

Piroplasmen, Apikomplexa, Babesien, Babesien – Therapie, Koinfektion mit Babesien, weitere Protozoen

Piroplasms, Apicomplexa, Babesia, Babesia - therapy, co-infection with Babesia, other protozoa

Babesien (Babesia) sind in Erythrozyten von Wirbeltieren parasitierende einzellige Krankheitserreger, Protozoen vom Stamm der Apicomplexa. Sie produzieren infektiöse Sporozysten oder Oozysten und durchlaufen einen charakteristischen Generationswechsel, bei dem sich geschlechtliche und ungeschlechtlich vermehrende Zellen abwechseln.

Bekannte Vertreter sind die Malaria-Erreger der Gattung Plasmodium sowie Toxoplasma gondii, der Erreger der Toxoplasmose, Babesien, Kokzidien, Leishmanien etc..

Babesia (Babesia) are parasitic protozoan pathogens living in erythrocytes of vertebrates. They belong to the tribe of Apicomplexa. They produce infectious sporocysts or oocysts, and undergo a characteristic change of generations, with alternating sexual and asexual proliferating cells. Well-known representatives are the malarial parasites of the genus Plasmodium and Toxoplasma gondii, the causative agent of toxoplasmosis, Babesia, Coccidia, Leishmania etc..

<http://www.kabilahsystems.de/toxoplasmen.pdf>

<http://www.xerlebnishaft.de/antibiosetherapie.pdf>

Babesien

Babes, V. (1888) Sur l'hémoglobinurie bactérienne du boeuf. C.R. Acad. Sci. Ser. III Sci. Vie 107, 692-694

Franca C. (1912) Sur la classification des Piroplasmes et description de deux formes de ces parasites. Arch Inst Bact C Pestana 3, 11-8

Skrabalo S, Deanovic Z (1957) Piroplasmose in man. Report of a case. Documenta de Medicina Geographica et Tropica 9, 11-16 <http://lymerick.net/tbi/1957-02.pdf>

Gorenflot A, Piette M, Marchand (1976) A. Babésioses connect et santé humaine. Premier cas de babésiose humaine observé en France. Rec Med Vet 152: 289-97

Krampitz HE. (1979) Babesia microti: Morphology, distribution and host relationship in Germany. Zbl Bakt Hyg, I Abt Orig A 244, 411-5

Walter G. (1981) Isolierung von Babesia microti (Franca 1912) aus freilebenden Nymphen von Ixodes ricinus (Linnaeus 1758). Acta Tropica 38, 187-8

Dammin GJ, Spielman A, Benach JL, Piesman J. (1981) The rising incidence of clinical Babesia microti infection. Hum Pathol 12, 398-400.

Gombert ME, Goldstein EJC, Benach JL, Tenenbaum MJ, Grunwaldt E, Kaplan MH, et al. (1982) Human babesiosis: clinical and therapeutic considerations. JAMA. 248, 3005-7

Gordon S, Cordon RA, Mazdzer EJ, Valigorsky JM, Blagg NA, Barnes SJ, et al. (1984) Adult respiratory distress syndrome in babesiosis. Chest. 86 633-4.

Marcus LC, Steere AC, Duray PH, Anderson AE, Mahoney EB. (1985) Fatal pancarditis in a patient with coexistent Lyme disease and Babesiosis. Ann Intern Med 103, 374-6

- Iacopino V, Earnhart T. (1990) Life-threatening babesiosis in a woman from Wisconsin. *Arch Intern Med.* 150, 1527-8.
- Conrad PA, Thomford JW, Marsh A, Telford SR, Anderson JF, Spielman A, Sabin EA, Yamane I, Persing DH. (1992) Ribosomal DNA probe for differentiation of *Babesia microti* and *Babesia gibsoni* isolates. *J Clin Microbiol* 5, 1210-5
- Horowitz ML, Coletta F, Fein AM. (1994) Delayed onset adult respiratory distress syndrome in babesiosis. *Chest.* 106, 1299-301.
- Boustani MR, Lepore TJ, Gelfand JA, Lararus DS. (1994) Acute respiratory failure in patients treated for babesiosis. *Am J Respir Crit Care Med.* 149 1689-91.
- Pruthi RK et al. (1995) Human babesiosis. *Mayo Clin Proc.* 70(9), 853-62. [PubMed](#)
- Persing DH, Conrad PA. (1995) Babesiosis: new insights from phylogenetic analysis. *Infect Agents Dis* 4, 182–195
- Herwaldt BL, Persing DH, Precigout EA, Goff WL, Mathiesen DA, Taylor PW, et al. (1996) A fatal case of babesiosis in Missouri: identification of another piroplasm that infects humans. *Ann Intern Med.* 124, 643-50.
- Meer-Scherrer L, Adelson M, Mordechai E et al. (1996) *Babesia microti* infection in Europe. *Curr Microbiol* 48, 435–437
- Krause, P.J. et al. (1996) Comparison of PCR with Blood Smear and Inoculation of Small Animals for Diagnosis of *Babesia microti* Parasitemia. *Journal of Clin Microbiol*, 2791-2794
- Kollars P, Miles D. (1997) **Giemasa-stained Blood Smearms** From a Fatal Case of Babesiosis in Missouri Demonstrating Various Stages of the Babesial Organism. *Journal of Spirochetal and Tick-Borne Diseases.* 4(1), 33
- Krause PJ., Spielman A., Telford, SR. et al. (1998) Persistent Parasitemia after Acute Babesiosis. *N Engl J Med* 339,160-165 <http://www.nejm.org/doi/full/10.1056/NEJM199807163390304>
- White DJ, Talarico J, Chang HG, et al. (1998) Human babesiosis in New York State: review of 139 hospitalized cases and analysis of prognostic factors. *Arch Intern Med* 158, 2149–54.
- Gorenflot A, Moubri K et al. (1998) Human babesiosis. *Ann Trop Med Parasitol* 92, 489-501
- Zahler M, Rinder H, Gothe R. (2000) Genotypic status of *Babesia microti* within the piroplasms. *Parasitol Res* 86: 642-646
- Matsui T et al. (2000) First documentation of transfusion-associated babesiosis in Japan. *Rinsho Ketsueki.* 41(8), 628-34. [PubMed](#)
- Kjemtrup AM, Conrad PA. (2000) Human babesiosis: an emerging tick-borne disease. *Int J Parasitol* 30, 1323-37
- Krause PJ, Lepore T, Sikand VK, et al. (2000) [Atovaquone and azithromycin for the treatment of babesiosis](#). *N. Engl. J. Med.* 343 (20), 1454–8. [doi:10.1056/NEJM200011163432004](https://doi.org/10.1056/NEJM200011163432004). [PMID 11078770](#).
- Homer MJ, Aguilar-Delfin I, Telford SR 3rd, Krause PJ, Persing DH. (2000) Babesiosis. *Clin Microbiol Rev.* 13, 451-69. [PMID 10885987](#) <http://cmr.asm.org/content/13/3/451.full>
- Cichocka A, Skotarczak B (2001) Babesiosis--difficulty of diagnosis. *Wiad Parazytol* 47(3), 527-33. <http://www.ncbi.nlm.nih.gov/pubmed/16894770>
- Hatcher JC, Greenberg PD, Antique J, Jimenez-Lucho VE. (2001) Severe babesiosis in Long Island: review of 34 cases and their complications. *Clin Infect Dis* 32, 1117–25.

