



All Databases PubMed Nucleotide Protein Genome Structure OMIM PMC Journals Books

Search for GoClear
DatabaseSearch
name term • [Advanced Search](#)

• [Limits](#)

• [Preview/Index](#)

• [History](#)

• [Clipboard](#)

• [Details](#)

Display Show

All: 1

Review: 0

Click to
change
filter
selection
through

1: [J Infect Dis.](#) 2009 May 1; 199(9): 1379-88.



[Links](#)

The antibiotics doxycycline and minocycline inhibit the inflammatory responses to the Lyme disease spirochete *Borrelia burgdorferi*.

[Bernardino AL](#), [Kaushal D](#), [Philipp MT](#).

Division of Bacteriology and Parasitology, Tulane National Primate Research Center, Tulane University, Covington, LA 70433, USA. Tetracyclines moderate inflammatory responses of various etiologies. We hypothesized that tetracyclines, in addition to their antimicrobial function, could exert control over the inflammation elicited by *Borrelia burgdorferi*. To model systemic effects, we used the human monocytic cell line THP-1; to model effects in the central nervous system, we used rhesus monkey brain astrocytes and microglia. Cells were stimulated with live or sonicated *B. burgdorferi* or with the lipoprotein outer surface protein A in the presence of increasing concentrations of doxycycline or minocycline. Both antibiotics significantly reduced the production of tumor necrosis factor-

alpha, interleukin (IL)-6, and IL-8 in a dose-dependent manner in all cell types. Microarray analyses of the effect of doxycycline on gene transcription in spirochete-stimulated monocytes revealed that the NFKB and CHUK (alias, IKKA) genes were down-regulated. Functionally, phosphorylation of IkappaBalpha and binding of NF-kappaB to target DNA were both reduced in these cells. Our results suggest that tetracyclines may have a dual therapeutic effect in Lyme disease.

PMID: 19301981 [PubMed - in process]

Related articles

- ▶ Interaction of the Lyme disease spirochete *Borrelia burgdorferi* with brain parenchyma elicits inflammatory mediators from glial cells as well as glial and neuronal apoptosis.
- [Am J Pathol. 2008]

- ▶ Autocrine and exocrine regulation of interleukin-10 production in THP-1 cells stimulated with *Borrelia burgdorferi* lipoproteins.
- [Infect Immun. 2002]

- ▶ Interleukin-10 modulates proinflammatory cytokines in the human monocytic cell line THP-1 stimulated with *Borrelia burgdorferi* lipoproteins.
- [Infect Immun. 2000]

- ▶ Pathogenesis of Lyme neuroborreliosis: mitogen-activated protein kinases Erk1, Erk2, and p38 in the response of astrocytes to *Borrelia burgdorferi* lipoproteins.
- [Neurosci Lett. 2005]

- ▶ Induction of pro- and anti-inflammatory cytokines by *Borrelia burgdorferi* lipoproteins in monocytes is mediated by CD14.
- [Infect Immun. 1999]

◦ » See reviews... | » See all...

Patient Drug Information

- ▶ Doxycycline (Doryx® , Monodox® , Vibramycin® Calcium Syrup, ...) Doxycycline is used to treat bacterial infections, including pneumonia and other respiratory tract infections; Lyme disease; acne; infections of skin, genital, and urinary systems; and anthrax (after inhalational exposur...

◦ Source: AHFS Consumer Medication Information

Recent Activity

[Turn Off](#) [Clear](#)

◦ [The antibiotics doxycycline and minocycline inhibit the inflammatory responses to the Lyme...The antibiotics doxycycline and minocycline inhibit the inflammatory responses to the Lyme disease spirochete *Borrelia burgdorferi*.](#)



[Borrelia and the Brain \(253\)](#) **PubMed**

◦ [Toll-like receptors: insights into their possible role in the pathogenesis of lyme neurobo...Toll-like receptors: insights into their possible role in the pathogenesis of lyme neuroborreliosis.](#)

◦ [Pathogenesis of neuroborreliosis--lessons from a monkey model.Pathogenesis of neuroborreliosis--lessons from a monkey model.](#)

The pathogenesis of lyme neuroborreliosis: from infection to inflammation.The pathogenesis of lyme neuroborreliosis: from infection to inflammation.

Display

Show

- [Write to the Help Desk](#)
 - [NCBI](#) | [NLM](#) | [NIH](#)
 - [Department of Health & Human Services](#)
- [Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)