

# Nanomedicine and Nanotechnology in Health Care

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## Thyroid hormone incorporated polycaprolactone nanofibrous material as a potential wound healing therapeutic

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Functional restoration of tissue after a major wound insult is an essential requisite, with rising incidents of non-healing chronic wounds. The delivery of endogenous molecules through nanomaterials to secure a speedy and thorough healing of such wounds has gained impetus in the past decade. Triiodothyronine (T3) is a hormone that exerts its activity at various target organs and has been reported to play a critical role in repair and regeneration of tissues after injury. The encapsulation of T3 in nanofibers has been explored to enable its sustained release. The physico-chemical characterization confirmed the encapsulation and uniform distribution of the hormone in the nanofiber. The nanocomposite enhances migration and proliferation of skin cells revealing the significant positive influence of the T3-entrapped nanofibers on the proliferation and migration of skin cells. Further, the in-vivo application of the composite nanofibers on full thickness excisional wounds in rat model confirmed the potential of the hormone in accelerating wound closure rate. The histological studies also corroborate the positive influence of T3-entrapped nanofibers on skin tissue regeneration. Thus this work reveals the effect of prolonged sustained delivery of T3 from nanofibers which might promote the healing of chronic cutaneous wounds.

### Biography

Aishwarya Satish is a Senior Research Fellow pursuing her PhD in Department of Biomaterials, CSIR-Central Leather Research Institute, a central government research institute in Tamil Nadu, India, with an expertise in preparation of biomaterials for wound healing and tissue engineering. Currently she is working on designing scaffolds for nerve tissue regeneration.

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