- Hunfeld KP, Lambert A, Kampen H, Albert S, Epe C, Brade V, Tenter AM. (2002) Seroprevalence of Babesia infections in humans exposed to ticks in Midwestern Germany. *J Clin Microbiol* 40, 2431-6
- Foppa IM, Krause PJ, Spielman et al. (2002) Entomologic and serologic evidence of zoonotic transmission of Babesia microti, eastern Switzerland. *Emerg Infect Dis* 2002; 8:722–6.
- Oleson, C. V.; Sivalingam, J. J.; O'Neill, B. J.; Staas, W. E. (2003) Transverse myelitis secondary to coexistent Lyme disease and babesiosis. In: *J Spinal Cord Med* 26 Nr. 2, S. 168–171.
- Alekseev AN, Semenov AV, Dubinina HV (2003) Evidence of Babesia microti infection in multi-infected Ixodes persulcatus ticks in Russia. *Exp. Appl. Acarol.* 29, 345-353. [[PubMed](#)]
- Centeno-Lima S, do Rosário V, Parreira R et al. (2003) A fatal case of human babesiosis in Portugal: molecular and phylogenetic analysis. *Trop Med Int Health* 8, 760-4
- Feder Jr. HM et al. (2003) Babesiosis in Pregnancy. *N Engl J Med* 349, 195-196
<http://www.nejm.org/doi/full/10.1056/NEJM200307103490221>
- Allred DR. (2003) Babesiosis: persistence in the face of adversity. *Trends Parasitol* 19, 51-5.
- Sherr VT (2004) Human babesiosis – an unrecorded reality Absence of formal registry undermines its detection, diagnosis and treatment, suggesting need for immediate mandatory reporting. *Medical Hypotheses* 63, 609–615
- Gray JS (2004) Babesia sp.: emerging intracellular parasites in Europe. *Pol J Microbiol* 55-60.
<http://www.ncbi.nlm.nih.gov/pubmed/15787198>
- Leonhard S. (2005) Untersuchungen zur Häufigkeit von Borrelia burgdorferi sensu lato, Anaplasma phagocytophilum und Babesia spp. in Ixodes ricinus aus Bayern und Baden-Württemberg. Inaugural-Dissertation zur Erlangung der tiermedizinischen Doktorwürde der Tierärztlichen Fakultät München
- Wormser, GP, Dattwyler, RJ, Shapiro, ED. et al. (2006): The clinical assessment, treatment, and prevention of lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis.* 43(9) 1089–1134.
- Meliani P, Khatibi S et al. (2006) Human babesiosis. *Med Mal Infect* 36(10), 499-504.
- Uilenberg G (2006) Babesia--a historical overview. *Vet Parasitol* 138(1-2), 3-10.
<http://www.ncbi.nlm.nih.gov/pubmed/16513280>
- Leiby DA (2006) Babesiosis and blood transfusion: flying under the radar. Blackwell Publishing Ltd. *Vox Sanguinis* 90, 157–165
- Genchi C (2007) Human babesiosis, an emerging zoonosis. *Parassitologia* 29-31.
<http://www.ncbi.nlm.nih.gov/pubmed/17691604>
- Hildebrandt A, Hunfeld KP, Baier M, et al. (2007) First confirmed autochthonous case of human Babesia microti infection in Europe. *Eur J Clin Microbiol Infect Dis* 26(8), 595-601.
<http://www.ncbi.nlm.nih.gov/pubmed/17587072>
- Cunha BA, Nausheen S, Szalda D (2007) Pulmonary complications of babesiosis: case report and literature review. *Eur J Clin Microbiol Infect Dis* 26(7), 505-8.
<http://www.ncbi.nlm.nih.gov/pubmed/17558489>
- Schaller JL, Burkland GA, Langhoff PJ (2007) Are various Babesia species a missed cause for hypereosinophilia? A follow-up on the first reported case of imatinib mesylate for idiopathic hypereosinophilia. *MedGenMed* 9(1), 38. <http://www.ncbi.nlm.nih.gov/pubmed/17435644>

