

Inhalable Biologics Market Size, Share & Trends Analysis Report By Biologics (Peptides & Proteins, Monoclonal Antibodies, RNAi-based Therapeutics), By Application (Diabetes, Cancer), By Dosage Form, By Distribution Channel, By Region, And Segment Forecasts, 2025 - 2030

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Abstracts

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Inhalable Biologics Market Growth & Trends

The global inhalable biologics market size is anticipated to reach USD 10.06 billion by 2030 and is projected to grow at a CAGR of 17.6% from 2025 to 2030, according to a new report by Grand View Research, Inc. Growth drivers include the increasing prevalence of respiratory diseases, rising demand for non-invasive drug delivery, and advancements in formulation technologies enhancing biologic stability. The market benefits from patient preference for self-administration, faster drug onset through pulmonary delivery, and research on inhalable monoclonal antibodies, peptides, and RNAi-based therapeutics. Regulatory support and technological innovations further expand market opportunities.

The high prevalence of respiratory conditions, including asthma, COPD, and cystic fibrosis, remains a key growth driver. According to the CDC and ACAAI, asthma affected 7.7% of Americans (24.9 million) in 2023, leading to significant healthcare utilization and costs. Inhalable biologics offer targeted lung delivery with rapid onset, enhancing treatment efficacy while minimizing systemic side effects. Companies such as Ocugen, Moderna, Pfizer-BioNTech, and AstraZeneca are expanding their portfolios through inhaled vaccines and therapeutics. For instance, Ocugen received FDA clearance in January 2025 for a Phase 1 trial of OCU500, an inhaled COVID-19

vaccine, while MannKind Corporation continues to expand Afrezza's reach, with Indian regulatory approval following positive Phase 3 trial results. The market pipeline remains active, with inhalable biologics targeting respiratory diseases, diabetes, infectious diseases, and oncology. A notable innovation includes inhalable mRNA therapeutics using lipid nanoparticles (LNPs) functionalized with zwitterionic polymers, as published in the Journal of the American Chemical Society in November 2024, demonstrating stable nebulization and effective pulmonary delivery. In December 2024, MannKind Corporation and Cipla Ltd. secured CDSCO approval for Afrezza (insulin human) Inhalation Powder for adults in India, following prior approvals in the U.S. and Brazil. Under this strategic initiative, MannKind will supply the product while Cipla manages marketing and distribution, with shipments expected by late 2025. The move aims to strengthen Afrezza's global presence, particularly in India, where over 74 million adults are affected by diabetes. Afrezza offers a non-injectable, rapid-acting insulin alternative, with quick absorption and a 2-3 hour effect, addressing patient preferences for innovative and patient-centric diabetes management solutions. Cipla's extensive distribution network is positioned to enhance access and improve patient outcomes across India. Safety measures include precautions for patients with chronic lung diseases due to the risk of bronchospasm. As part of pipeline advancements in inhalable biologics, Ab Initio Pharma participated as a Silver Sponsor at the 35th Drug Delivery to the Lungs (DDL) Conference from December 11–13, 2024, in Edinburgh. This engagement represents a strategic initiative to highlight its drug delivery solutions, including small molecules, peptides, oligonucleotides, and RNA-based therapies. Key conference features include a presentation on intranasal mRNA delivery and a poster on inhaled oligonucleotides, emphasizing innovation in non-invasive treatment modalities. These initiatives underscore a growing emphasis on expanding access to inhalable therapies and strengthening global market positions through strategic partnerships, regulatory approvals, and pipeline innovations focused on chronic and infectious diseases.

Inhalable Biologics Market Report Highlights

Based on type, the peptides and proteins segment led the market with the largest revenue share of 29.85% in 2024, due to their broad therapeutic applications, stability improvements, and efficient pulmonary absorption.

The RNAi-based therapeutics segment is projected to grow at a robust CAGR over the forecast period.

Based on applications, the diabetes segment accounted with the largest market revenue share in 2024. However, respiratory diseases are expected to grow at a rapid CAGR over the forecast period.

Based on dosage form, the dry powder inhalers segment accounted for the largest market revenue share in 2024, aided by approved products in the segment. However, the nebulizers segment is expected to witness at the fastest CAGR over the forecast period.

Based on the distribution channel, the hospital pharmacies segment accounted for the largest market revenue share in 2024.

In December 2024, Cipla received CDSCO approval on December 11, 2024, to exclusively distribute and market Afrezza (inhaled insulin) in India, developed by MannKind Corporation. Afrezza is a rapid-acting insulin for type 1 and type 2 diabetes, offering a non-injectable alternative with quick absorption and a 2-3 hour effect. Cipla aims to enhance diabetes management accessibility, leveraging its distribution network to improve patient outcomes across India.

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