete absorption

3

Buffer addition



2 drops of buffer
 ●● after complete absorption

4

Reading

00:05:00~00:10:00



+



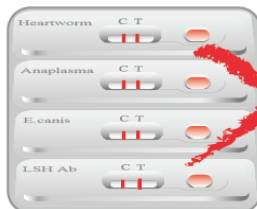
-

Read the result 10 min

5

Discard

00:10:00



Discard the used device
 In valid result after 10 min

Canine Heartworm

Infection route of canine heartworm



A dog having canine heartworm, microfilariae, in blood is bitten by mosquito. Then, the mosquito carries the heartworm's larva in the blood from the dog.

2~3 weeks later, the larva grows able to infect other dogs.

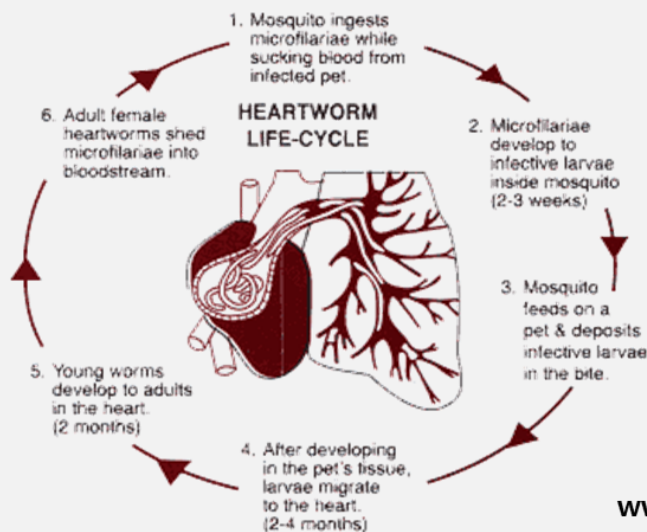


When the mosquito bites another dog, the infectious larva is transmitted into the dog. After penetrating the skin and growing in the tissues for several months, the heartworm enters the heart of the dog.



When in the heart, the heartworm grows 14 inches in length, doing severe harm to the heart, lung, and other critical organs and, in the end, causing the death if not treated properly.

www.avma.org



www.speedwayvet.com

Canine Heartworm

Information

Adult heartworms grow several inches in length and reside in the pulmonary arteries where it can obtain enough nutrients. The heartworms inside the arteries trigger inflammation and form hematoma. The heart, then, should pump more often than before as the heartworms increase in number, blocking the arteries.

When infection deteriorates (over 25 heartworms exist in a 18 kg dog), the heartworms move into the right atrium, blocking the flow of blood.

When the number of heartworms reaches more than 50, they could occupy atriums and ventricles.

When infected with over 100 heartworms in the right part of the heart, the dog loses the function of the heart and eventually dies. This fatal phenomenon is called as "Caval Syndrom."

Unlike other parasites, the heartworms lay small insects called as microfilaria. Microfilaria in mosquito moves into a dog when the mosquito sucks blood from the dog. The heartworms that can survive in the host for 2 years die if they do not move into another host within that period. The parasites residing in a pregnant dog can infect its embryo.

Early examination of heartworms is very important in eliminating them. Heartworms go through several steps such as L1, L2, L3 including the transmission stage through mosquito to become adult heartworms.



Canine Heartworm

Heartworms in mosquito

Microfilaria in mosquito grows into L2 and L3 parasites able to infect dogs in several weeks. The growth depends on the weather. Favorable temperature for the parasite is over 13.9°C.

When an infected mosquito bites a dog, microfilaria of L3 penetrates into its skin. In the skin, the microfilaria grows into L4 for 1~2 weeks. After residing in the skin for 3 months, L4 develops into L5, which moves into blood.

L5 as the form of adult heartworm enters the heart and pulmonary arteries where 5~7 months later heartworms lay insects.



Canine Heartworm

Diagnosis

The disease history and clinical data of a sick dog, and various diagnostic methods should be considered in diagnosing the dog. For example, X-ray, ultrasound scan, blood examination, detection of microfilaria and, in worst case, autopsy are required.

Serum examination;

Detection of antibodies or antigens in the blood

Antigen examination;

This focuses on detecting the specific antigens of female adult heartworms. The examination is carried out in the hospital and its success rate is high. Test kits available on the market are designed to detect 7~8 month-old adult heartworms so that heartworms younger than 5 months are hard to detect.

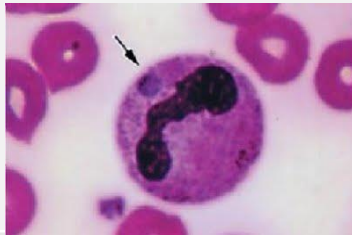
Treatment

The infection of heartworms is successfully cured in most cases. To eliminate all heartworms, the use of medicines is the best way. Early detection of the heartworms raises the success rate of the treatment. However, in the late stage of infection, complication can occur, making the treatment more difficult.