- Häselbarth K, Tenter AM, Brade V, et al. (2007) **First case of human babesiosis in Germany** - Clinical presentation and molecular characterisation of the pathogen. *Int J Med Microbiol* 297(3), 197-204. <http://www.ncbi.nlm.nih.gov/pubmed/17350888>
- Bonnet S, Jouglin M, L'Hostis M, Chauvin A (2007) *Babesia* sp. EU1 from Roe Deer and Transmission within *Ixodes Ricinus*. *Emerging Infectious Diseases* 13(8) 1208-1210
- Vannier E, Gewurz BE, Krause PJ (2008) Human babesiosis. *Infect Dis Clin North Am* 22(3), 469-88, viii-ix.
- Hunfeld KP, Hildebrandt A, Gray JS (2008) Babesiosis: recent insights into an ancient disease. *Int J Parasitol* 38(11), 1219-37. <http://www.ncbi.nlm.nih.gov/pubmed/18440005>
- Vasil'eva IS, Gutova VP, Ershova AS (2008) The parasitic system of human babesiasis. *Med Parazitol (Mosk)* (1), 36-40. <http://www.ncbi.nlm.nih.gov/pubmed/18365472>
- Krause PJ, Gewurz BE, Hill D, et al. (2008) Persistent and relapsing babesiosis in immune-compromised patients. *Clin Infect Dis* 46(3), 370-6. <http://www.ncbi.nlm.nih.gov/pubmed/18181735>
- Wong WS, Chung JY, Wong KF (2008) Images in haematology. Human babesiosis. *Br J Haematol* 140(4), 364. <http://www.ncbi.nlm.nih.gov/pubmed/18042268>
- Blaschitz M, Narodoslavsky-Gföller M, Kanzler M et al. (2008) *Babesia* species occurring in Austrian *Ixodes ricinus* ticks. *Appl Environ Microbiol* 74, 4841–4846
- Johnson ST, Cable RG, Tonnetti L, et al. (2009) Seroprevalence of *Babesia microti* in blood donors from *Babesia*-endemic areas of the northeastern United States: 2000 through 2007. *Transfusion* 49 (12), 2574-82. <http://www.ncbi.nlm.nih.gov/pubmed/19821951>
- [Vannier E, Krause PJ](http://www.ncbi.nlm.nih.gov/pubmed/19727410) (2009) Update on babesiosis. *Interdiscip Perspect Infect Dis*. 2009, 984568. doi: 10.1155/2009/984568. <http://www.ncbi.nlm.nih.gov/pubmed/19727410>
<http://www.hindawi.com/journals/ipid/2009/984568/>
- Haapasalo K, Suomalainen P, Sukura A, et al. (2010) Fatal babesiosis in man, Finland, 2004. *Emerg Infect Dis* 16(7), 1116-8.
- Weld ED, Eimer KM, Saharia K, et al. (2010) Transfusion medicine illustrated. The expanding range and severity of babesiosis. *Transfusion* 50(2), 290-1.
- Gray J, Zintl A, Hildebrandt A, et al. (2010) Zoonotic babesiosis: overview of the disease and novel aspects of pathogen identity. *Ticks Tick Borne Dis* 1(1), 3-10. <http://www.ncbi.nlm.nih.gov/pubmed/21771506>
- [Aderinboye O, Syed SS](http://www.ncbi.nlm.nih.gov/pubmed/211097) (2010) **Congenital babesiosis in a four-week-old female infant.** *Pediatr Infect Dis J*. 29(2), 188. doi: 10.1097/INF.0b013e3181c3c971.
- Mayne PJ. (2011) Emerging incidence of Lyme borreliosis, babesiosis, bartonellosis, and granulocytic ehrlichiosis in Australia. *Int J Gen Med*. 4, 845-52 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3258014>
- Martinot M, Zadeh MM, Hansmann Y, Grawey I, Christmann D, Aguilon S, Jouglin M, Chauvin A, De Briel D. (2011) Babesiosis in immunocompetent patients, Europe. *Emerg Infect Dis*. 17(1), 114-6.
- Blum S, Gattringer R, Haschke E, et al. (2011) The case: hemolysis and acute renal failure. Babesiosis. *Kidney Int* 80(6), 681-3.
- Stricker RB, Johnson L. (2011) Lyme disease: the next decade. *Infection and Drug Resistance* 4 1–9 <http://www.dovepress.com/getfile.php?fileID=8503>
- Chiang E, Haller N (2011) Babesiosis: an emerging infectious disease that can affect those who travel to the northeastern United States. *Travel Med Infect Dis* 9(5), 238-42. <http://www.ncbi.nlm.nih.gov/pubmed/21862413>

Schorf S, Pfister K, Reulen H, et al. (2011) **Occurrence of Babesia spp., Rickettsia spp. and Bartonella spp. in Ixodes ricinus in Bavarian public parks, Germany.** Parasit Vectors 135. <http://www.ncbi.nlm.nih.gov/pubmed/21762494>

Ohmori S, Kawai A, Takada N, et al. (2011) Development of real-time PCR assay for differential detection and quantification for multiple Babesia microti-genotypes. Parasitol Int 60(4), 403-9. <http://www.ncbi.nlm.nih.gov/pubmed/21723958>

Wudhikarn K, Perry EH, Kemperman M, et al. (2011) Transfusion-transmitted babesiosis in an immunocompromised patient: a case report and review. Am J Med 124(9), 800-5. <http://www.ncbi.nlm.nih.gov/pubmed/21683324>

Wormser GP, Lombardo G, Silverblatt F, et al. (2011) Babesiosis as a cause of fever in patients undergoing a splenectomy. Am Surg 77(3):345-7. <http://www.ncbi.nlm.nih.gov/pubmed/21375849>

Leiby DA (2011) Transfusion-transmitted Babesia spp.: bull's-eye on Babesia microti. Clin Microbiol Rev 24(1), 14-28. <http://www.ncbi.nlm.nih.gov/pubmed/21233506>

Martinot M, Zadeh MM, Hansmann Y, et al. (2011) Babesiosis in immunocompetent patients, Europe. Emerg Infect Dis 17(1), 114-6. http://wwwnc.cdc.gov/eid/article/17/1/10-0737_article.htm

Lubin AS, Snyderman DR, Miller KB (2011) Persistent babesiosis in a stem cell transplant recipient. Leuk Res 35(6), e77-8.

Pancewicz S, Moniuszko A, Bieniarz E, et al. (2011) Anti-Babesia microti antibodies in foresters highly exposed to tick bites in Poland. Scand J Infect Dis 43(3), 197-201. <http://www.ncbi.nlm.nih.gov/pubmed/21142620>

[Teal AE](#), [Habura A](#), [Ennis J](#) et al. (2011) **A new real-time PCR assay** for improved detection of the parasite Babesia microti. J Clin Microbiol. 50(3), 903-8.

[Gabielli S](#), [Galuppi R](#), [Marcer F](#) et al. (2011) Development of **culture-based serological assays** to diagnose Babesia divergens infections. Vector Borne Zoonotic Dis.

