PHARMA PARTNERING CONSIDERATIONS FOR INJECTION DEVICE COMPONENTS

In the modern world of injectable drugs, one of the major considerations for pharma is choosing partner companies for the development and manufacture of the injection device components. Here, Adam Shain, Director, Global Business Development, Injectables, Aptar Pharma, discusses several of the considerations that go into ensuring that the best possible partner is selected.

The needs of customers within the injectables sector are forever evolving and, as a result, the number of suppliers has increased in tandem, covering a broad range of specialities and portfolios. As the spectrum of choice grows, so does the opportunity to make a selection unwisely. With the modern paradigm of partnering between pharmaceutical companies and suppliers, selecting a partner is a critical decision. So, how can pharma ensure that they make the best possible choice? This article outlines many of the aspects that ought to be considered, such that the resulting partnership will be symbiotic, mutually beneficial and ultimately deliver superior outcomes.

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There are, of course, myriad factors to consider. However, an initial list of potential partners can be refined with some simple considerations:

- A partner's capacity to scale manufacturing with demand, whilst maintaining production consistency.
- A partner's quality assurance methodology – particularly in light of the increasing demands surrounding the reduction of particulates.
- A partner's business continuity planning and ability to ensure a secured supply in the face of a quality or manufacturing failure.

Potential injectable device component partners should recognise that pharma and biotech customers are facing many complex challenges, from increased regulatory requirements to the needs of their own internal development programmes, which often involve extremely sensitive drug formulations. These challenges are new and therefore often need new thinking, new insight and new R&D solutions to meet them. Such fresh thinking requires a partner that is prepared to accept new challenges and work together to bring a product to life.

QUALITY ASSURANCE

Above all else, it is essential that the components of an injectable drug delivery device are of the required quality standard (Figure 1). As such, a potential partner must deliver said standard of manufacturing and cleanliness in components, even as the demand for higher quality standards grows. They should be able to demonstrate compliance to quality standards including ISO certifications, such as ISO 15378:2011. It is worth considering how open a potential partner is to inspection, from regulatory bodies and clients alike, and what methodology they use internally for validating their quality assurance systems.

CONSISTENCY OF SUPPLY

The nature of partnering means that often a pharma company selects only a single supplier. In this circumstance it is an

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Figure 1: The primary consideration of any partner should be their ability to ensure the necessary quality requirements are met.

Figure 2: Components that are ready to use without the need to sterilise are becoming a new standard.

absolute imperative that the partner can guarantee the security of supply – can they consistently deliver? Considerations here include how a single source partner would manage upward and downward variations in demand and the potential use of mirrored production sites.

STERILISATION OF COMPONENTS

The progression of manufacturing standards amongst injectables component suppliers in recent years has seen them match those required of laboratories and regulatory agencies to the point where products can be offered that simply need sterilising before use. However, as standards continue to increase, a demand has risen for components that are ready for use directly upon arrival (Figure 2). Such components greatly simplify use, as they are directly introduced into restricted access barrier systems (RABS) or isolators, bypassing the need for sterilisation beforehand and guaranteeing cleanliness. Before choosing such a product however, it is necessary to consider its compatibility with the overall process, e.g. is the product steam or gamma irradiated?

STABILITY AND COMPATIBILITY STUDIES

Regulatory and Pharmacopeial requirements continue to evolve, requiring companies to focus more on the product lifecycle. As such, it is of noteworthy benefit if a partner is able to demonstrate an understanding of this ever-changing regulatory environment and ability to provide guidance in their specialist areas. One of the most beneficial aspects a device or component partner can advise on is stability and compatibility, in particular extractables, preferably providing a full report identifying potential compounds that may migrate into the formulation from its container (Figure 3). A primary container will often have multiple materials in contact

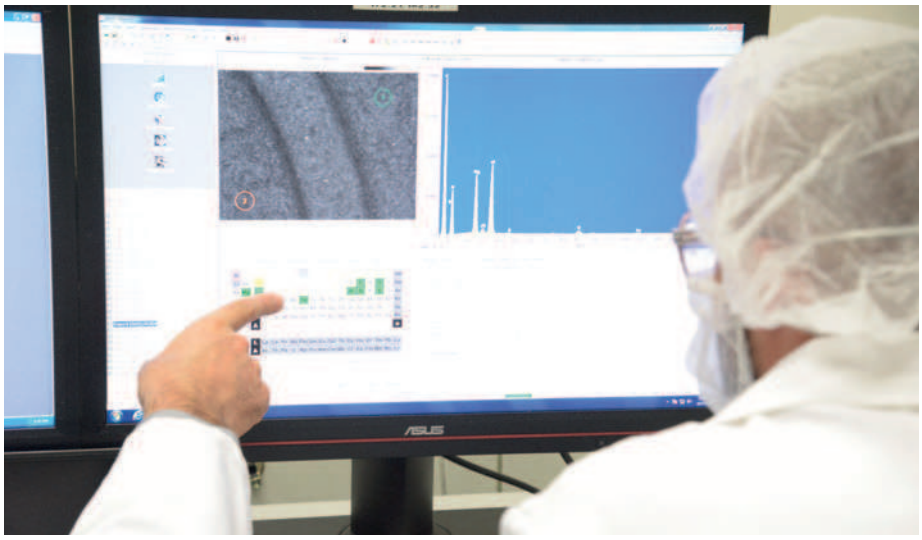

Figure 3: Extractables reports are highly beneficial when assessing primary container components.

with the drug product, most commonly a glass vial or syringe and a plastic stopper, each of which will have extractables and leachables profiles that will need to be assessed. Further to this, it is worth considering if a potential partner is able to provide a toxicological assessment as well.

