Hot melt extruded and injection moulded dosage forms

April 27 2016

Hot Melt Extrusion (HME) and Injection Moulding (IM) are becoming more prevalent in the drug delivery field due to their advantages over current pharmaceutical manufacturing techniques. HME is a continuous process that can be used in the pharmaceutical industry to increase the solubility of poorly water soluble drugs, through the generation of solid dispersions, and to manufacture dosage final dosage forms. IM, which is usually combined with HME (HME-IM) is a rapid, versatile and continuous manufacturing technique, that is easily scaled up and can be used to manufacture a range of pharmaceutical dosage forms from oral tablets to implantable devices.

Increasing numbers of new drugs being developed have a low solubility and high tissue permeability, which means that bioavailability is solubility dependent. This has caused a number of challenges for the pharmaceutical industry as drugs with low water solubility often have a lack of flexibility in their formulation and administration. Recently, much attention has been focused on the development of solid dispersions for the solubility enhancement of poorly water soluble drugs. HME is a continuous method of producing solid dispersions, which is easily scalable while the extrudate can be shaped to suit the next processing step.

HME and HME-IM have the potential to produce a range of complex pharmaceutical dosage forms such as multi-layered tablets and long-term implantable devices. Furthermore, HME can be linked to 3D printing to provide a continuous process for the manufacture of complex and

bespoke dosage forms designed and formulated for an individual patient, thus ushering in the age of personalised medicine.

This article provides the reader with all they need to know about the applications of HME and IM within the pharmaceutical industry as well as some of the obstacles that may limit their use. Furthermore, it introduces the reader to the potential of HME and 3D printing in the manufacture of complex dosage forms and personalised medicines.

More information: Ian major et al, Hot Melt Extruded and Injection Moulded Dosage Forms: Recent Research and Patents, *Recent Patents on Drug Delivery & Formulation* (2015). DOI: 10.2174/1872211309666150512111143

Provided by Bentham Science Publishers