[Bloch EM](#), [Herwaldt BL](#), [Leiby DA](#) et al. (2012) **The third described case of transfusion-transmitted Babesia duncani.** Transfusion. 52(7), 1517-22. doi: 10.1111/j.1537-2995.2011.03467.x. Epub 2011 Dec 13. <http://www.ncbi.nlm.nih.gov/pubmed/22168221>

Sanjaya N Senanayake et al. (2012) First report of human babesiosis in Australia. Med J 196(5), 350-2. <https://www.mja.com.au/journal/2012/196/5/first-report-human-babesiosis-australia>

Menis M., Anderson SA, Izurieta HS, (2012) Babesiosis among Elderly Medicare Beneficiaries, United States 2006–2008 Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 18, No. 1

Joseph JT, Purtill K, Wong SJ, Munoz J, Teal A, Madison-Antenucci S, et al. (2012) Vertical transmission of Babesia microti, United States. Emerg Infect Dis. <http://dx.doi.org/10.3201/eid1808.110988>

[Chmielewska-Badora J](#), [Moniuszko A](#), [Zukiewicz-Sobczak W](#) et al. (2012) Serological survey in persons occupationally exposed to tick-borne pathogens in cases of co-infections with Borrelia burgdorferi, Anaplasma phagocytophilum, Bartonella spp. and Babesia microti. Ann Agric Environ Med. 19(2), 271-4.

[Oz HS](#), [Westlund KH](#). (2012) "Human babesiosis": an emerging transfusion dilemma. Int J Hepatol. 2012, 431761

Johnson ST, Cable RG, Leiby DA (2012) Lookback investigations of Babesia microti-seropositive blood donors: seven-year experience in a Babesia-endemic area. Transfusion 52 <http://www.ncbi.nlm.nih.gov/pubmed/21910741>

Vannier E, Krause PJ (2012) Human Babesiosis. N Engl J Med 366, 2397-407 DOI: 10.1056/NEJMra1202018 <http://www.nejm.org/doi/full/10.1056/NEJMra1202018> <http://www.ncbi.nlm.nih.gov/pubmed/22716978> <http://www.nejm.org/doi/full/10.1056/NEJMc1208515>

Cornillot E, Dassouli A, Garg A, Pachikara N, Randazzo S, et al. (2013) Whole Genome Mapping and Re-Organization of the Nuclear and Mitochondrial Genomes of Babesia microti Isolates. PLoS ONE 8(9), e72657. doi:10.1371/journal.pone.0072657
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0072657>

Hildebrandt A, Gray JS, Hunfeld K-P (2013) Human Babesiosis in Europe: what clinicians need to know. Springer-Verlag Berlin Heidelberg. DOI 10.1007/s15010-013-0526-8
<http://www.ncbi.nlm.nih.gov/pubmed/24104943>

Yager PH, Luginbuhl LM, Dekker JP (2014) Case 6-2014: A 35-Day-Old Boy with Fever, Vomiting, Mottled Skin, and Severe Anemia. N Engl J Med 370, 753-62. DOI: 10.1056/NEJMcp1208155
<http://www.nejm.org/doi/full/10.1056/NEJMcp1208155>

Hildebrandt A, Hunfeld K-P (2014) Humane Babesiose – eine seltene, aber potenziell gefährliche Zoonose. Human babesiosis – a rare but potentially dangerous zoonosis. Dt Med Wschr. Sonderdruck 18 <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0034-1369936>

Garg A, Stein A, Zhao W et al. (2014) Sequence and Annotation of the Apicoplast Genome of the Human Pathogen Babesia microti. PLoS One. 9(10), e107939. doi: 10.1371/journal.pone.0107939. eCollection 2014. <http://www.ncbi.nlm.nih.gov/pubmed/25280009>

Lempereur L, Shiels B, Heyman P et al. (2015) A retrospective serological survey on human babesiosis in Belgium. Clin Microbiol Infect. 21(1), 96.e1-7. doi: 10.1016/j.cmi.2014.07.004. Epub 2014 Oct 12. <http://www.ncbi.nlm.nih.gov/pubmed/25636942>

Wilson M, Glaser KC, Adams-Fish D et al. (2015) Development of droplet digital PCR for the detection of Babesia microti and Babesia duncani. Experimental Parasitology 149, 24-31
<http://www.ncbi.nlm.nih.gov/pubmed/25500215>

Wang G, Wormser GP, Zhuge J et al. (2015) Utilization of real-time PCR assay for diagnosis of Babesia microti infection in clinical practice. Ticks and Tick-borne Diseases. xxx-xxx

Wang G, Villafuerte P, Zhuge J et al. (2015) Comparison of a Quantitative PCR Assay with peripheral Blood Smear Examination for Detection and Quantitation of Babesia microti Infection in Humans. Diagnostic Microbiology & Infectious Disease.
<http://www.mdlinx.com/infectious-disease/medical-news-article/2015/03/20/babesia-microti-babesiosis-polymerase-chain-reaction/6026590/>
<http://www.dmidjournal.com/article/S0732-8893%2815%2900076-0/abstract>

Jiang J-F, Zheng Y-C, Jiang R-R et al. (2015) Epidemiological, clinical, and laboratory characteristics of 48 cases of « Babesia veratorum » infection in China: a descriptive study. The Lancet.com/infection 15(2), 196-203 <http://www.ncbi.nlm.nih.gov/pubmed/25539588>

Bloch EM, Levin AE, Williamson PC et al. (2016) A prospective evaluation of chronic Babesia microti infection in seroreactive blood donors. Transfusion. doi: 10.1111/trf.13617. [Epub ahead of print] <http://www.ncbi.nlm.nih.gov/pubmed/27184253>

„The findings indicate prolonged seropositivity in blood donors. Although rare, asymptomatic, persistent PCR positivity supports the current policy of indefinite deferral for donors with a history of babesiosis or positive test results. Repeat testing by PCR and serology will be necessary if reinstatement is to be considered.“

Raffalli J, Wormser GP (2016) Persistence of babesiosis for >2 years in a patient on rituximab for rheumatoid arthritis. Diagnostic Microbiology and Infectious Disease, Volume 0, Issue 0, <http://dx.doi.org/10.1016/j.diagmicrobio.2016.02.016>

Gulersen M, Brost BC, Bobrovnikov V, Bornstein E (2016) Acute Babesiosis in Pregnancy: A Novel Imitator of Hemolysis, Elevated Liver Enzymes, and Low Platelet Count Syndrome. Obstet Gynecol. 128(1), 197-200. doi: 10.1097/AOG.0000000000001445.
<http://www.ncbi.nlm.nih.gov/pubmed/27275801>

