Phage development for clinical applications

Phaxiam Therapeutics, 60 avenue Rockfeller, 69008 Lyon, France

The World Health Organization (WHO), has described antimicrobial resistance to antibiotics (AMR) as one of the most urgent global health challenges for the next decade, noting that it threatens "to send modern medicine back decades to the pre-antibiotic era, when even routine surgeries were hazardous". The threat posed by AMR and the challenges in developing new approaches to tackle this are huge. The quest for alternatives to antibiotic therapy is a major public health issue.

One of the most promising alternatives is phage therapy that uses viruses known as bacteriophages, or "phages", that specifically infect and induce bacteria lysis without impact on human cells. Phages have been used empirically for decades in some countries in Eastern Europe, but preparations from these countries cannot be imported to France or Western European countries as they fail to meet standard drug agency (ANSM, EMEA) criteria for human use.

Phaxiam Therapeutics has been developing a portfolio of phages targeting 4 of the most resistant and dangerous bacteria, responsible for more than two-thirds of hospital-acquired resistant infections: Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa and Klebsiella.

Phaxiam's phages are produced in GMP grade and used in several clinical trials with various administration routes including:

- 2 phages against Staphylococcus Aureus covering 98% of the patients infected by a SA; Currently a Phase 2 is ongoing on DAIR patients in Europe (local administration) and a Phase 1 study is ready to start in patients with endocarditis (intravenous administration) ;
- 4 phages against E.Coli, with a phase 1 submitted in subjects with neurogenic bladder (intravesical administration)

In parallel, a phagogram is developed to ensure the specificity of the phages against the patient's bacteria.