Recipharm

Tackling antimicrobial resistance through swift & seamless antibiotic development

INTRODUCTION

The challenge of antimicrobial resistance

In recent years, the increasing development of antimicrobial resistance (AMR) has cast a shadow of uncertainty over the global health landscape. The World Health Organization (WHO) has emphasised the gravity of the situation, ranking AMR as one of the top global public health threats confronting humanity[1].

At the heart of the AMR crisis is the constant evolution of bacteria and the general use of antibiotics that leads to the development of drug-resistants[2].

Addressing AMR will require several responses. Firstly, there will have to be a continuation of the proactive stance to carefully manage the use of established and broad-spectrum antibiotics combined with secure handling, and disposal of waste products will also help address the issue. In addition, the development of new antibiotics — especially those capable of addressing new resistant strains as they appear — is critical to help us continue to tackle infections and to enable us to preserve the effectiveness of existing therapeutics for longer.

Companies and their mission

In a concerted effort to confront the critical challenge of AMR, Innoviva Specialty Therapeutics, Recipharm and ACS Dobfar have collaborated to develop and manufacture a new antibiotic.

Innoviva Specialty Therapeutics, a subsidiary of Innoviva, Inc., is a biotechnology company focused on developing and commercialising innovative therapies in critical care and infectious disease. The company's commercial portfolio includes the first and only antibiotic developed specifically to treat Acinetobacter pathogens in adults; a vasopressor indicated to increase blood pressure in adults with septic or other distributive shock; and a broad-spectrum antibiotic to treat complicated intra-abdominal infections in adults.

ACS Dobfar ACS Dobfar has a mission to provide its stakeholders with state-of-the-art anti-infective products, alongside top-tier research, development, and manufacturing services. This commitment is underpinned by a dedication to adhering to efficient timelines and cost-effective strategies.

The imperative for new antibiotics

The journey towards developing and launching new antibiotics confronts obstacles that demand careful consideration. These challenges encompass both the scientific complexities and the intricacies of navigating an anti-AMR market landscape.

The crucial role of comprehensive support

The task of progressing antibiotics through the clinical stages efficiently and preparing for a successful commercial launch demanded a unified approach. Recognising the complexity of this endeavour, Innoviva Specialty Therapeutics and ACS Dobfar found themselves in need of comprehensive and integrated support that would not only expedite the development process but also ensure the optimal positioning of these vital antibiotics in the market. At this critical juncture, ACS Dobfar turned to Recipharm for its expertise and proven track record.

> "Although we have API and fill-finish capabilities, we don't have the capabilities to manufacture and market a penicillin-based antibiotic for the U.S. market. Also, as a prominent antibiotic manufacturer, Recipharm is well acquainted with the intricacies of antibiotic production and is deeply committed to combating the threat of AMR through its operational practices."
>
> — ACS Dobfar Stefano Fapanni

THE CHALLENGE

The collaborative endeavour of ACS Dobfar and Recipharm presented a unique set of challenges that necessitated specialised development support spanning the entire spectrum from clinical to commercial manufacturing.

Central to these challenges were the following key factors:

Expertise in antibiotic development

The field of antibiotic development suffers from a lack of specialised industry expertise. With only a limited number of new treatments entering the market, the availability of individuals possessing the intricate knowledge and skills required for effective antibiotic development is notably limited. This shortage of expertise emphasised the complexity of this project, which demanded a partner with a deep understanding of antibiotic development to navigate the intricate landscape of this specialised field.

Filling capabilities and scalability

As the project advanced towards the precipice of commercialisation, the necessity of advanced filling capabilities and seamless scalability became apparent. The ability to smoothly transition from clinical to commercial manufacturing while ensuring consistency and efficiency was a formidable feat that demanded a partner equipped with the technical prowess and infrastructure to manage the evolving demands of the project.

