

Abstract Submitted
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Long-term Controlled Drug Release from bi-component Electrospun Fibers SHANSHAN XU, ZIXIN ZHANG, QINGHUA XIA, CHARLES HAN, Chinese Academy of Sci (CAS) — Multi-drug delivery systems with timed programmed release are hard to be produced due to the complex drug release kinetics which mainly refers to the diffusion of drug molecules from the fiber and the degradation of the carrier. This study focused on the whole life-time story of the long-term drug releasing fibrous systems. Electrospun membrane utilizing FDA approved polymers and broad-spectrum antibiotics showed specific drug release profiles which could be divided into three stages based on the profile slope. With throughout morphology observation, cumulative release amount and releasing duration, releasing kinetics and critical factors were fully discussed during three stages. Through changing the second component, approximately linear drug release profile and a drug release duration about 13 days was prepared, which is perfect for preventing post-operative infection. The addition of this semi-crystalline polymer in turn influenced the fiber swelling and created drug diffusion channels. In conclusion, through adjusting and optimization of the blending component, initial burst release, delayed release for certain duration, and especially the sustained release profile could all be controlled, as well as specific anti-bacterial behavior could be obtained.

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