Case study
Drug product

Pediatric dosage formulation


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A US-based global biopharmaceutical company known for its successful anti-infective products for adults was looking to reformulate the product into an age-appropriate dosage form for young children and pre-teen patients.

Maintain the equipment train

The customer established a list of criteria for selecting a CDMO partner. Among its operational priorities, it identified:

- Maintaining as closely as possible the train of equipment used to manufacture its adult and adolescent formulations
- Proven blending, compression, and coating capability, particularly of micro-tablets and oral granules
- Ability to handle a variety of batch capacities: engineering, design of experiment protocol, clinical batch, registration, and validation; scaling to commercial production runs
- International regulatory and significant commercial operational expertise
- Expertise in cleaning requirements for low-dose formulations

The customer also wanted the CDMO to be flexible, responsive, and cooperative, and to engage in communications at the highest levels of the organization. In addition, they requested to be onsite during manufacturing to address any issues in real time.

Cambrex initially emerged as a candidate because its 226,000 sq.ft. GMP facility in Québec, Canada features the necessary equipment to handle a range of batch sizes, from 10kg to 900kg. In addition, Cambrex has in place all the quality systems to support the registration of the customer's product in multiple markets worldwide, including the US, Canada, and throughout Europe.

Invest for the win-win

Cambrex was selected because it demonstrated flexibility, responsiveness, and cooperation. As a result, Cambrex ultimately received multiple pediatric formulation projects from the customers, in part because it was willing to make modifications and invest in new equipment to mimic the manufacturing process train for the adult formulation. For one of the projects, the customers contributed to a major investment in equipment components and modifications in the process train to more effectively contain the active ingredient.

Overview

A global biopharmaceutical company with a successful adult anti-infective product franchise was looking to create a pediatric formulation to meet US FDA regulatory requirements, expand patient access to children in an appropriate dosage form and strength, and to extend patent protection of its flagship product line.

Challenge

The pediatric formulation and dosage form(s) in development at small/lab scale did not fit the plant equipment profile used to manufacture the adult dosage form at the customer's facility. The customer, therefore, required a high-quality, agile CDMO with experience supplying international markets that could manufacture its pediatric formulation on the same equipment train used for manufacturing its adult dosage form.

Solution

Cambrex was selected because it could most closely match the train of equipment, as well as for its expertise, quality systems, international regulatory expertise, and flexibility to allow the customer to meet its internal and external regulatory commitments and short delivery deadlines.

Results

Cambrex is now working concurrently on multiple pediatric formulations and has been recognized by the pharmaceutical customer as a Pediatric Center of Excellence – a reliable partner in its ongoing efforts to bring pediatric formulations to market to address unmet medical needs.

"We were handling high value API for each batch, so having an efficient transfer system for the API and blended powder was very important to not only transfer the product completely but also to contain the product," said Maryse Laliberte, General Manager at Cambrex's Québec facility.

When it was discovered that aqueous coating would not handle the necessary taste masking, Cambrex and the customer worked together to fund additional modifications to two manufacturing suites within Cambrex's facility to allow for solvent coating of the tablets using explosion-proof technologies and new solvent coating machinery.

"It's a win-win situation because for us, we are getting a new capability with the new XP coating, and on their side, because it was not something they could find anywhere else, they are now able to achieve the full process all at Cambrex Mirabel, including the alcohol coating for two of the pediatric products at one site," Ms. Laliberte said.

On track

Cambrex's collaborative approach extends to clear, joint goal setting to achieve milestones and enable the customer to file regulatory submissions within stated deadlines. The projects are all on track and Cambrex has met all of its commitments to the customer because of manufacturing schedule flexibility, quick turnaround with documentation, sharing best practices, and drawing from the customer's product knowledge to allow for a smooth process.

"We have been able to turn around and make the batch, or change the batch size, and deliver the product, as needed, on the days they have requested," said Ms. Laliberte. "If our customers need to work on a fast-track project, we are equipped and we have the team to deliver."

Measuring success

Cambrex is measured by the customer against key performance indicators based on the speed of its execution, compliance with quality systems (Cambrex's and the customer's), the quality of its work, and its ability to resolve issues quickly and with transparency.

The customer has been so pleased with its relationship with Cambrex that it has deemed the CDMO its main pediatric manufacturer and has extended the products placed at Cambrex for other adult formulations/products.

"They see us as an extension of them, not only as a service provider," Ms. Laliberte said of the customer. "We have built a relationship where both teams – theirs and ours – exchange best practices to achieve the goals of both companies."

> "Cambrex is very open to work in a collaborative way with our customers. It's not 'we do what we think and if we fail, we do it over'. Instead, we work together, getting the customer's input, and we do it right the first time."
>
> **Maryse Laliberte**
> General Manager

Making it work

Based on Cambrex's success with this customer, Ms. Laliberte suggests that pharmaceutical companies looking for CDMO partners to deliver pediatric formulations consider the following:

- Keep the formula as close to the adult formula as possible
- Maintain the same train of equipment where possible; or if necessary work with your CDMO to look for synergistic investments that can solve commercialization challenges
- Leverage data and knowledge from the adult formulation scale/process
- If the adult dosage form is in a solid oral dose formula, choose mini-tablets or oral granules over liquid formulations to minimize variables during development

About Cambrex

Cambrex is a leading global contract development and manufacturing organization (CDMO) that provides drug substance, drug product, and analytical services across the entire drug lifecycle.

With over 40 years of experience and a growing team of over 2,200 experts servicing global clients from North America and Europe, Cambrex is a trusted partner in branded and generic markets for API and finished dosage form development and manufacturing.