



Product sheet
Babesia canis

BioSystems

What is it?

Canine babesiosis, also known as “tick-borne disease”, is a parasitic disease caused by the protozoan *Babesia canis*, transmitted primarily by infected ticks. Infection occurs when a tick infected with *Babesia canis* feeds on the blood of a dog. During feeding, the tick inoculates the *Babesia* sporozoites into the dog's bloodstream, where they infect red blood cells.

Babesia canis stages

The life cycle of this microorganism involves an intermediate host, usually ticks, which will transmit the infection during feeding by releasing sporozoites into the dog's bloodstream. This transmission requires 2 to 3 days. Known vectors of *Babesia* transmission include *Rhipicephalus sanguineus*, as well as *Haemaphysalis bispinosa* and *H. longicornis*. *Babesia canis* develops in the erythrocytes of the host, where it can be visualized as bilobed pyriform organisms that frequently occur in pairs. Inside the red blood cells, *Babesia canis* is released from its outer coating and begins to divide, acquiring a new form called a merozoite, which may be ingested by a new tick during feeding. After ingestion by the tick, *Babesia canis* begins sexual reproduction (gamogony), giving rise to numerous sporozoites that accumulate in the salivary glands of ticks.

Why diagnose Babesia canis?

Babesia canis is a serious tick-borne parasitic disease that affects dogs, causing haemolytic anaemia and potentially death if not treated in time. Early diagnosis is extremely important as it allows for effective treatment, which can prevent serious complications, including chronic disease, as well as measures to prevent spread to other animals and, in some cases, to humans.

Diagnostic

Diagnosis of canine babesiosis is usually made when the animal develops the first symptoms of the disease, which include: (a) high fever; (b) lack of appetite/weight loss; (c) oedema; (d) jaundice; and (e) presence of blood in urine.

Diagnosis of this zoonotic disease may include: serological tests: detection of anti-*Babesia* antibodies through the use of immunoassay techniques (ELISA); blood smear: microscopic examination of a blood sample taken from the ear or tail tip of the animal, to look for *Babesia* parasites in the erythrocytes; PCR: molecular test to detect parasite DNA, useful in case of doubtful results.

ELISA-based determination of anti-*Babesia canis* antibodies has a diagnostic sensitivity and specificity of 88% and 91%, respectively.

Performance characteristics: ELISA

The anti-*Babesia* antibodies present in the sample bind to the proteins of the *Babesia canis* parasite, immobilized on the surface of the microplate wells. It is then incubated with peroxidase-conjugated canine anti-IgG antibodies. Finally, the substrate 3,3',5,5'-tetramethylbenzidine (TMB) is added in the presence of hydrogen peroxide (H₂O₂), which upon degradation by peroxidase gives rise to a blue coloured product. The enzymatic reaction is stopped with an acid solution and the formation of yellow product is measured at 450 nm. The concentration of antibody in the sample is proportional to the absorbance of the reaction product. The specificity of the *Babesia canis* positive control has been verified against an internal canine reference serum.

Interferences: hemolysis (hemoglobin < 500 mg/dL), lipemia (triglycerides < 1625 mg/dL), and bilirubin (30 mg/dL) do not interfere. Other substances and drugs may interfere.

Cross-reactivity: with other *Babesia* species due to its proximity to *Babesia canis*, with false positive results.

Reference values

Samples with absorbance ratios greater than 1.1 are considered **positive**. Samples with absorbance ratios less than 0.9 are considered **negative**. Samples with ratios between 0.9 and 1.1 should be considered doubtful, and repeat testing or determination of alternative parameters of diagnostic value is recommended.

Ordering information

Product	Code	Presentation
Anti-Babesia Antibodies (IgG) ELISA Dog	44702	96 test

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