Increasing Demand for Personalized Medicine is Supporting the Growth of the Global 3D Printed Drugs Market

According to The Niche Research, Global 3D Printed Drugs Market is Anticipated to reach USD 740 Mn by 2031.

WILMINGTON, DELAWARE, UNITED STATES, December 4, 2023 /EINPresswire.com/ -- Three-dimensional (3D) printing is driving an evolutionary change in pharmaceuticals and clinical pharmacy practise, shifting away from traditional mass manufacture of medications and towards individualised medicinal products for each individual. Through offering the on-demand design and fabrication of flexible formulations with customised doses, forms, sizes, drug release, and multi-drug combinations, the concept has the potential to benefit patients, chemists, and the pharmaceutical business alike. This is an important turning point in the history of 3D printing technology in pharmaceuticals, necessitating the involvement and assistance of healthcare professionals such as pharmacists, physicians, nurses, and pharmacy technicians, among others, in order for the technology to be widely translated into clinical practise.

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Global 3D Printed Drugs Market Snapshot
Market Value in 2022: USD 305 Million
Market Value Forecast 2031: USD 740 Million
Growth Rate : 9.2%
Historical Data: 2015-2021
Base Year: 2022
Forecast Data: 2023-2031

Trends in the Global 3D Printed Drugs Market
The progress of 3D printing, as well as other digital health technologies, is creating a paradigm change in clinical pharmacy practise towards a vision of a unique and digitised treatment route

that can adapt to each individual patient's changing needs. To present, the US Food and medicine Administration (FDA) has authorised one 3D printed medicine product for human use – levetiracetam in 2016. Furthermore, FDA approved a clinical study including a 3D printed medication for patients with rheumatoid arthritis in February 2021. The Medicines and Healthcare Products Regulatory Agency (MHRA) then issued a proposal for a new regulatory framework in March 2021 to facilitate the development of POC manufacturing and supply, incorporating 3D printing technology for personalised medication manufacture which has led to the growth of the 3D printed drugs market.
Many research articles have been published that demonstrate the potential and significance of 3D printing technology in medicine manufacturing and patient care. Previously, commercially accessible 3D printers were not standardised or suitable for purpose in the production of pharmaceutical items. Biotech businesses have collaborated with regulatory bodies in recent years to produce pharmaceutical 3D printers that enable the fabrication of printlets that are safe and effective for pharmaceutical application. FabRx designed a pharmaceutical 3D printer as one example. This is a multi-nozzle GMP printer designed for pharmaceutical manufacturing. It was created in collaboration with regulatory bodies, including the MHRA, and hospital end-users. Thus, with the on-going advancements in the global 3D printed drugs market will exponentially rise during the forecast period.

Global 3D Printed Drugs Market Future
The 3D printed drugs market is likely to expand into various therapeutic areas. Beyond conventional tablets and capsules, 3D printing can be used to create complex and customized dosage forms for different medical conditions, including neurological disorders, cardiovascular diseases, and cancer. One of the major driver for the adoption of 3D printing for drugs which has the ability to rapidly prototype and test new drug formulations with 3D printing technology could lead to faster drug development and reduced time to market for new medications. Besides Regulatory agencies like the FDA and European Medicines Agency (EMA) are actively working on guidelines and standards for 3D-printed pharmaceuticals. As these regulations evolve and become more well-defined, it may encourage more companies to invest in 3D-printed drug research and development.

Key Takeaways from the 3D Printed Drugs Market
• In 2022, tablets segment, had the highest share in the global 3D printed drugs market. The ability to tailor medications to individual patient needs aligns with a growing trend toward patient-centric healthcare. 3D printing supports the idea of treating patients as unique individuals with specific medical requirements.
• Based on the technology, fused deposition modelling segment had the highest share in the 3D printed drugs market in 2022. Due to the utilisation of a relatively simple method and less expensive equipment, a varied selection of excipients, and convenience of generating dosage forms, FDM is the most commonly studied 3D printing approach in the pharmaceutical business. This approach has been used to create a variety of dosage forms, including tablets, polypills,

controlled-release devices, and oro-mucosal films.
• In the last few years, pharmaceutical companies are highly investing in 3D printing for drugs. Traditional tablet manufacturing methods have limitations when it comes to creating complex and precise dosage forms. 3D printing allows pharmaceutical companies to produce intricate, multi-layered tablets with precise control over drug release rates. This is particularly beneficial for conditions that require specific drug delivery profiles.
• The 3D printed drugs market is highly expanding in the Asia Pacific region in the last few years. Countries such as China, India, and Japan are heavily investing in research and development, and the adoption of advanced technologies like 3D printing in drug manufacturing as a natural progression. In 2022, Eli Lilly partnered with Triastek to develop a novel 3D structural dosage form design.

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What are Key Players Doing to Thrive in the Global 3D Printed Drugs Market?
• Aprecia Pharmaceuticals: Spritam was the first and only 3D printed medication authorised by the FDA in 2015. Aprecia Pharmaceuticals is the company driving the first and only FDA-validated 3D printing technology for commercial-scale medication development. Their goal is to make medications easier to consume and to minimise the amount of tablets required by patients. Using this platform, Aprecia created ZipDose Technology, which allows tablets to have a high dose load of up to 1,000 mg while still dissolving quickly with a sip of water.
• Triastek, Inc.: Triastek is a global pioneer in pharmaceutical 3D printing, with 41 patents covering more than 20% of all 3D printing pharmaceutical applications worldwide. Triastek produces its own in-house pharmaceuticals and collaborates with others to deliver drug development solutions using their patented MED 3D printing technology.

Key Companies in the Global 3D Printed Drugs Market:
o Aprecia Pharmaceuticals LLC
o Cycle Pharmaceuticals Limited
o FABRX LTD.
o Hewlett Packard
o Merck & Co., Inc.
o Triastek
o Other market participants

Key Segments Profiled in the 3D Printed Drugs Market:
By Dosage Form
o Tablets
o Capsules
o Multi Drug implants
o Nanomedicine
o Others
By Technology

- Thermal Inkjet printing method
- Zip dose method
- Binder Jet Printing
- Fused Deposition Modelling (FDM)
- Semi solid Extrusion
- Direct Powder Extrusion
- Stereo-lithography
- Selective Laser Sintering

By Application

- Oncology
- Rare diseases
- Metabolic disorders
- Transplants
- Nutraceuticals
- Others

By End Users

- Academic researchers
- Clinical pharmacists
- Pharmaceutical companies
- Others

By Region

- North America (U.S., Canada, Mexico, Rest of North America)
- Europe (France, The UK, Spain, Germany, Italy, Nordic Countries (Denmark, Finland, Iceland, Sweden, Norway), Benelux Union (Belgium, The Netherlands, Luxembourg), Rest of Europe)
- Asia Pacific (China, Japan, India, New Zealand, Australia, South Korea, Southeast Asia (Indonesia, Thailand, Malaysia, Singapore, Rest of Southeast Asia), Rest of Asia Pacific)
- Middle East & Africa (Saudi Arabia, UAE, Egypt, Kuwait, South Africa, Rest of Middle East & Africa)
- Latin America (Brazil, Argentina, Rest of Latin America)

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