

Accepted Manuscript

Antibacterial properties of plasma from the prairie rattlesnake (*Crotalus viridis*)

Sarah J. Baker, Mark E. Merchant

PII: S0145-305X(18)30024-7

DOI: [10.1016/j.dci.2018.03.002](https://doi.org/10.1016/j.dci.2018.03.002)

Reference: DCI 3118

To appear in: *Developmental and Comparative Immunology*

Received Date: 12 January 2018

Revised Date: 2 March 2018

Accepted Date: 2 March 2018

Please cite this article as: Baker, S.J., Merchant, M.E., Antibacterial properties of plasma from the prairie rattlesnake (*Crotalus viridis*), *Developmental and Comparative Immunology* (2018), doi: [10.1016/j.dci.2018.03.002](https://doi.org/10.1016/j.dci.2018.03.002).

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 Antibacterial Properties of Plasma from the Prairie Rattlesnake (*Crotalus viridis*)2 Sarah J. Baker^{1*} and Mark E. Merchant²3 ¹Illinois Natural History Survey, 1816 S Oak Street, Champaign, IL 61820

4 sjbaker2@illinois.edu

5 ²Department of Chemistry, McNeese State University, Box 90455, Lake Charles, LA, 706096
7 **ABSTRACT**

8 The innate immune system functions to quickly respond to pathogens and is likely the primary
9 line of defense for ectothermic vertebrates. Snake populations appear to be in widespread decline
10 globally, but despite the threats from emerging pathogens, very little work has been conducted to
11 characterize their basic immune function. We used a wide-ranging snake species, the Prairie
12 Rattlesnake (*Crotalus viridis*), to measure effects of snake plasma on the growth of eight
13 bacterial species. Additionally, we quantified bacterial killing ability and kinetics of the immune
14 response. Our results show that Prairie Rattlesnakes have robust innate immune systems, and
15 concentrations of 10% snake plasma inhibit growth of 6 of 8 bacteria tested. Undiluted snake
16 plasma inhibited nearly all bacterial growth. The immune response was fairly rapid, inhibiting
17 73% of bacterial growth within 20 minutes of exposure. These results are encouraging for
18 conservation of wild populations, as snakes appear to exhibit a strong innate immune response.
19 However, further work needs to be directed toward the evaluation of immune system capabilities
20 in individual populations of conservation concern, and against pathogens known to cause
21 mortality in wild snakes.

22 Keywords: antimicrobial; bacteria; innate immunity; rattlesnake; serum complement

23 Declarations of Interest: None.

Download English Version:

<https://daneshyari.com/en/article/8497728>

Download Persian Version:

<https://daneshyari.com/article/8497728>

[Daneshyari.com](https://daneshyari.com)