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Biodegradable Polymeric Nanoparticles for Targeted Therapy in Cardiovascular Diseases- A Comprehensive Review

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Abstract: *Cardiovascular diseases remain the leading cause of global mortality, driven largely by atherosclerosis and modifiable risk factors such as hypertension, dyslipidemia, diabetes, and lifestyle behaviors. Despite advances in pharmacological therapies, there is a growing need for improved drug delivery and continuous monitoring strategies. Recent developments in biodegradable polymeric nanoparticles offer targeted, sustained, and biocompatible drug delivery, while biodegradable materials also enable innovative cardiac tissue engineering and implantable devices. This review highlights current CVD pathology and management, and introduces a biodegradable, multifunctional cardiac monitoring system capable of sensing pressure, pH, lactate, and volatile organic compounds. Integrated with AI-driven analytics and wireless communication, this platform enables personalized, real-time cardiovascular assessment, representing a promising direction for next-generation cardiovascular care.*

Keywords: Biodegradable Nanoparticles, Targeted Therapy, Cardiovascular Diseases

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