

# When ticks transmit dangerous pathogens

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Lyme disease is a dangerous disease which is transmitted by ticks. Blood-sucking ticks ingest the agents that cause the disease - bacteria of the species *Borrelia burgdorferi* and its relatives - during a blood meal, and subsequently transmit them to the next victim they feast on, often a person. It is estimated that, in Western Europe, up to half of all ticks carry the bacteria. Although the early symptoms of the illness are quite mild, if left untreated, it can result in serious damage to the skin, the joints, the heart and the nervous system, and effective therapy becomes very difficult.

Provided by Ludwig-Maximilians-Universität München

A team of researchers led by the veterinary bacteriologist Professor Reinhard Straubinger at LMU has now shown, in an animal model, that application of a gel containing the antibiotic azithromycin to the site of the bite rapidly terminates the infection. The efficacy of this local antibiotic therapy for the treatment of borreliosis in humans is now being tested in a Phase III clinical trial. In the meantime, though, patients must still undergo antibiotic treatment for several weeks and, in many cases, the drug must be administered intravenously - which is distressing not only for children.

Furthermore, treatment measures are often initiated on suspicion, because the bacteria are not detectable in the blood soon after one has been bitten by an infected tick.

"Our approach simply involves applying a transparent, self-adhesive plaster to the site of the wound," says Straubinger. "Because the plaster contains very little antibiotic, the effects are localized and side-effects are negligible."

**More information:** Evaluation of the preventive capacities of a topically applied azithromycin formulation against Lyme borreliosis in a murine model Jens Knauer, Inke Krupka, Christiane Fuedner, Jörg Lehmann, Reinhard Straubinger *Journal of Antimicrobial Chemotherapy* online, 15. September 2011

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