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Dosing challenges in respiratory therapies

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ABSTRACT

The pulmonary route of administration has been commonly used for local lung conditions such as asthma and chronic obstructive pulmonary disease (COPD). Recently, with the advent of new technologies available for both formulation and device design, molecules usually delivered at high doses, such as antibiotics and insulin to treat cystic fibrosis (CF) and diabetes, respectively, can now be delivered by inhalation as a dry powder. These molecules are generally delivered in milligrams instead of traditional microgram quantities. High dose delivery is most commonly achieved via dry powder inhalers (DPIs), breath activated devices designed with a formulated powder containing micronized drug with aerodynamic diameters between 1-5 μ m. The powder formulation may also contain other excipients and/or carrier particles to improve the flowability and aerosol dispersion of the powder. A drawback with high doses is that the formulation contains a great number of fine particles, leading to a

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