Tuvshintulga B, AbouLaila M, Sivakumar T, Tayebwa DS, Gantuya S, Naranbaatar K, Ishiyama A, Iwatsuki M, Ootoguro K, Omura S, Terkawi MA, Guswanto A, Rizk MA, Yokoyama N, Igarashi I (2017) [Chemotherapeutic efficacies of a clofazimine and diminazene aceturate combination against piroplasm parasites and their AT-rich DNA-binding activity on Babesia bovis](#). Sci Rep. 7(1), 13888. doi: 10.1038/s41598-017-14304-0. PMID: 29066849 [PubMed - in process] [Free PMC Article](#) [Similar articles](#)

Huber D, Beck A, Anzulović Ž, Jurković D, Polkinghorne A, Baneth G, Beck R. (2017) [Microscopic and molecular analysis of Babesia canis in archived and diagnostic specimens reveal the impact of anti-parasitic treatment and postmortem changes on pathogen detection](#). Parasit Vectors. 10(1), 495. doi: 10.1186/s13071-017-2412-1. PMID: 29047398 [PubMed - in process] [Free PMC Article](#) [Similar articles](#)

Checa R, Montoya A, Ortega N, González-Fraga JL, Bartolomé A, Gálvez R, Marino V, Miró G. (2017) [Efficacy, safety and tolerance of imidocarb dipropionate versus atovaquone or buparvaquone plus azithromycin used to treat sick dogs naturally infected with the Babesia microti-like piroplasm](#). Parasit Vectors. 10(1), 145. doi: 10.1186/s13071-017-2049-0. PMID: 28292316 [PubMed - in process] [Free Article](#). [Similar articles](#)

Primus S, Akoolo L, Schlachter S, Parveen N (2017) [Screening of patient blood samples for babesiosis using enzymatic assays](#). Ticks Tick Borne Dis. pii: S1877-959X(17)30442-9. doi: 10.1016/j.ttbdis.2017.11.003. [Similar articles](#)

Abdallah MO, Niu Q, Yang J, Hassan MA, Yu P, Guan G, Chen Z, Liu G, Luo J, Yin H. (2017) [IDENTIFICATION OF 12 PIROPLASMS INFECTING TEN TICK SPECIES IN CHINA USING REVERSE LINE BLOT HYBRIDIZATION](#). J Parasitol. doi: 10.1645/16-161. [Epub ahead of print] PMID: 28355109 [PubMed - as supplied by publisher] [Similar articles](#)

- ➔ **Life cycle of Babesia microti** <http://youtu.be/JOakxoorjoQ>
http://web.stanford.edu/class/humbio103/ParaSites2006/Babesiosis/Images/Babesia_LifeCycle.gif
- ➔ **Cunha BA, Barnett B: Babesiosis.** <http://emedicine.medscape.com/article/212605-overview>
- ➔ PubMed (2016) **Babesia vertical transmission**
<http://www.ncbi.nlm.nih.gov/pubmed/?term=Babesia+vertical+transmission>

Babesien – Therapie

Virchow R. (1927) Über die Wirkung des **Chinins** auf den respiratorischen Stoffwechsel des Menschen In: Naunyn-Schmiedeberg's Archives of Pharmacology, Heidelberg
[doi:10.1007/BF01863946](https://doi.org/10.1007/BF01863946) <http://link.springer.com/article/10.1007%2FBF01863946>

Miller LH, Neva FA, Gill F (1978) **Failure of chloroquine** in human babesiosis (Babesia microti): case report and chemotherapeutic trials in hamsters. Ann Intern Med 88(2), 200-2.
<http://www.ncbi.nlm.nih.gov/pubmed/626449>

CDC. (1983) Epidemiologic Notes and Reports **Clindamycin and Quinine** Treatment for Babesia microti Infections. MMWR Morb Mortal Wkly Rep 32(5), 65-6, 72.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/00001244.htm>

Brasseur P, Lecoublet S, Kapel N, et al. (1996) **Quinine** in the treatment of Babesia divergens infections in humans. Eur J Clin Microbiol Infect Dis 15(10), 840-1.

Wittner M et al. (1996) **Atovaquone in the treatment of Babesia microti infections in hamsters.** Am J Trop Med Hyg 55(2), 219-22. [PubMed](#) "**Ciprofloxacin, chloroquine, and artemisin all have no activity against babesia.**"

Marley SE et al. (1997) **Evaluation of selected antiprotozoal drugs in the Babesia microti-hamster model.** Antimicrob Agents Chemother. 41(1), 91-4. [PDF](#) "**Mefloquine, halofantrine, artesunate, and artemisin acid, exhibited little or no effect on parasitemia.**"

