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Abstract

This study aimed to develop novel co-processed tablet fillers based on the principle of particle engineering for direct compaction and to compare the characteristics of co-processed products obtained by fluid-bed coating and co-spray drying, respectively. Water-soluble mannitol and water-insoluble calcium carbonate were selected as representative fillers for this study. Hydroxypropyl methylcellulose (HPMC), serving as a surface property modifier, was distributed on the surface of primary filler particles via the two co-processing methods. Both fundamental and functional properties of the products were comparatively investigated. The results showed that functional properties of the fillers, like flowability, compactibility, and drug-loading capacity, were effectively improved by both co-processing methods. However, fluid-bed coating showed greater advantages over co-spray drying in some aspects, which was mainly attributed to the remarkable differences in some fundamental properties of co-processed powders, like particle size, surface topology, and particle structure. For example, the more irregular surface and porous structure induced by