عنوان مقاله:

Artificial Intelligence in Pharmaceuticals: Exploring Applications and Legal Challenges

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نویسندگان:

fatemeh shaki – Department of Toxicology and Pharmacology, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran.

Mohamadsadegh Amilrkhanloo – Mehrandish Educational Law Institute, Gorgan, Iran.

Danial Jahani – Unit of Medicinal Chemistry Associated With CSIC, Department of Toxicology and Therapeutical Chemistry, Faculty of Pharmacy, University of Barcelona, Barcelona, Spain.

Milad Chahrdori – Department of Toxicology and Pharmacology, Faculty of Pharmacy, Mazandaran University of Medical Sciences, Sari, Iran.

خلاصه مقاله:

Background and Objectives: The pharmaceutical sciences have the potential to benefit significantly from the advancements in artificial intelligence (AI). One of the primary areas where AI can prove invaluable is the discovery and development of new drugs. Compared to traditional methods, with the help of AI algorithms, vast amounts of data can be analyzed more efficiently, leading to the rapid identification of potential drug candidates. AI has the potential to expedite the drug discovery process, thereby leading to the development of new treatments for various diseases. This article delves into the manifold applications of AI in the pharmaceutical industry and the legal challenges that come with it. Methods: This study conducted a thorough search on the PubMed, Scopus, and Google Scholar databases using the following keywords: "Artificial intelligence", "neural network", "pharmacy", "pharmaceutical", "drug discovery", "legal", and "ethical". In addition, we obtained further references by cross-referencing from essential articles. This article comprehensively overviews how AI is applied in the pharmaceutical industry and highlights the critical legal and ethical challenges. Results: AI can assist in personalized medicine by analyzing patient data and providing tailored treatment plans. By considering individual patient characteristics, such as genetics and medical history, AI algorithms can help healthcare professionals make more informed decisions about which treatments will most likely be effective for each patient. In addition to drug discovery and personalized medicine, AI can also enhance the efficiency of pharmaceutical manufacturing processes. AI-powered systems can monitor and optimize production lines, ensuring that quality standards are met while reducing the risks of errors or deviations. Additionally, AI can be an essential tool in pharmacovigilance through real-world data analysis, which can detect adverse drug reactions and other safety concerns. This approach can aid regulatory authorities and pharmaceutical companies identify and address potential medication risks more effectively. Conclusion: AI application in the pharmaceutical sciences has marked potential for improving drug discovery, clinical trials, personalized medicine, manufacturing processes, and pharmacovigilance. By using the power of AI, the industry can boost efficiency, cut costs, and ultimately deliver better healthcare outcomes for patients.

کلمات کلیدی:

Artificial intelligence, Drug design, Pharmacy, Legal, Ethics