

## HISTORY OF THE DEVELOPMENT AND FUTURE OF THE INHALATION THERAPY

**S. G. Opimakh**

*Abstract*

Throughout its existence, humanity encounters respiratory diseases. In an attempt to overcome these diseases, inhalation therapy was born, continuing to develop nowadays.

The review analyses the literature data on the development and future of the inhalation therapy.

Humans seek for an effective method of inhaling drugs since ancient times. The aerosol drug delivery has been the mainstay of treatment for pulmonary diseases, particularly asthma, for over 3500 years. In ancient times, therapeutic aerosols were often delivered by smoking or by placing herbal mixtures in a heated container and inhaling the vapors. From ancient times to the present day, plants containing tropane alkaloids (such as *Datura stramonium*, *Hyoscyamus niger*, and opium) have been used as the main raw materials. Improvements in manufacturing capabilities at the dawn of the Industrial Revolution led to more sophisticated methods of generating therapeutic vapors or atomizing drug solutions. Rapid progress in aerosol therapy technology has been observed since the 18th century. The development of nebulizers was undoubtedly influenced by the invention of anesthesia, as it marked the beginning of the search for devices for effective pain relief. The first metered-dose aerosol inhaler was introduced in 1956 and significantly advanced the development of therapeutic aerosols. The first dry powder inhaler was developed in the mid-19th century. It did not gain popularity in clinical practice until the 1990s. The signing of the Montreal Protocol in 1987 led to a surge of innovation in the development of inhalers, which formed the current inhaler market. Nowadays, inhalation therapy has gone beyond the treatment of obstructive lung diseases, and far beyond pulmonology as well. The prospects for its further development lie both in the improvement of existing drug molecules and delivery devices, and in the creation of new ones with the use of the digital technologies.

**Key words:** inhalation therapy, delivery devices, inhaler, nebulizer, metered-dose inhaler, dry powder inhaler, history of pulmonology.

**Ukr. Pulmonol. J. 2025;33(1):61–72.**

*Svitlana G. Opimakh*

*SO "National scientific center of phthysiology, pulmonology and allergology named after F. G. Yanovskii National Academy of medical sciences of Ukraine"*

*Department of diagnostics, therapy and clinical pharmacology of lung diseases*

*Senior research associate*

*MD, PhD*

*10, M. Amosova str., Kyiv, 03038, Ukraine*

*Tel./fax: 380 44 270 27 33, opimakh@ifp.kiev.ua*