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Online Quality Monitoring of Medicines and Consumable Using Machine Learning : A Literature Review

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Abstract: *This study reviews the use of machine learning (ML) for real-time quality monitoring of medicines and medical consumables. It explores various ML techniques—supervised, unsupervised, deep, and reinforcement learning—and their role in detecting defects, predicting anomalies, and optimizing processes. ML enhances accuracy and efficiency but faces challenges like data access, regulatory issues, and system integration. Emerging trends such as AI-IoT, blockchain, and federated learning offer promising advancements. The review provides insights into current practices, challenges, and future directions for ML-driven pharmaceutical quality monitoring.*

Keywords: Machine Learning, Online Quality Monitoring, Medicines, Consumables, Pharmaceutical Industry, AI, Real-Time Inspection, Anomaly Detection

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