In light of these challenges, ACS Dobfar and Innoviva Specialty Therapeutics sought a singular partner capable of offering unwavering support throughout the entire project life cycle. The desired attributes of this ideal collaborator included:

Simplified project management

A major consideration was finding a company that could streamline project management processes to achieve complex deliverables within tight deadlines. The complexities of the project called for a cohesive approach that consolidated site capabilities for all the necessary vial sizes, along with clinical and tech-transfer under a single, integrated umbrella.

Seamless scaling from clinical to commercial manufacturing

The ideal partner needed to possess the capabilities to seamlessly scale production from the clinical stage to the demands of commercial manufacturing. This transition was crucial not only to maintain product integrity but also to maintain the timelines without the disruptions inherent in tech-transfers between different suppliers.

Maintaining timelines

The urgent need for novel antibiotics necessitated a partner who could contribute to maintaining project timelines.

- Eliminating technical transfers between different suppliers, under a single comprehensive partner, significantly reduced bottlenecks, and accelerated progress.
- The knowledge and expertise around molecules in the market allowed for easy and quick sourcing of API from known suppliers, with technical batches not needed before process validation.
- Three clinical batches were also used as registration batches, allowing the timelines to be shortened further.

These approaches allowed for the timeline from clinical to process validation through the FDA to be cut down to six years.

Delivering quality within stringent timelines

A critical imperative of the collaboration was simultaneously achieving the highest quality standards and navigating the constraints of tight project deadlines. This dual mandate posed a formidable challenge, necessitating the identification and implementation of strategic solutions.

Furthermore, unforeseen challenges had to be preempted to avoid the threat of unexpected bottlenecks that could potentially derail the project's progress. The companies recognised the need to proactively minimise such risks, ensuring that the project's trajectory remained steadfast and uninterrupted. In essence, the challenge encompassed not only the technical intricacies of achieving commercial quality but also the strategic foresight to mitigate potential roadblocks and maintain seamless progress.

THE SOLUTION

In addressing the challenges posed by the project's goals, ACS Dobfar turned to Recipharm, a trusted CDMO collaborator with a proven track record. The decision was based on prior successful collaborations on various projects, instilling a high degree of confidence in Recipharm's ability to provide the essential support required for this endeavour.

> "Recipharm was a great choice for us because of its good track record in the U.S., the flexibility they provide in clinical and commercial service, and because we've worked with them successfully on previous projects."
>
> — ACS Dobfar Stefano Fapanni

Harnessing the unique capabilities of the Brescia site

Recipharm strategically harnessed the breadth of its comprehensive service portfolio and drew upon the unique specialisations housed within its state-of-the-art facility located in Brescia, Italy. This strategic choice facilitated the project from the clinical phase to commercial, driven by Recipharm's flexible clinical and commercial services. At the core of this support lay the distinctive capabilities of the Brescia site, which played a pivotal role in shaping the project's trajectory.

These capabilities included fill-finish for all the necessary market vial sizes and seamless clinical and tech-transfer from the Brescia site as there was no need for further investment.

Notably, the site's adeptness at manufacturing was evidenced by the production of four meticulously crafted batches. This sustained manufacturing endeavour unfolded for three years, serving as a testament to the site's capacity for consistent and precise output.

Strategic batch management for regulatory approval

One of the achievements as a direct result of the partnership revolved around meticulous batch management. Recipharm directed its efforts at minimising the number of batches required for registration and subsequent approval by regulatory authorities. This strategic approach significantly streamlined the regulatory process, eliminating unnecessary complexities and expediting the path to approval. Notably, this encompassed stringent adherence to the standards set forth by regulatory bodies, including the FDA.

