



International Alliance for
Biological Standardization

Avoiding Antimicrobial Resistance: Veterinary Use of Phages for Prevention, Therapy and Control of Bacterial Infections

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Virtual Meeting

Use of phage in aquaculture: are we treating the water or the animals?

When used right, bacteriophages can be safe and efficacious antibacterial solutions, and important supplements to other strategies, such as hygiene, vaccines and antibiotics.

The bacteriophage product Custus®YRS contains lytic bacteriophages which specifically infect and kill *Yersinia ruckeri*, the bacterium causing yersiniosis disease in salmon farms. Typically, *Yersinia ruckeri* infects a subset of a fish population very early in life, establishing a subclinical carrier state in the infected fish. Clinical disease outbreaks are triggered by fish handling operations which cause stress in the animals. Stress induce massive increase in bacterial shedding from the carrier subpopulation at the same time as the naïve subpopulation is susceptible to infection and development of clinical yersiniosis. Addition of *Y. ruckeri* specific phages to fish holding water during such handling operations can effectively control bacterial infection pressure in the water, and through this mechanism prevent triggering of disease outbreaks.

Successful development of safe and efficacious bacteriophage products for antibacterial use demands that the developer complies with 1) the fundamental laws of nature, 2) the evolving laws of markets, and 3) the man-made laws governing quality, safety and efficacy of various product classes.

Phage host specificity put great restraint on market value for each product. The cost of product development, registration and maintenance is therefore pivotal for the development of phage-based antibacterials.

Finding the right balance between 'medicinal viability' (including quality, safety and efficacy) and 'commercial viability' for phage-based antibacterials will require close and transparent collaboration between academic institutions, industry stakeholders, and the relevant authorities.