- Pudney M, Gray JS (1997) Therapeutic efficacy of **atovaquone** against the bovine intraerythrocytic parasite, *Babesia divergens*. J Parasitol 83(2), 307-10. <http://www.ncbi.nlm.nih.gov/pubmed/9105316>
- Evenson DA, Perry E, Kloster B, et al. (1998) **Therapeutic apheresis** for babesiosis. J Clin Apher 13(1), 32-6. <http://www.ncbi.nlm.nih.gov/pubmed/9590496>
- Shih CM, Wang CC (1998) Ability of **azithromycin** in combination with **quinine** for the elimination of babesial infection in humans. Am J Trop Med Hyg 59(4), 509-12. <http://www.ncbi.nlm.nih.gov/pubmed/9790419>
- Krause PJ et al. (1998) Persistent parasitemia after acute babesiosis. N Engl J Med 339(3), 160-5. [PDF](#) [This experience indicates that babesial infection may recrudescence after many months of asymptomatic parasitemia and that, although a standard course of clindamycin and quinine therapy usually is effective, it may fail.]
- Shih CM, Wang CC. (1998) **Ability of azithromycin in combination with quinine for the elimination of babesial infection in humans.** Am J Trop Med Hyg. 59(4), 509-12. PubMed "Failure of elimination of the babesial infection was observed two weeks after treating with standard regimen of oral quinine plus intravenous clindamycin for a 10-day course of therapy. Azithromycin in place of clindamycin was administered for another 10-day course of therapy two months following initial treatment. Clearance of Babesia parasites was observed and verified by hamster inoculation."
- Brasseur P et al. (1998) **In vitro evaluation of drug susceptibilities of Babesia divergens isolates.** Antimicrob Agents Chemother 42(4), 818-20 [PDF](#) „Mefloquine, choroquine, and quinine were inactive”
- Gray JS, Pudney M (1999) Activity of **atovaquone** against *Babesia microti* in the Mongolian gerbil, *Meriones unguiculatus*. J Parasitol 85(4), 723-8. <http://www.ncbi.nlm.nih.gov/pubmed/10461956>
- Krause PJ, Lepore T, Sikand VK, et al. (2000) **Atovaquone and azithromycin** for the treatment of babesiosis. N Engl J Med 343(20), 1454-8. <http://www.nejm.org/doi/full/10.1056/NEJM200011163432004> [PDF](#)
- Dorman SE, Cannon ME, Telford SR, et al. (2000) Fulminant babesiosis treated with **clindamycin, quinine**, and whole-blood exchange transfusion. Transfusion 40(3), 375-80. <http://www.ncbi.nlm.nih.gov/pubmed/10738042>
- Weiss LM (2002) Babesiosis in humans: a treatment review. Expert Opin Pharmacother 3(8), 1109-15. <http://www.ncbi.nlm.nih.gov/pubmed/12150690> [clindamycin-quinine, atovaquone-azithromycin]
- Baggish AL, Hill DR (2002) Antiparasitic agent **atovaquone**. Antimicrob Agents Chemother 6(5), 1163-73.
- Feder HM, Lawlor M, Krause PJ (2003) Babesiosis in pregnancy. N Engl J Med 349(2), 195-6. [clindamycin and quinine]
- Krause PJ (2003) Babesiosis diagnosis and treatment. Vector Borne Zoonotic Dis 3(1):45-51. <http://www.ncbi.nlm.nih.gov/pubmed/12804380> [clindamycin (600 mg every 6 h) and quinine (650 mg every 8 h), azithromycin (500-600 mg on day 1, and 250-600 mg on subsequent days) and atovaquone (750 mg every 12 h)]
- Kasahara K, Nomura S, Subeki , et al. (2005) Anti-babesial compounds from **Curcuma zedoaria**. Planta Med 71(5), 482-4. <http://www.ncbi.nlm.nih.gov/pubmed/15977324>
- Subeki , Nomura S, Matsuura H, et al. (2005) Anti-babesial activity of some central **kalimantan plant** extracts **and active oligostilbenoids** from *Shorea balangeran*. Planta Med 71(5), 420-3. <http://www.ncbi.nlm.nih.gov/pubmed/15931579>
- Stricker RB, Lautin A, Burrascano JJ (2005) Lyme disease: point/counterpoint. Expert Rev Anti Infect Ther 3(2), 155-65. <http://www.ncbi.nlm.nih.gov/pubmed/15918774> [Langzeit]
- Corpelet C, Vacher P, Coudore F, et al. (2005) Role of **quinine** in life-threatening *Babesia divergens* infection successfully treated with **clindamycin**. Eur J Clin Microbiol Infect Dis 24(1), 74-5.

Richier E, Biagini GA, Wein S, et al. (2006) Potent antihematozoan activity of novel **bisthiazolium drug T16**: evidence for inhibition of phosphatidylcholine metabolism in erythrocytes infected with *Babesia* and *Plasmodium* spp. *Antimicrob Agents Chemother* 50(10), 3381-8. <http://www.ncbi.nlm.nih.gov/pubmed/17005821>

Shoemaker RC, Hudnell HK, House DE, et al. (2006) **Atovaquone plus cholestyramine** in patients coinfecting with *Babesia microti* and *Borrelia burgdorferi* refractory to other treatment. *Adv Ther* 23(1), 1-11. <http://www.ncbi.nlm.nih.gov/pubmed/16644602>

Vial HJ, Gorenflot A (2006) Chemotherapy against babesiosis. *Vet Parasitol* 138(1-2), 147-60. <http://www.ncbi.nlm.nih.gov/pubmed/16504402> [**clindamycin and quinine, atovaquone-azithromycin**]

Vyas JM, Telford SR, Robbins GK (2007) Treatment of refractory *Babesia microti* infection with **atovaquone-proguanil** in an HIV-infected patient: case report. *Clin Infect Dis* 45(12), 1588-90. <http://www.ncbi.nlm.nih.gov/pubmed/18190320>

Guay D (2007) Update on **clindamycin** in the management of bacterial, fungal and protozoal infections. *Expert Opin Pharmacother* 8(14), 2401-44. <http://www.ncbi.nlm.nih.gov/pubmed/17927492>

Stricker RB (2007) Counterpoint: long-term antibiotic therapy improves persistent symptoms associated with lyme disease. *Clin Infect Dis* 45(2), 149-57. <http://www.ncbi.nlm.nih.gov/pubmed/17578772>

Raju M, Salazar JC, Leopold H, et al. (2007) **Atovaquone and azithromycin** treatment for babesiosis in an infant. *Pediatr Infect Dis J* 26(2), 181-3. <http://www.ncbi.nlm.nih.gov/pubmed/17259886>

Häselbarth K, Tenter AM, Brade V et al. (2007) **First case of human babesiosis in Germany** – Clinical presentation and molecular characterisation of the pathogen. *Int J Med Microbiol* 297, 197–204

Hildebrandt A, Hunfeld KP, Baier M et al. (2007) **First confirmed autochthonous case of human *Babesia microti* infection in Europe**. *Eur J Clin Microbiol Infect Dis* 26, 595–601

Vannier E, Gewurz BE, Krause PJ (2008) Human babesiosis. *Infect Dis Clin North Am* 22(3), 469-88, viii-ix. <http://www.ncbi.nlm.nih.gov/pubmed/18755385> [**clindamycin and quinine and exchange transfusion**]

AbouLaila M, Sivakumar T, Yokoyama N, et al. (2010) Inhibitory effect of **terpene nerolidol** on the growth of *Babesia* parasites. *Parasitol Int* 59(2), 278-82. <http://www.ncbi.nlm.nih.gov/pubmed/20178862>

Goo YK, Terkawi MA, Jia H, et al. (2010) **Artesunate**, a potential drug for treatment of *Babesia* infection. *Parasitol Int* 59(3), 481-6. <http://www.ncbi.nlm.nih.gov/pubmed/20541037>

Wormser GP, Prasad A, Neuhaus E, et al. (2010) Emergence of resistance to **azithromycin-atovaquone** in immunocompromised patients with *Babesia microti* infection. *Clin Infect Dis* 50(3), 381-6. <http://www.ncbi.nlm.nih.gov/pubmed/20047477>

El Khoury MY, Gandhi R, Dandache P, Lombardo G, Wormser GP. (2011) Non-surgical management of spontaneous splenic rupture due to *Babesia microti* infection. *Ticks Tick Borne Dis*. 2(4), 235-8.

