

Review of Nitric Oxide Releasing Delivery Platform

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Abstract: *This study presents a novel nitric oxide (NO) releasing delivery platform designed to enhance therapeutic efficacy in various biomedical applications. Utilizing biocompatible materials, the platform provides controlled release of NO, a molecule known for its diverse roles in cellular signaling and vascular function. The delivery system was optimized for stability and release kinetics, demonstrating effective NO release under physiological conditions. In vitro studies indicate improved cellular responses, including enhanced vasodilation and anti-inflammatory effects. This platform holds potential for applications in wound healing, cardiovascular therapies, and other areas where NO's biological properties can be harnessed. Further in vivo investigations will be crucial for assessing the platform's effectiveness and safety in clinical settings. Nitric oxide (NO•) is a free radical gas, produced in the human body to regulate physiological processes, such as inflammatory and immune responses. It is required for skin health; therefore, A lack of NO• is known to cause or worsen skin conditions related to three biomedical applications—Infection treatment, injury healing, and blood circulation. Therefore, research on its topical release Has been increasing for the last two decades. The storage and delivery of nitric oxide in physiological Conditions to compensate for its deficiency is achieved through pharmacological compounds called NO-donors. These are further incorporated into scaffolds to enhance therapeutic treatment. A wide Range of polymeric scaffolds has been developed and tested for this purpose. Hence, this review Aimsto give a detailed overview of the natural, synthetic, and semisynthetic polymeric matrices That have been evaluated for antimicrobial, wound healing, and circulatory dermal applications. These matrices have already set a solid foundation in nitric oxide release and their future perspectiveIs headed toward an enhanced controlled release by novel functionalized semisynthetic polymer Carriers and co-delivery synergetic platforms. Finally, further clinical tests on patients with the Targeted condition will hopefully enable the eventual commercialization of these systems.*

Keywords: Here are some key keywords related to nitric oxide releasing delivery platforms: Nitric oxide(NO),Drug deliver, Nanoparticles