Advanced Drug Delivery Systems Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The advanced drug delivery systems (ADDS) market is expected to register a CAGR of 5.3% during the forecast period (2022-2027).

The COVID-19 pandemic had positively impacted the market's growth rate. Several studies emphasize how ADDS will help develop improved delivery systems (dosage forms) of existing therapeutic agents. For instance, in June 2020, the Chalmers University of Technology in Sweden, the University of Gothenburg, and AstraZeneca started new pivotal research combining many promising concepts to investigate a nasal spray mRNA vaccine against COVID-19. The team was working on a biomimetic nanoparticle that contains both immune enhancers and a targeting protein to investigate design principles for nasal immunization. The Chalmers Innovation Office, the Chalmers Area of Advance Health Engineering, the Swedish Foundation for Strategic Research, and the Swedish Research Council contributed to the initiative.

Additionally, in April 2020, Bioavanta-Bosti developed a 48-hour manufacturing process using its Novochizol chitosan polysaccharide nanotechnology to encapsulate APIs or biologics for localized delivery and sustained release intra-pulmonary drug delivery formulations, which are suitable for treating COVID-19 patients. Bioavanta-Bosti also reported in 2020 that it is looking for collaborations with drug developers and clinical researchers to produce a repurposed medicine or new molecular or biological entity formulations to treat severe COVID-19 infection in the lungs. ADDS has aided in exploring new insights to identify untapped areas for future targeted distribution, and it is quickly gaining traction in the pharmaceutical sector and academic institutions. Thus, COVID-19 has had a significant impact on the growth of the market.

Furthermore, the factors driving this market's growth include the development of new drugs and biologics; advancements in understanding human biology and diseases; and increased R&D spending.

Advancements in several biology-oriented initiatives have created a unique opportunity to better understand the molecular effects of human diseases and develop novel drugs and biologics based on these factors. The recently discovered advanced drug delivery systems include lipid, protein, and polymer technologies with better lipid distribution in the body, preventing drug degradation due to the external environment and reducing the rate of drug clearance. Advanced drugs and biologics have higher efficiency with a smaller dosage of drugs. Hence, they must be supported with advanced drug delivery systems to gain maximum efficacy.

In addition to the drugs and biologics, the drug-eluting implants have the potential to provide uninterrupted treatment and a reduction in drug dosage (hence a less frequent need for dosing). The advanced sustained release systems help target intestinal infections and others. The trend toward self-injection devices and the rapidly growing pipeline of biologics/biosimilars and auto-injectors have also recently emerged as an important class of medical devices. Many companies are focusing on the launch of new products that will contribute to market growth. For instance, in December 2020, Agile Therapeutics, Inc., commercially launched Twirla (levonorgestrel and Ethinyl estradiol) transdermal system, a new non-daily, non-invasive contraceptive patch in the United States. Additionally, in February 2022, Nu Gen Medical Devices Inc. delivered a purchase order from a Taiwanese medical distributor, Shin-Ya Biotechnology Co., Ltd., for its InsuJet needleless injection system. This is part of a multi-year sales and distribution agreement with a minimum commitment of CDN 100,000 over the first two years, with future commitments for the remaining three years of the agreement to be finalized in due course. Such agreements are also contributing to the growth of the market.

Likewise, Duocap (capsule-in-a-capsule), electrocapsule, and light-up delivery monitoring technology (LDMT) are some of the controlled and targeted oral drug delivery systems that provide a new way of formulating poorly soluble compounds and monitoring the release rate of drugs. Advanced drug delivery systems are being developed to resolve solubility problems and make the drugs more lipid-soluble. Thus, this enables them to easily cross lipid barriers in the body, eventually preventing external issues, such as photodegradation and pH changes, from affecting the drug and further achieving the desired concentration at the desired location to provide the maximum therapeutic effect. Thus, these developments are expected to positively impact the market's growth.

However, product recalls of advanced drug delivery products and challenges in nanomedicine-based drug delivery may hinder the growth of the market.

