AI-Driven Visions into the Ethnobotanical Use of Traditional Medicinal Plants: Bridging Culture and Innovation

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Abstract

Ethnobotany, as a bridge between traditional knowledge and modern science, offers valuable insights into the medicinal use of plants that are deeply rooted in cultural heritage. However, the preservation and utilization of this knowledge face challenges such as data fragmentation, loss of oral traditions and a lack of systematic documentation. This paper explores how artificial intelligence (AI) can revolutionize ethnobotanical research by analyzing and synthesizing vast datasets, predicting new uses for medicinal plants, and enhancing the documentation of indigenous knowledge. By integrating AI-driven tools such as machine learning algorithms, natural language processing and predictive analytics, researchers can uncover patterns, optimize plant-based healthcare solutions and preserve cultural heritage. Case studies demonstrate successful applications of AI in classifying plants, validating traditional medicinal claims, and bridging knowledge gaps. The paper also addresses the integration of AI with ethnobotanical research as it not only fosters innovation in sustainable healthcare but also serves as a crucial step toward safeguarding cultural knowledge for future generations.