> ""The synergy between us and Recipharm was reinforced by our historical relationship. Our collaboration created a solution that harnessed the specialised expertise and unique capabilities of the Recipharm personnel and its site in Brescia. Overall, the strategic utilisation of the Brescia manufacturing site, coupled with an astute approach to batch management, underscored a successful partnership."
>
> — ACS Dobfar Stefano Fapanni

THE OUTCOME — A TIMELINE OF ACHIEVEMENT

Six years in the making, the project's journey from inception to FDA approval is a testament to the synergistic efforts of Innoviva Specialty Therapeutics, ACS Dobfar and Recipharm. This achievement highlights the manufacturing flexibility and specialist expertise of Recipharm that was integral to the project's success. The project also serves as a strong example of how a suitable CDMO partner can help develop quick manufacturing solutions to produce novel antibiotics.

The successful FDA approval of the drug marks the emergence of a new antibiotic. This breakthrough underscores the profound impact of collaboration and focused expertise in driving advancements that hold the potential to transform healthcare landscapes. With the approval, the antibiotic is poised to contribute significantly to addressing unmet medical needs by effectively fortifying the arsenal for the fight against the ever-evolving threats of AMR.

> "The journey from project inception to FDA approval was marked by the indispensable contribution of Recipharm. The flexibility and specialised expertise proved to be critical to project success. This partnership exemplifies the power of collaboration, where two entities seamlessly merge their strengths to conquer challenges and achieve outcomes that stand as benchmarks of excellence."
>
> — ACS Dobfar Stefano Fapanni

LOOKING AHEAD

The launch of the antibiotic in the U.S. is a major stepping stone towards a broader, more expansive future for the company. As part of this expansion, Innoviva Specialty Therapeutics is exploring avenues to introduce the antibiotic into new markets, with a keen eye on the dynamic landscape of healthcare globally. This strategic expansion speaks to the antibiotic's potential to address diverse medical needs and protect public health on a global scale.

The project support provided by Recipharm remains dedicated and will extend well beyond the launch of the antibiotic. Post-launch, the CDMO's commitment to the project endures, providing continued support that ensures the product's sustained success and market presence. This ongoing collaboration underscores the profound impact of a dedicated partner, one that remains resolute in navigating the challenges and opportunities that arise as the antibiotic finds its footing in diverse markets.

"We are delighted to have undertaken this transformative journey with Recipharm. The dedication, innovative solutions and collaborative spirit have been essential to the progress of the project. As we look ahead, we eagerly anticipate further milestones and successes, knowing that our partnership will continue as a driving force behind our shared vision for this antibiotic and our future novel antibiotic collaborations."

— ACS Dobfar Stefano Fapanni

1. https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance
2. https://pubmed.ncbi.nlm.nih.gov/24738913/

About ACS Dobfar

Established in 1973, Acs Dobfar is an Italian, privately held, chemical-pharmaceutical company that has achieved, over its 50 years of experience, a strong leading position in the health-care sector. With our Headquarters located in Tribiano, 10 Km outside of Milan, we now embrace 23 production facilities connecting four continents and employ more than 3000 workers. As a fully integrated provider of affordable, high quality pharmaceutical intermediates, superior APIs and finished dosage forms (PDF), Dobfar spans the globe exporting to over 100 countries worldwide. We cover the full spectrum of activities from process development through commercial manufacturing ensuring the best outcome for our clients. Our core value is to provide better health for everyone.

www.acsdobfar.it

About Recipharm

Established in 1995, Recipharm's manufacturing, fill & finish, and delivery-device services encompass a wide variety of drug dosage forms and modalities. Recipharm is an industry leading CDMO with over 30 facilities and 9,000 employees globally – supporting companies that are developing small molecules, biologics, and drug-device combinations. The company operates development and manufacturing facilities in France, Germany, India, Israel, Italy, Portugal, Spain, Sweden, the UK and the US.

Introducing ReciBioPharm, Recipharm's biologics business combining the capabilities of recently acquired CDMOs Arranta Bio, GenIbet and Vibalogics. Our expanded biologics drug development and manufacturing services encompass technologies based on live viruses and viral vectors, live-microbial biopharmaceutical products, recombinant proteins, nucleic acid-based mRNA and plasmid DNA production.

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