Anaplasma Phagocytophilum

Information

The bacterium *Anaplasma phagocytophilum* (formerly *Ehrlichia phagocytophila*) may cause infection in several animal species including human. The disease in domestic ruminants is also called tick-borne fever (TBF), and has been known for at least 200 years. Bacteria of the family Anaplasmataceae are gram-negative, nonmotile, coccoid to ellipsoid organisms, varying in size from 0.2 to 2.0µm diameter. They are obligate aerobes, lacking a glycolytic pathway, and all are obligate intracellular parasites. All species in the genus *Anaplasma* inhabit membrane-lined vacuoles in immature or mature hematopoietic cells of mammalian host. *Anaplasma phagocytophilum* infects neutrophils and the term granulocytotropic refers to infected neutrophils. Rarely organisms, have been found in eosinophils.



Anaplasma phagocytophilum

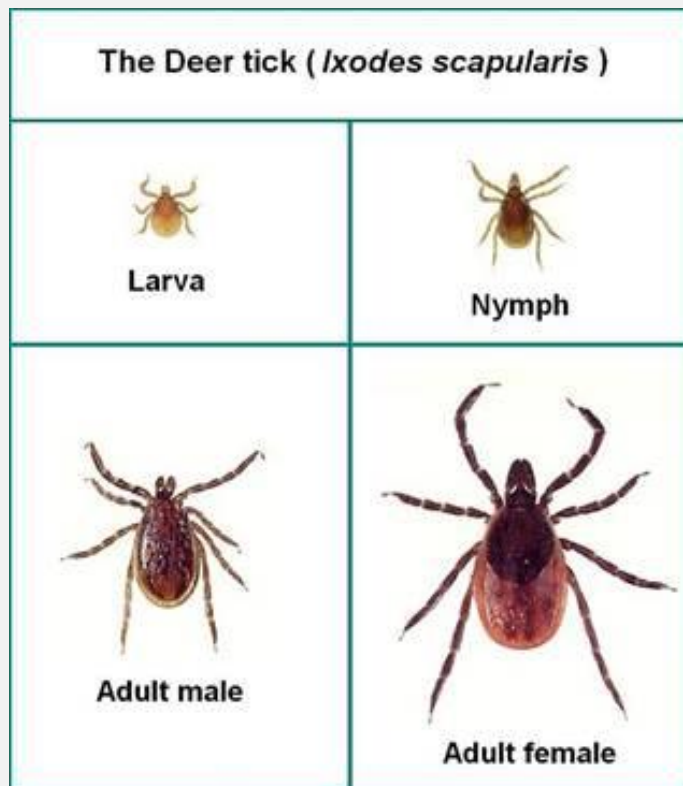
Symptoms

Common clinical signs of canine anaplasmosis include high fever, lethargy, depression and polyarthrititis. Neurologic signs (ataxia, seizures and neck pain) can also be seen. *Anaplasma phagocytophilum* infection is seldom fatal unless complicated by other infections. Direct losses, crippling conditions and production losses have been observed in lambs. Abortion and impaired spermatogenesis in sheep and cattle have been recorded. The severity of the infection is influenced by several factors, such as variants of *Anaplasma phagocytophilum* involved, other pathogens, age, immune status and condition of the host, and factors such as climate and management. It should be mentioned that clinical manifestations in humans range from a mild self-limited flu-like illness, to a life-threatening infection. However, most human infections probably result in minimal or no clinical manifestations.

Anaplasma Phagocytophilum

Transmission

Anaplasma phagocytophilum is transmitted by ixodid ticks. In the United States the principal vectors are *Ixodes scapularis* and *Ixodes pacificus*, while *Ixodes ricinus* has been found to be the main exophilic vector in Europe. *Anaplasma phagocytophilum* is transstadially transmitted by these vector ticks, and there is no evidence of transovarial transmission. Most studies to date that have investigated the importance of mammalian hosts of *A. phagocytophilum* and its tick vectors have focused on rodents but this organism has a wide mammalian host range, infecting domesticated cats, dogs, sheep, cows, and horses.



Anaplasma Phagocytophilum

Diagnosis

Indirect immunofluorescence assay is the principal test used to detect infection. The acute and convalescent phase serum samples can be evaluated to look for a four-fold change in antibody titer to *Anaplasma phagocytophilum*. Intracellular inclusions (morulea) are visualized in granulocytes on Wright or Giemsa stained blood smears. Polymerase chain reaction(PCR) methods are used to detect *Anaplasma phagocytophilum* DNA.

