

Title: Composite Scaffold Carrying Skin Regenerating Peptides for Enhanced Wound Healing

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Tissue engineering scaffolds made up of biomaterials have made a great impact on improving the standard and efficiency of the wound healing. As the basic principle onto which the scaffolds were built shifted from a top-down approach to a bottom-up approach so did the trend to design them. As major individual scaffolding systems like hydrogels and nano-fiber scaffolds etc., though they displayed great potential in improving the wound healing process, they each had their own drawbacks leading to less than ideal wound healing ; which is why we aimed on synthesizing a composite scaffold made up of chitosan-gelatin hydrogel dispersed with VEGF-M (angiogenesis promoting peptide) and tylotoin peptide entrapped PLGA nanoparticles while the upper layer of the hydrogel was incorporating fine nano-fiber scaffold made up of PLA-chitosan-PHBV. The composite scaffold eliminated the individual drawbacks of each scaffolding system and conferred an additive or cumulative effect for the ability to promote and enhance wound healing which was much better than a single scaffolding system trying to achieve the same, as seen and proved by in-vitro testing of the composite scaffold by MTT assay and scratch wound healing assay. The VEGF_M peptide and Tylotoin peptide was successfully synthesized and tested for their viability potential in keratinocyte cell line like HaCaT. The two wound healing promoting peptides were entrapped in PLGA nanoparticles helping to not only boost the wound healing process but also to achieve a gradual release of the peptide to last the complete span of a normal healing process thereby helping to evoke a sustained biological response and hence improving the efficiency of the healing process and the capacity of the composite scaffold to heal a wound better.

Biography

Nanditha is currently doing her PhD from Rajiv Gandhi Centre for Biotechnology and University of kerala. She has published a paper in a reputed international journal as coauthor.

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