Antimicrobial effects of lactoferrin and cannabidiol on *Borrelia burgdorferi*

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Abstract
Robust antimicrobial resistance in pathogenic bacteria such as *Borrelia burgdorferi*, the Lyme disease bacteria, has proven difficult to alleviate in affected patients. Due to the bacterium's ability to form biofilms in unfavorable conditions, standard means of eliminating infection has shown to be ineffective and has lead the need to find a novel biologically active compound to combat these infectious agent. Lactoferrin previously has been shown to have antimicrobial effects on biofilms formed by *Pseudomonas aeruginosa* in cystic fibrosis patients. In this project, the effect of lactoferrin was tested against the biofilm form of *Borrelia burgdorferi*. The results show that the amount of biofil

Materials and Methods:

Low passage isolates of B31 strain of *B. burgdorferi* sensu stricto were cultured in Barbour-Stoner-Kelly H (BSK-H) complete medium supplemented with 6%

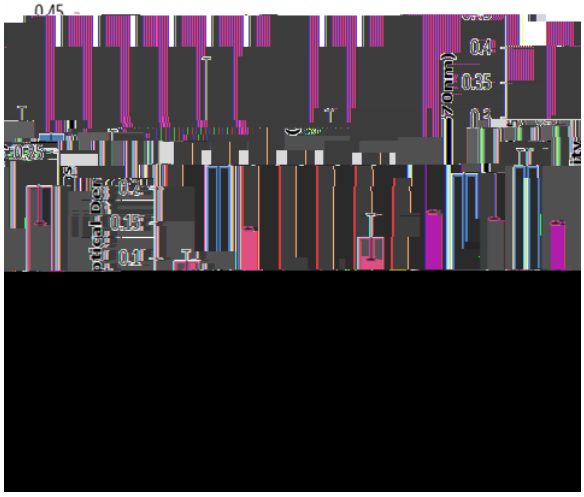

Fig 2. Quantitative analysis of Borrelia burgdorferi biofilm treated with different concentration of allicin using MTT viability assay. Negative control was a sample treated with vehicle (PBS buffer) and positive control had doxycycline (doxy) and Stevia, which was shown by previous research to have a significant effect on *B. burgdorferi* biofilm.

Conclusions and Future Work:

Data from this study showed that lactoferrin could have a significant effect on the viability of *B. burgdorferi* biofilm, while allicin did not show any potential effect. The mechanism of the antimicrobial effect of lactoferrin has been previously suggested to work by absorbing and therefore sequestering iron and manganese, so bacteria cannot utilize it. In a recent Nature publication, lactoferrin was demonsto7(e)D [(t) -1.149.59 1to-7( )]12(s)-(i)g-7( )5(s)-12(n)7(ei)-3(a)-3(n)57(t l-12(y)25 c)-13onou7(e)Dnoi-12(s)2(

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Biography:

Dylan Haenel is a senior at the University of New Haven majoring in Biotechnology. He works as an Academic Peer Mentor for Bethel HTc n-1.1596nR7(yD1596nR7-7(a(a)-0)-4( )](B))0(ks)-3(ae5bTw T* [o)-4(rn)-3(a)-njrn(hno)-12(l)-