



International Alliance for  
Biological Standardization

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

November 19-20, 2024  
Virtual Meeting

### **A bacteriophage product against *Staphylococcus aureus* to treat bovine mastitis**

#### Background and Challenges:

Bovine mastitis is a significant, economical problem in dairy farming. A wide range of bacterial pathogens can cause an inflammation of the udder, but *Streptococcus uberis* and *Staphylococcus aureus* are the most relevant pathogens to date. Affected cows are visibly ill and produce milk that contains high numbers of somatic cells. Above a certain threshold the dairy will reject the milk, leaving the farmer with the economic loss. The use of antibiotics is still the standard treatment for mastitis, but the development of antibiotic resistant pathogens (e.g. MRSA) significantly reduces the cure rates achieved by the veterinarians. As a last resort affected cows are prematurely slaughtered, generating further losses for the farmer. Thus, alternative strategies to treat mastitis are in high demand.

#### Proposed Approach:

The idea to use bacteriophages as an alternative to fight pathogenic bacteria, especially antibiotic resistant bacteria, is not novel. A number of groups isolated bacteriophages against *Staphylococcus aureus*, with the intention to treat bovine mastitis, but only few studies made it past the laboratory concept stage. Some of the problems were associated with the stability and activity of the bacteriophages in the complex medium "raw milk". Others with the purity, formulation and route of application.

#### Conclusions:

We report the development of a bacteriophage product with a broad range of activity against *Staphylococcus aureus* strains known to cause mastitis. We show that this product is active in raw milk and is able to cure bovine mastitis in lactating cows. Aspects about the regulatory status and the economic relevance of such a product will also be addressed.