TIME-TO-MARKET

If quality is the primary priority, time-to-market comes a very close second. When considering potential partners in this regard, as before with extractables, it is a significant benefit if they have a thorough understanding of the regulatory environment. It is desirable for a partner to have a proven track record of swift regulatory approvals derived from this understanding, as it will demonstrate that the partnership will likely accelerate that all-important time-to-market. To achieve this a potential partner needs both expertise in device development and a deep understanding of formulation science, combining them to develop devices and components that satisfy the requirements of the regulators and the drug itself.

TECHNICAL AND SCIENTIFIC RESOURCES

The quality of technical, scientific and R&D support a partner is able to provide is another aspect to consider, particularly with regard to the stability and continuous improvement of an injectable device. The things to look at here include the potential partner's existing portfolio of products, any patents they may have, their process development methods and history, the capability and credentials of their development team and their in-house laboratories and facilities. With an eye to the last, in particular it is important to note their scientific and technical specialities (e.g. analytical chemistry, microbiology, product engineering, materials science) and the standards and best practices for which they have accreditations.

Figure 4: Automated production reduces human contact and therefore the risk posed to highly sensitive molecules.

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BIOLOGICS AND SENSITIVE MOLECULES

With the recent rise of biologics, the average new drug formulation is notably more sensitive than in previous generations. As such, when working with these complex proteins, the interaction of the drug with its primary container is a critical concern. Here, in addition to extractables, the device components must be assessed to ensure that they are inert with respect to the drug they are intended to contain. So, returning to the matter at hand, selection of a component partner with a specialism in this area, particularly when dealing with plastic or silicone, can make the development process much easier.

Secondary to this, but still worth considering with sensitive molecules, it is worth considering the degree to which the manufacture of these components is automated, including the charging and discharging of moulds and trimming

BOX 1: PARTNERING CONSIDERATIONS – QUICK CHECKLIST

1. Capacity to scale manufacture
2. Quality assurance methodology
   - Internal validation methods
3. Business continuity planning
   - Ability to deal with quality/manufacturing failure
4. Quality inspections
   - Regularity of regulator inspections
   - Openness to client inspection
5. Consistency of supply
6. Sterilisation of components
7. Stability and compatibility studies
   - Understanding of the regulatory environment
   - Extractables & leachables testing
8. Ability to reduce time-to-market
9. Technical and scientific resources
   - Existing product portfolio
   - Team and in-house laboratories/facilities
   - Scientific/technical specialism
10. Ability to deal with sensitive molecules
    - Automation of manufacturing process
11. Ethos compatibility

of components. By reducing human contact, manufacturing partners can mitigate against risks of errors or entrance of particulates into their facility, thus reducing the risk to the drug. However, when considering automated manufacturing it is important to go back to the previous consideration of quality assurance and note the methodology, for example in-line vision inspection (Figure 4).

ETHOS COMPATIBILITY

The last consideration to touch upon is that it is preferable to select a partner with similar company values and ethos. Though an intangible aspect, compatibility in this regard is a boon to a working relationship, and with the depth and length of relationship expected from a good partnership as discussed here, such a boon will pay dividends. Specifics to consider are their engagement with the healthcare trends of the moment, their attitude towards innovation and disruptive technologies, their communicativeness and responsiveness to feedback, and how they approach the challenges of development.

CONCLUSION

Pharmaceutical and biotech customers are facing many complex challenges today, including increased regulatory requirements and the need to deliver extremely sensitive drug formulations via the injectable route. These challenges require fresh thinking. Discovering a partner with the right balance of scale and care, one with the same values, the same commitment to quality, and a clear partnership approach gives you the best of all worlds – flexibility of scale, consistency of supply, speed-to-market, innovative thinking, and a commitment to meet tomorrow's injectables challenges today – together.

ABOUT THE COMPANY

Aptar Pharma provides innovative drug delivery systems, components and services to pharmaceutical, consumer healthcare and biotech customers worldwide, spanning a wide range of routes of administration, including nasal, pulmonary, ophthalmic, dermal and injectable. Aptar Pharma's mission is to provide complete solution services built around its drug delivery systems and to create stage-specific development packages designed to proactively address regulatory needs and accelerate approval. Overall, six billion components and systems are produced annually across 12 manufacturing sites and are accessed by 1.6 billion patients, and over US$50 billion worth of pharmaceutical products depend on Aptar Pharma's systems. Aptar Pharma is part of AptarGroup, Inc (NYSE:ATR).

ABOUT THE AUTHOR

Adam Shain is the Global Business Development Director for Aptar Pharma's injectables division and is responsible for driving the new business agenda, with a particular focus on reinforcing the division's innovation proposition. Mr Shain previously worked for Promius Pharma, a subsidiary of Dr Reddy's Laboratories, where he was instrumental in the development, commercialisation and launch of many of its branded products. Prior to his position at Dr Reddy's, Adam held various commercial roles within Aptar Pharma.