PowdermatriX

SPARK CASE STUDY

CRITICAL PROOF

What's the story?
Nottingham based Critical Pharmaceuticals Limited has developed solvent free formulation technology for producing polymeric microparticles for drug delivery. These allow the slow release of drugs from the polymers, reducing the number of injections required by patients and improving the drugs effect. This gives the prescriber significantly more control on when and how much to prescribe for the patient and can speed up the healing process.

Although Critical Pharmaceuticals were confident with their product, they were required to have evidential proof that the excipients (agents that aid drug release in the body) were effective, in order to introduce it to potential customers in the United States.

This particular SPARK project was designed to investigate the properties and performance of the composite powders used for depot injection in the pharmaceutical industry produced by Critical Pharmaceuticals' solvent free formulation technology.

What went on?
The Business Partnership Unit at the School of Chemistry (University of Nottingham) acted as the solution provider to investigate the loading of different excipients into biodegradable polymeric microparticles using supercritical carbon dioxide and the effects of these excipients on microparticle size, morphology, and degradation.

The results of the project were very positive as it demonstrated that it is possible to incorporate excipients at high loadings into the polymeric microparticles. It also showed that the loading of the excipients had an effect on microparticle morphology compared to excipient-free microparticles.

What happened?
The benefits of the SPARK award were that it enabled important research work to be carried out that would not have been possible without it. The aim of the work was in response to customer interactions from the US regarding the loading of excipient within our polymeric formulations. The data generated enabled us to have a robust answer to their questions and will be invaluable in business development discussions.

The SPARK project threw up several unanswered questions about Critical Pharmaceuticals' processes, and it is believed that this would make an excellent basis of a CASE award to investigate the parameters involved in producing powders using Critical Pharmaceuticals' supercritical fluid technique.

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