Prevention

No vaccine is available to prevent *Anaplasma phagocytophilum* infection. Prevention relies on avoidnig exposure to the tick vector (*Ixodes scapularis*, *Ixodes pacificus*, and *Ixode ricinus*) from spring through fall, prophylatic use of antiacaricides, and prophylactic use of doxycycline or tetracycline when visiting *Ixodes scapularis*, *Ixodes pacificus*, and *Ixode ricinus* tick-endemic regions.

Ehrlichia canis

Information

Ehrlichia canis is a small and rod shaped parasites transmitted by the brown dog tick, *Rhipicephalus sanguineus*. *E. canis* is the cause of classical ehrlichiosis in dogs. Dogs may be infected by several *Ehrlichia* spp. but the most common one causing canine ehrlichiosis is *E. canis*.

E. canis has now been known to have spread all over the United States, Europe, South America, Asia and the Mediterranean.

Infected dogs that are not treated can become asymptomatic carriers of the disease for years and eventually die from massive hemorrhage.



Female *Rhipicephalus sanguineus*.
http://webpages.lincoln.ac.uk/fruedisuelli/FR-webpages/parasitology/Ticks/TIK/tick-key/background_rhipicephalus.htm



Ehrlichia canis seen in a membrane-bound inclusions (morulae) within the cytoplasm of a monocyte.
<http://www.vet.uga.edu/VPP/clerk/Bockino/>

Symptoms

Ehrlichia canis infection in dogs is divided into 3 stages;

ACUTE PHASE: This is generally a very mild phase. The dog will be listless, off food, and may have enlarged lymph nodes. There may be fever as well but rarely does this phase kill a dog. Most clear the organism on their own but some will go on to the next phase.

SUBCLINICAL PHASE: In this phase, the dog appears normal. The organism has sequestered in the spleen and is essentially hiding out there.

CHRONIC PHASE: In this phase the dog gets sick again. Up to 60% of dogs infected with *E. canis* will have abnormal bleeding due to reduced platelets numbers. Deep inflammation in the eyes called "uveitis" may occur as a result of the long term immune stimulation. Neurologic effects may also be seen.

Ehrlichia canis

Diagnosis and treatment

Definitive diagnosis of *Ehrlichia canis* requires visualization of morula within monocytes on cytology, detection of *E. canis* serum antibodies with the indirect immunofluorescence antibody test (IFA), polymerase chain reaction (PCR) amplification, and/or gel blotting (Western immunoblotting).

The mainstay of prevention of canine ehrlichiosis is tick control. The drug of choice for treatment for all forms of ehrlichiosis is doxycycline for at least one month. There should be dramatic clinical improvement within 24-48 hours following initiation of treatment in dogs with acute-phase or mild chronic-phase disease. During this time, platelet counts begin to increase and should be normal within 14 days after initiation of treatment.

After infection, it is possible to become re-infected; immunity is not lasting after a previous infection.

Prevention

The best prevention of ehrlichiosis is to keep dogs free of ticks. This should include checking the skin daily for ticks and treating dogs with tick control. Since ticks carry other devastating diseases, such as Lyme disease, anaplasmosis and Rocky Mountain spotted fever, it's important to keep dogs tick-free.

Leishmaniasis

Information

Leishmaniasis is a major and severe parasitic disease of humans, canines and felines. The agent of leishmaniasis is a protozoan parasite and belongs to the leishmania donovani complex. This parasite is widely distributed in temperate and subtropical countries of Southern Europe, Africa, Asia, South America and Central America. Leishmania donovani infantum (*L. infantum*) is responsible for the feline and canine disease in Southern Europe, Africa, and Asia. Canine Leishmaniasis is a severe progressive systemic disease. Not all dogs develop clinical disease after inoculation with the parasites. The development of clinical disease is dependent on the type of immune response that individual animals have against the parasites.

Symptoms

In Canine

Both visceral and cutaneous manifestations may be found simultaneously in dogs; unlike humans, separate cutaneous and visceral syndromes are not seen. The clinical signs are variable and can mimic other infections. Asymptomatic infections can also occur. Typical visceral signs may include fever (which can be intermittent), anemia, lymphadenopathy, splenomegaly, lethargy, decreased exercise tolerance, weight loss, and a decreased appetite. Less common visceral signs include diarrhea, vomiting, melena, glomerulonephritis, liver failure, epistaxis, polyuria-polydipsia, sneezing, lameness (due to polyarthritis or myositis), ascites, and chronic colitis.

