

## LTT (Lymphozyten-Proliferationstest, „Lymphozyten-Transformationstest“)

### Interferon Gamma Test, ELISpot (T-Cell Spot), dem Lymphozytentransformationstest bei Borreliose und bei anderen Infektionskrankheiten

Im **Lymphozyten-Proliferationstest**, auch **Lymphozyten-Transformationstest** genannt (**LTT**), wird die **Proliferationskapazität von Lymphozyten** dargestellt. Der Test dient der Bewertung des Immunstatus oder der Diagnose einer speziellen Sensibilisierung.

In the **Lymphocyte proliferation assay**, also known as **lymphocyte transformation test (LTT)**, the **proliferation capacity of lymphocytes** is shown. The test is used to evaluate the immune status or the diagnosis of specific sensitization of an object.

Im **Interferon Gamma Test**, dem **ELISPOT (Enzyme-Linked ImmunoSpot)**, auch T-Cellspot genannt, wird durch die **Bestimmung der Zytokin – Produktion die Quantität und die Qualität einer T – Zell - Immunantwort zeitnah** dokumentiert.

In the **Interferone Gamma Test**, **ELISPOT (Enzyme-Linked ImmunoSpot)**, also called T-Cell spot, represented by the determination of cytokine – Production, the **quantity and quality of T - cell - immune response in a timely manner** is documented.

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Ibd. Chemistry and Biology of the ELISPOT Assay

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Online publiziert: 7. September 2008 © Springer Medizin Verlag 2008  
[http://edoc.rki.de/documents/rki\\_ab/re67fIHRghoUo/PDF/26C0oxyqlxZYff.pdf](http://edoc.rki.de/documents/rki_ab/re67fIHRghoUo/PDF/26C0oxyqlxZYff.pdf)

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**„Borrelia-specific antibodies are not detectable until several weeks after infection and even if they are present, they are no proof of an active infection. Since the sensitivity of culture and PCR for the diagnosis or exclusion of borreliosis is too low, a method is required that detects an active Borrelia infection as early as possible. For this purpose, a lymphocyte transformation test (LTT) using lysate antigens of Borrelia burgdorferi sensu stricto, Borrelia afzelii and Borrelia garinii and recombinant OspC was developed and validated through investigations of seronegative and seropositive healthy individuals as well as of seropositive patients with clinically manifested borreliosis. The sensitivity of the LTT in clinical borreliosis before antibiotic treatment was determined as 89,4% while the specificity was 98,7%. In 1480 patients with clinically suspected borreliosis, results from serology and LTT were comparable in 79.8% of cases. 18% were serologically positive and LTT-negative. These were mainly patients with borreliosis after antibiotic therapy. 2.2% showed a negative serology and a positive LTT result. Half of them had an early erythema migrans. Following antibiotic treatment, the LTT became negative or borderline in patients with early manifestations of borreliosis, whereas in patients with late symptoms, it showed a regression while still remaining positive. Therefore, we propose the follow-up monitoring of disseminated Borrelia infections as the main indication for the Borrelia-LTT.“**

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**„Fazit für die Praxis: Der LTT wird aufgrund von Spezifitätsproblemen in der Diagnostik der Lyme-Borreliose/Neuroborreliose nicht empfohlen. Es gibt bislang keine wissenschaftlich gesicherten Daten, die einen Nutzen des LTT/Elispot belegen und den Einsatz in der Diagnostik der Borreliose rechtfertigen. Der Test ist insbesondere auch nicht geeignet, die Krankheitsaktivität einer Borrelieninfektion anzuzeigen; aus dem Testergebnis darf keine Therapieentscheidung abgeleitet werden. Zusammengefasst ist der Borrelien-LTT als Diagnoseinstrument und als Verlaufsparemeter in der Borreliendiagnostik ungeeignet.“**

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[Dessau RB](#), [Fingerle V](#), [Gray J](#), [Hunfeld KP](#), [Jaulhac B](#), [Kahl O](#), [Kristoferitsch W](#), [Stanek G](#), [Strle F](#) (2014) **The lymphocyte transformation test for the diagnosis of Lyme borreliosis has currently not been shown to be clinically useful.** Clinical Microbiology and Infection. European Society of Clinical Microbiology and Infectious Diseases. The authors of this publication are members of the ESCMID study group for Lyme borreliosis: [www.escmid.org/ESGBOR](http://www.escmid.org/ESGBOR) [Clin Microbiol Infect](#). doi: 10.1111/1469-0691.12583. [Epub ahead of print] <http://www.ncbi.nlm.nih.gov/pubmed/24520912>  
**„ABSTRACT This letter is a comment on a study using lymphocyte transformation test (LTT) for diagnosis of active Lyme borreliosis caused by Borrelia burgdorferi sensu lato [1]. This LTT study reports the findings derived from a validation panel containing 120 blood donors seronegative for Borrelia, 40 seronegative patients with autoimmune diseases, 48 healthy seropositive controls and 94 seropositive patients with clinical signs of Lyme borreliosis. Furthermore, 1480 samples were investigated with both serology (Borrelia IgG and IgM ELISA and Western blot, Mikrogen, Munich Germany) and LTT.“**  
**„The development of a biomarker for active infection with B. burgdorferi sensu lato would be of clinical value, as antibody detection cannot currently distinguish active infection from immunological memory**

resulting from past or asymptomatic infection. However, T-cell recognition may be inherently indiscriminate, and problems with specificity may therefore be hard to avoid. A recent Swedish study [here no citation] “did not find the ELISPOT technique to be useful for supplementary clinical diagnosis, with a specificity of just 82%.... In conclusion, the clinical value of the LTT for the diagnosis of active Lyme borreliosis was not supported the von Baehr et al. Study [1]“

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« **It is concluded that, for putative European-acquired Lyme borreliosis infections, it would be sensible to carry out both the LTT-MELISA and Western blot assay.** »

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Bernt - Dieter Huismans 2012. Letzte Revision November 2016 [www.Huismans.click](http://www.Huismans.click)  
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