

**Title :** Electrospun Cellulose Acetate-Based Composite Membrane for Enhanced Drug Delivery Performance

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## ABSTRACT

Cellulose acetate (CA)-based wound dressings offer an eco-friendly alternative to petrochemical-based dressings, as CA is derived from natural cellulose. This study aims to add value to agricultural products such as sugarcane, corn, and cassava by utilizing CA, which can be extracted from these sources, to develop composite membranes for biodegradable wound dressings with antibacterial properties. To reinforce the CA membrane, carbon nanotubes (CNTs) were incorporated to enhance mechanical strength. Additionally, a nanosheet material (NM) was introduced to increase surface area, providing more sites for drug adsorption and release. Both CNTs and NM were used in minimal amounts to mitigate potential toxicity. The resulting fibrous composite membranes are expected to promote skin breathability, prevent excessive moisture buildup, and support wound healing while exhibiting antibacterial effects. This approach not only improves the performance of CA membranes for wound healing applications but also promotes sustainability by utilizing CA derived from domestic agricultural resources.



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