Advanced Drug Delivery Systems Market Trends

The Oral Drug Delivery System Segment by Type to Hold the High Growth Over the Forecast Period

The oral drug delivery method is the most common and preferred drug administration route by the physician and the patient. The demand for this route of administration mostly lies in the convenience of intake and the availability of a broad window of the therapeutic index, which, in turn, lowers the possibility of toxicity and side effects.

With increasing costs and complications in developing, patenting, and marketing new drug entities, pharmaceutical companies, with simultaneous recognition of the therapeutic advantages of controlled drug delivery, are paying greater attention to developing and modifying oral-release drug delivery systems. Over the last decade, oral release drug delivery systems have received extensive attention owing to their flexibility, reduced dosing frequency, and better patient compliance. The aforesaid factors, in combination with the reasonable cost of oral controlled release drug delivery systems, led to greater adoption of this route of administration.

The accelerated pace of advanced oral drug delivery system development is fostered by a growing market of controlled release formulations and new launches in key therapeutic areas such as the central nervous system and cardiovascular, metabolic, and

respiratory diseases. For instance, in 2020, Progenity Inc. reported positive preliminary preclinical data regarding the performance of its oral drug delivery system (DDS), the DDS capsule, which uses a proprietary autonomous localization technology designed to identify the ileal/ileocecal region of the GI tract. This technology is based on anatomy and is designed to resist variability in physiological conditions like pH, motility, and bacteria. The launch of such products will provide growth opportunities for the segment in the near future.

The demand for advanced drug delivery systems such as oral thin-film drugs is rising due to their high clinical efficacy and effectiveness against diseases. For instance, in June 2021, Shilpa Medicare Ltd. launched an oral thin film formulation, a pediatric dose of paracetamol oral thin film, under the brand name Molshil. Shilpa received approval for Molshil oral thin films after sufficiently complying with bioequivalence requirements. Shilpa's Paracetamol oral thin films are patent protected and are the first of their kind in the world.

Thus, owing to the abovementioned factors, the oral drug delivery segment is expected to grow during the forecast period.

North America Dominates the Market and is Expected to Follow the Same Trend Over the Forecast Period

North America currently dominates the global advanced drug delivery systems market owing to the better adoption of improved drug delivery solutions and follow-up of advanced treatment approaches in healthcare. The United States is the largest market in the region. The growing inclination toward self-administration of drugs, increasing innovations in injectable drug delivery systems, the high adoption rate of new healthcare technologies, and the high prevalence of chronic diseases are the primary drivers for the United States advanced drug delivery systems market.

Heart disease is a leading cause of death that burdens people, communities, healthcare providers, and systems in the country. Nearly half of all adults in the United States have some form of cardiovascular disease. According to the American Cancer Society, nearly 2 million new cancer cases are expected to be diagnosed, and around 609,000 people will die from cancer in the United States in 2022. Such a high burden of diseases creates demand for advanced drug delivery systems for effective treatment and thus drives the growth of the market.

Additionally, the joint initiatives taken by the market players, non-profit organizations, and government agencies are also propelling the growth of the market in the region. For instance, in March 2022, TFF Pharmaceuticals, Inc. entered into a Cooperative Research and Development Agreement (CRADA) with the United States Army Medical Research Institute of Infectious Diseases (USAMRIID), part of the United States Army Medical Research and Development Command and the United States Army's premier institution and facility for defensive research into countermeasures against biological warfare, and the Geneva Foundation, a non-profit that advances innovative medical research within the United States military. As per the agreement, TFF Pharmaceuticals and USAMRIID will evaluate the immune response of a dry powder recombinant Vesicular Stomatitis Virus Severe Acute Respiratory Syndrome Coronavirus-2 Glycoprotein (TFFD-rVSV-SARS2-GP) vaccine formulated using TFF's Thin Film Freezing technology. Such joint initiatives are also expected to propel the growth of the market.

Thus, owing to the abovementioned factors, the North American region is expected to show growth over the forecast period.

Advanced Drug Delivery Systems Market Competitor Analysis

The advanced drug delivery systems market is moderately competitive. Owing to the continuous technological advancements in the drug delivery system, there are possibilities for newer players to enter the market over the coming years. Some major players in this market are Boston Scientific Corporation, Baxter International, Becton, Dickinson and Company, Kindeva Drug Delivery L.P., and others.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
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