INHALATION PRODUCTS

Since their inception in the 1950s, metered-dose inhalers (MDIs) are used by millions of people to treat a variety of diseases, such as asthma, chronic obstructive pulmonary disease and other lung diseases. MDIs contain therapeutically-active ingredients dissolved or suspended in a propellant or mixture of propellants in compact pressurized aerosol dispensers. Dry-powder inhalers (DPIs), both pre-metered and device-metered, are used by a significant and growing patient population. Novel devices continue to come onto the market.

During development, these inhalation products bear unique characteristics that must be considered for formulation stability, manufacturing, container and closure system, and quality control. These components can affect the product’s efficacy and ability to deliver reproducible doses.

Regulatory Expectations

The FDA and other regulatory organizations have published guidance documents focusing on the testing requirements for MDIs and DPIs, including the following:

- Appearance
- Identification
- Moisture content
- Net fill weight
- Drug content (assay)
- Impurities/degradation products
- Foil integrity testing
- Microbiological testing
- Particle size distribution
  - Andersen cascade impaction (ACI)
  - Next generation impaction (NGI)
- Microscopic evaluation
- Leak rate
  - Valve delivery (shot weight)
- Extractables/leachables including nitrosamines

Address Regulatory Expectations Upfront

Understanding the specific challenges posed by inhalation products is a first step toward regulatory compliance. However, testing MDIs and DPIs requires a broad range of expertise and methodologies. You can improve your product’s efficacy with the help of Covance analytical support. Our scientists have decades of experience in conducting these studies and are intimately familiar with established protocols including USP, FDA and ICH standards. We can also modify, develop, and validate methods for specific matrices.

Our specialists analyze the appearance of the content, container and closure system as an indicator of product integrity. We perform identification tests to verify the identity of the
drug substance. We pay particular attention to monitoring water or moisture and conducting specific assays. We measure the net weight of all formulation components and determine concentration of drug substance. These methods are also used to determine levels of degradation products and impurities. Due to the complexity of the dose, we analyze the medication available at the mouthpiece to ensure dose uniformity from multiple containers and consistency through the product’s life. Other analytical services include microscopic examination, leak rate testing, valve delivery verification and extractables/leachables testing.

At Covance, we help make your solutions real through world-class analytical support, scientific insights and expertise in all phases of nonclinical and clinical studies.

Contact us to learn more about how Covance’s inhalation services can support your drug development efforts.