**In Vitro Effect on Piglet Gut Microbiota and In Vivo Assessment of Newly Isolated Bacteriophages against F18 Enterotoxigenic *Escherichia coli* (ETEC)**

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Pig production is impacted by the negative effects of enterotoxigenic Escherichia coli (ETEC), which might result in post-weaning diarrhea (PWD) in piglets. F4 and F18 fimbriae are utilized by ETEC strains to adhere to the small intestinal epithelial cells of the host. If antibiotic resistance becomes a problem with ETEC infections, phage therapy would be an interesting alternative. Four bacteriophages, termed vB\_EcoS\_ULIM2, vB\_EcoM\_ULIM3, vB\_EcoM\_ULIM8, and vB\_EcoM\_ULIM9 in the present study, have been isolated against an O8:F18 E. coli strain (A-I-2110) and selected based on their host range. These phages have been investigated in-vitro and shown lytic activity throughout a pH (4-10) and temperature (25-45 °C) range. These bacteriophages have been categorized as Caudoviricetes according to genomic investigation. No lysogeny-related gene have been identified. Galleria mellonella larvae in vivo model revealed the therapeutic potential of one chosen phage, vB\_EcoS\_ULIM2, with a statistically significant increase in survival compared to untreated larvae. A static model of the piglet intestinal microbial environment was infected with vB\_EcoS\_ULIM2 for 72 hours in order to evaluate the impact of this phage on the piglet gut microbiota. In a Galleria mellonella model, this study confirms the effective replication of the phage and demonstrates the safety of the phage-based therapy for the piglet microbiota.