Nehrbass-Stuedli A, Boykin D, Tidwell RR, Brun R. (2011) Novel **diamidines** with activity against *Babesia divergens* in vitro and *Babesia microti* in vivo. *Antimicrob Agents Chemother*. 55(7), 3439-45. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3122389/>

Shimamoto Y, Sasaki m, Ikadai H et al. (2012) Downregulation of Hepatic Cytochrome P450 3A in Mice Infected with *Babesia microti*. *Toxicology. J Med Vet Sci* 74(2), 241-245 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4155197/>

Vannier E, Krause PJ (2012) Human babesiosis. *N Engl J Med* 366(25), 2397-407. <http://www.nejm.org/doi/full/10.1056/NEJMra1202018>

Lawres LA, Garg A, Kumar V et al. (2016) Radical cure of experimental babesiosis in immunodeficient mice using a **combination of an endochin-like quinolone and atovaquone**. The Rockefeller University Press, doi: 10.1084/jem.20151519
<http://jem.rupress.org/content/early/2016/06/06/jem.20151519.abstract?cited-by=yes&legid=jem;jem.20151519v2>

- ➔ Marie Kroun, Revideret sep. 2003 <http://kroun.ulmarweb.dk/babesiabeh.htm>
- ➔ Video microscopy <http://lymerick.net/MK-videomicroscopy.html>

Ko-Infektion von Babesien und Borrelien etc.

Benach JL, Coleman JL, Habicht GS, MacDonald A, Grunwaldt E, Giron JA (1985) [Serological evidence for simultaneous occurrences of Lyme disease and babesiosis](http://www.ncbi.nlm.nih.gov/pubmed/4031555). J Infect Dis. 152(3), 473-7
<http://www.ncbi.nlm.nih.gov/pubmed/4031555>

Mitchell PD, Reed KD, Hofkes JM. (1996) Immunoserologic evidence of coinfection with *Borrelia burgdorferi*, *Babesia microti*, and human granulocytic Ehrlichia species in residents of Wisconsin and Minnesota. J Clin Microbiol 34, 724-7

Brassard, P.; Pollack, R.; Peck, J.; Persing, D. H. (1996) Concurrent Lyme disease and babesiosis. Evidence for increased severity and duration of illness. In: JAMA 275, Jun, Nr. 21, S. 1657–1660.

Krause PJ, Telford SR 3rd, Spielman A et al. (1996) Concurrent Lyme disease and babesiosis. Evidence for increased severity and duration of illness. JAMA 275, 1657–60.

Hunfeld KP, Allwinn R, Peters S et al. (1998) Serologic evidence for tick-borne pathogens other than *Borrelia burgdorferi* (TOBB) in Lyme borreliosis patients from midwestern Germany. Wien Klin Wochenschr 110, 901–908

Wang TJ, Liang MH, Sangha O, Phillips CB, Lew RA, Wright EA, et al. (2000) Coexposure to *Borrelia burgdorferi* and *Babesia microti* does not worsen the long-term outcome of Lyme disease. Clin Infect Dis 31, 1149–54.

Krause PJ et al. (2002) Disease specific diagnosis of connecting tick borne zoonoses: Babesiosis, HGE and Lyme Disease. Clin Inf Dis 34, 1184-1191

Alfred DR. (2003) Babesiosis: persistence in the face of adversity. Trends in Parasitology 19, 51-55
Oleson CV, Sivalingam JJ, O'Neill BJ, Staas WE. (2003) Transverse myelitis secondary to coexistent Lyme disease and babesiosis. J Spinal Cord Med 26, 168-71.

Hermanowska-Szpakowicz T, Skotarczak B et al. (2004) Detecting DNA's of *Anaplasma phagocytophilum* and *Babesia* in the blood of patients suspected of Lyme disease. Ann Agric Environ Med 11, 351-4

Hartelt K, Oehme R, Frank H et al. (2004) Pathogens and symbionts in ticks: prevalence of *Anaplasma phagocytophilum* (*Ehrlichia* sp.), *Wolbachia* sp., *Rickettsia* sp., and *Babesia* sp. in Southern Germany. Int J Med Microbiol 293 (37), 86–92

Swanson SJ, Neitzel D, Reed KD, Belongia EA. (2006) Coinfections acquired from Ixodes ticks. Clin Microbiol Rev 19, 708–27.

Harvey WT, Martz D (2007) Motor neuron disease recovery associated with IV ceftriaxone and anti-*Babesia* therapy. Acta Neurol Scand 115(2), 129-31. <http://www.ncbi.nlm.nih.gov/pubmed/17212618>

Hildebrandt A, Tenter AM, Straube E et al. (2008) Human babesiosis in Germany: Just overlooked or truly new? Int J Med Microbiol 298 (01), 336–346

Franke J, Fritsch J, Tomaso H et al. (2010) Coexistence of Pathogens in Host-Seeking and Feeding Ticks within a Single Natural Habitat in Central Germany. *Microbiology Applied and Environmental* 76(20) 6829-6836 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2953012/>

Welc-Falęciak R, Hildebrandt A, Siński E. (2010) Co-infection with *Borrelia* species and other tick-borne pathogens in humans: two cases from Poland. *Ann Agric Environ Med.* 17(2), 309-13.

Hildebrandt A, Franke J, Schmoock G, Pauliks K, Krämer A, Straube E. (2011) Diversity and coexistence of tick-borne pathogens in central Germany. *J Med Entomol.* 48(3), 651-5.