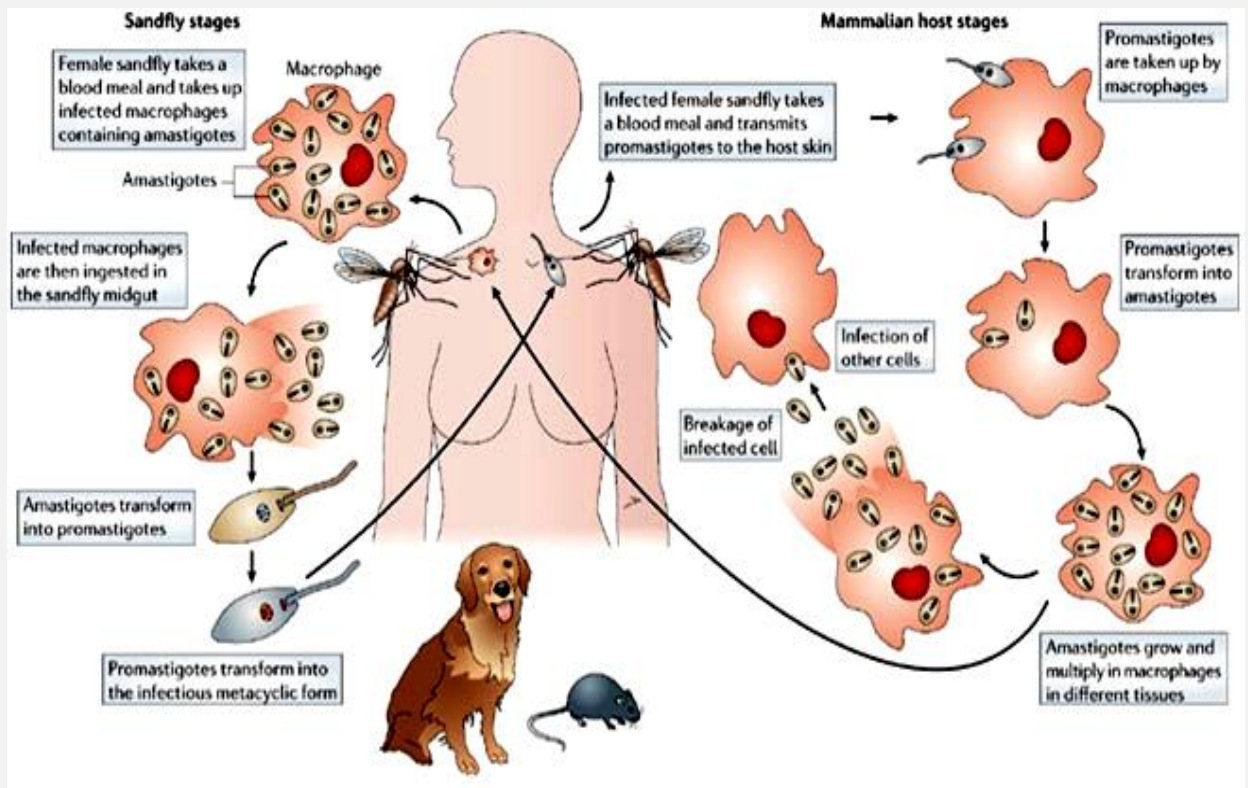
In Feline

Cats are rarely infected. In most infected cats, the lesions are limited to crusted cutaneous ulcers, usually found on the lips, nose, eyelids, or pinnae. Visceral lesions and signs are rare.

Leishmaniasis

Life cycle

The life cycle is completed in two hosts. A vertebrate host and an invertebrate host (sand fly). The female sand fly feeds on vertebrate host and ingests amastigotes. Flagellated promastigotes develop in the insect. The promastigotes are injected into the vertebrate host during feeding of the sandfly. The promastigotes develop into amastigotes and multiply primarily in the macrophages of the skin, mucosa and viscera, causes cutaneous, mucosal and visceral leishmaniasis respectively



Leishmaniasis

Diagnosis

In dogs, leishmaniasis is usually diagnosed by direct observation of the parasites, using Giemsa or proprietary quick stains, in smears from lymph node, spleen, or bone marrow aspirates, tissue biopsies, or skin scrapings from lesions. Organisms may also be found in ocular lesions, particularly in granulomas. The amastigotes are round to oval parasites, with a round basophilic nucleus and a small rodlike kinetoplast. They are found in macrophages or freed from ruptured cells. Immunohistochemistry and polymerase chain reaction (PCR) techniques are also used.

Prevention

The drugs most commonly used are: Meglumine Antimoniate associated with Allopurinol, Aminosidine, and recently, Amphotericin B. All these drugs require a multiple dose regimen, and this will depend on the patient's condition and owner cooperation. It is suggested that maintenance treatment should be kept with allopurinol, because it is not possible to ensure that dogs will not relapse if treatment is discontinued. The use of collars containing insecticides, shampoos or sprays effective to protect dogs from sandfly bites must be continuously used for all patients under treatment. The vector control is one of the most important aspects of disease control.

The sandfly is vulnerable to the same insecticides as the malaria vector.