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Hot melt extrusion: An emerging drug delivery technology

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Hot melt extrusion (HME) is emerging technology which is gaining high importance in the pharmaceutical industry as a novel technique for the preparation of various dosage forms and drug delivery systems, for example granules and sustained release tablets. It is a fast growing technology platform that is utilized to solve difficult formulation challenges, primarily in the area of solubilization. Due to fast processing, high degree of automation, absence of solvents, simple and continuous operation and ability to process poorly compactable material into tablet form are some of the main advantages offered over conventional processing by this emerging technique. Applications of HME in pharmaceutical industry continue to grow and recent success of this technique has made it a useful tool of consideration as a drug delivery

solution. The use of hot-melt extrusion (HME) within the pharmaceutical industry is steadily increasing, due to its proven ability to efficiently manufacture novel products. HME involves the application of heat, pressure and agitation through an extrusion channel to mix materials together, and subsequently forcing them out through a die. Twin-screw extruders are most popular in solid dosage form development as it imparts both dispersive and distributive mixing. It blends materials while also imparting high shear to break-up particles and disperse them. HME extrusion has been shown to molecularly disperse poorly soluble drugs in a polymer carrier, increasing dissolution rates and bioavailability.

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