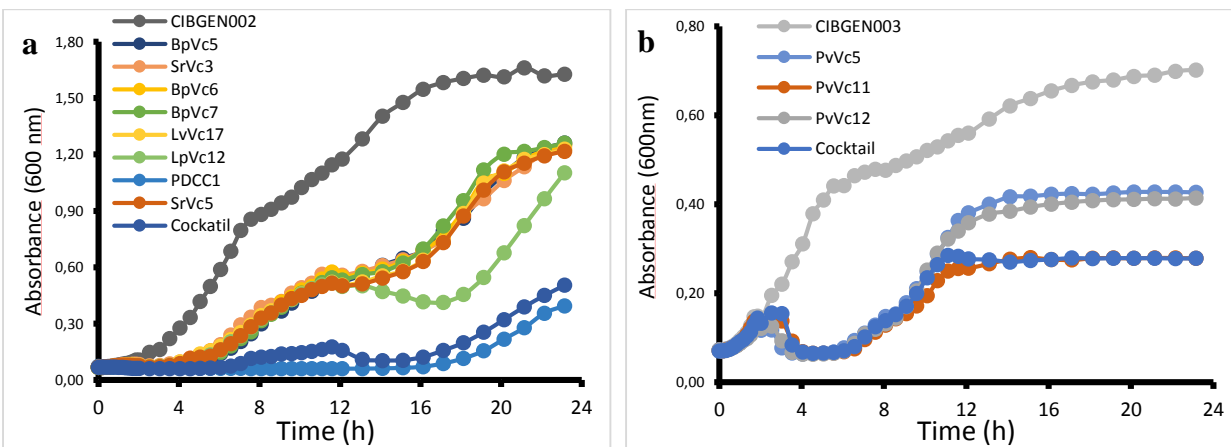


# A BACTERIOPHAGE COCKTAIL AS AN ALTERNATIVE FOR THE CONTROL OF *Vibrio parahaemolyticus* RESPONSIBLE FOR AHPND IN *Penaeus vannamei*

Juan M. Serrano\*, Sonia A. Soto-Rodriguez, Eduardo Quiroz-Guzmán

Centro de Investigación en Alimentación y Desarrollo. Unidad Mazatlán  
Av. Sábalo-Cerritos s/n C.P. 82112, Mazatlán, Sinaloa, México  
serrano120@estudiantes.ciad.mx

Acute hepatopancreas necrosis disease (AHPND), caused by specific strains of *Vibrio parahaemolyticus*, has generated high mortalities in the shrimp cultures around world, and among the failed strategies to control the disease has been the use of chemotherapeutic agents, which may cause antibiotic resistance and detrimental effects in the environment. A friendly environment alternative is the use of the phage therapy. The aim of the present study is the formulation of a bacteriophage cocktail with a wide range of *Vibrio* genus hosts and able to lyse *V. parahaemolyticus* AHPND strains. The application of phages produced a significant inhibition ( $p<0.05$ ) on the growth of both *Vibrio* strains (**Fig. 1**); however, there were differences on the effectiveness for lysing the target strain among single phages or cocktails. A cocktail of 12 bacteriophages showed 72.02% inhibition of *Vibrio campbellii* and 66.88% inhibition of *V. parahaemolyticus* with a cocktail of 3 bacteriophages.



**Figure 1.** Killing curves of *Vibrio campbellii* growth and *V. campbellii* with 9 bacteriophages (a); *Vibrio parahaemolyticus* growth, *V. parahaemolyticus* with 3 bacteriophages (b), and their respective cocktails.

Bacteriophages were also characterized to different physicochemical conditions, in this study all the bacteriophages demonstrated viability in chloroform and at different salinities between 5 and 40 g/L. The selection of bacteriophages for the formulation of a cocktail will be by the plating efficiency test (EOP) and tests to find resistant bacteria to bacteriophages. Afterwards, an experimental infection with *P. vannamei* will be done to evaluate the effectiveness of the bacteriophage cocktail to control *V. parahaemolyticus* AHPND. Additionally, samples will be taken for histology and metagenomics analysis.