Oral vaccine that breaks the transmission cycle of the Lyme disease spirochete can be delivered via bait

Abstract:

Borrelia burgdorferi causes Lyme disease, a potentially debilitating human disease for which no vaccine is currently available. We developed an oral bait delivery system for an anti-B. burgdorferi vaccine based in OspA. Mice were immunized orally via gavage and bait feeding. Challenge was performed via Ixodes scapularis field nymphs carrying multiple B. burgdorferi strains. Vaccination protected 89% of the mice and the systemic immune response was skewed toward IgG2a/2b production. Moreover, this oral vaccine reduced the pathogen in the tick vector by eight-fold. We conclude that this oral vaccine induces a protective systemic immune response against a variety of infectious B. burgdorferi strains found in nature and therefore it can eliminate this zoonotic pathogen from its major host reservoirs. Because we observed elimination of the spirochete from the tick vector, a broad delivery of this oral vaccine to wildlife reservoirs is likely to disrupt the transmission cycle of this pathogen.

Notes:

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