Schorf S, Pfister K, Reulen H et al. (2011) Occurrence of *Babesia* spp., *Rickettsia* spp. and *Bartonella* spp. in *Ixodes ricinus* in Bavarian public parks, Germany. *Parasit Vectors* 4, 135

Martínez-Balzano C, Hess M, Malhotra A. (2012) Severe babesiosis and *Borrelia burgdorferi* co-infection. *QJM hcs100* doi: 10.1093/qjmed/hcs100 First published online: June 7, 2012 <http://qjmed.oxfordjournals.org/content/early/2012/06/07/qjmed.hcs100.short?rss=1>

Sultan, P, Green C, Riley E, Carvakho B. (2012) Spinal anesthesia for caesarean delivery in a patient with babesiosis and Lyme disease. *Anesthesia* 67(2), 180-3.

Vannier E, Krause PJ (2012) **Human babesiosis.** *N Engl J Med* 366, 2397-2407 <http://www.nejm.org/doi/full/10.1056/NEJMra1202018>

Horowitz RI Babesiosis and blood supply, (2012) <http://www.poughkeepsiejournal.com/VideoNetwork/2033553691001/Babesiosis-and-the-Blood-Supply>

Horowitz RI Babesiosis discussion (2012) <http://www.poughkeepsiejournal.com/videonetwork/2028523611001?odyssey=mod|video|article>

Kroun, M (2012) **Buffy coat / Microhematocrit technique.** <http://lymerick.net/why-buffycoat.html>

Eshoo MW et al. (2014) Broad-Range Survey of Tick-Borne Pathogens in Southern Germany Reveals a High prevalence of *Babesia microti* and a Diversity of Other Tick-Borne Pathogens. *Vector-Borne and Zoonotic Diseases*, 14 (8)

Hersh MH, Ostfeld RS, McHenry DJ et al. (2014) Co-Infection of Blacklegged Ticks with *Babesia microti* and *Borrelia burgdorferi* Is Higher than Expected and Acquired from Small Mammal Hosts. *PLoSone.* 9(6), e99348 <http://www.ncbi.nlm.nih.gov/pubmed/24940999>
https://www.google.dk/search?q=anaplasma+marginalis&rlz=1C1RNPN_enDK400&source=lnms&tbm=isch&sa=X&ei=0Z96UbbbBlfesgalz4CYAq&ved=0CAcQ_AUoAQ&biw=1004&bih=718#imgsrc=ev97pgYqzB_KZM%3A%3BJloRfUgaYm4e0M%3Bhttp%253A%252F%252Fdc451.4shared.com%252Fdoc%252FBZinWzDm%252Fpreview001.png%3Bhttp%253A%252F%252Fdc451.4shared.com%252Fdoc%252FBZinWzDm%252Fpreview.html%3B543%3B741

CDC (2014) Publications Morbidity and Mortality Parasites - Babesiosis <http://www.cdc.gov/parasites/babesiosis/publications.html>

Goethert HK, Telford SR (2014) Not « out of Nantucket » : *Babesia microti* in sothern New England comprise at least two major populations. <http://www.ncbi.nlm.nih.gov/pubmed/25492628>
<http://www.parasitesandvectors.com/content/pdf/s13071-014-0546-y.pdf>

Dunn JM, Krause PJ, Davis S et al. (2014) ***Borrelia burgdorferi* Promotes the Establishment of *Babesia microti* in the Northeastern United States.** *PLoSone.* 1-12
DOI: 10.1371/journal.pone.0115494 <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0115494>

Vannier E, Krause P (2014) **Babesiosis in China, an emerging threat.** *Lancet Infect Dis.* DOI: [http://dx.doi.org/10.1016/S1473-3099\(14\)71062-X](http://dx.doi.org/10.1016/S1473-3099(14)71062-X)
<http://www.thelancet.com/journals/laninf/article/PIIS1473-3099%2814%2971062-X/abstract>

[Warren T](#), [Lau R](#), [Ralevski F](#) (2015) **Fever in a Visitor to Canada: A Case of Mistaken Identity.** *J Clin Microbiol.* pii: JCM.00269-15. <http://www.ncbi.nlm.nih.gov/pubmed/25762775>

Vannier EG, Diuk-Wasser MA, Mamoun ChB et al. (2015) **Babesiosis**. Infect Dis Clin N Am 29, 357-370 http://www.researchgate.net/publication/277027707_Babesiosis

Blood Products Advisory. Committee Meeting May 13, 2015 Great Room, Building 31 FDA White Oak Campus 10903 New Hampshire Ave. Silver Spring, MD

Topic I: Strategies for Implementation of Antibody and Nucleic Acid-based testing for Babesia microti in Blood Donors.

<http://www.fda.gov/downloads/advisorycommittees/committeesmeetingmaterials/bloodvaccinesandotherbiologics/bloodproductsadvisorycommittee/ucm446274.pdf>

Curci SRo, Tria LP, Gucwa AL (2016) **Seroprevalence of Babesia microti in Individuals with Lyme Disease** Vector-Borne and Zoonotic Diseases, 16(12), 737-743. [Abstract](#) | [Full Text HTML](#) | [Full Text PDF \(418 KB\)](#) | [Full Text PDF with Links \(248 KB\)](#)

Leishmanien und andere Protozoen

Laskay T, Miko TL, Teferedegn H et al. (1994) Detection of Leishmania aetiopica in paraffin-embedded skin biopsies using the polymerase chain reaction. Mitt. Österr. Ges. Tropenmed. Parasitol. 16, 141-146 <http://www.ncbi.nlm.nih.gov/pubmed/7660431>

RKI, Kinderlen AF (2008) Infektionsimmunologie von Leishmaniosen.

http://www.rki.de/DE/Content/InfAZ/L/Leishmaniose/P22_AK_Lei_D.html

v.Stebut E, Boecken G, Sunderkötter C, Bogdan C (2016) Kutane Leishmaniasis. Deutsches Ärzteblatt. 113(15), C596-C599

Medikamente bei Leishmaniosis z.B.: **Fluconazol, Azole, Amphotericin i.v., Antimon i.v. Metronidazol, Cotrim, Rifampicin**

- ➔ **Apicomplexa z.B.: Coccidia; Toxoplasma, Cryptospora, Isospora, Plasmodia, Babesia, Protomyxzoa rheumatica, "Sporentierchen, Sporozoen"**
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