Formulation and Manufacture of Pharmaceuticals by Impregnation onto Porous Carriers

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Technology description

Figure 1. SEM Pictures of pure Neusilin ® and impregnated with Fenofibrate at 30% loading.
Invention Summary:Rutgers scientists have developed a novel platform of pharmaceutical product development by utilizing fluid bed impregnation (FBI) of API solutions onto porous carriers. Impregnation of solutions into porous carriers allows extremely uniform distribution of small amounts of material, which can be used for drug dosage regulation. Currently, the method can be adjusted for drug content as low as 0.1% and as high as 10%, thus spanning the entire range of interest for poorly soluble, highly potent compounds in oral delivery applications. The drug release profile can also be controlled through the manufacturing process.Since the impregnated material can be filled directly into capsules, many inactive substances that were previously required for formula stability throughout encapsulation (i.e. compression aids, glidants, surfactants, disintegrants, or lubricants) can be eliminated as well. Also, the FBI method is uniquely suited for drug formulation development and clinical supply manufacturing, as it is safer than processes that require drugs to be handled in dry, powder form.

Application area

Therapeutics
Clinical Supply Manufacturing
Product Formulation and Development
Drug Loading
Drug Delivery
Controlled Release
Porous Carrier Technology

Advantages

Approach eliminates all API operations after synthesis and purification (i.e., crystallization, drying, milling) making issues related to API crystallinity, physical stability, flow, cohesion, electrostatics, and particle size distribution no longer relevant
Extremely uniform material content in finished dosages

Enhances deliverability of poorly soluble drugs
Significant simplification of product manufacturing sequence
Safety and environmental improvements
Simplified scale-up procedure
Reduced number of critical raw material attributes and control parameters

Institution

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