

FUNCTIONALIZED NANOFIBERS WITH IMMOBILIZED LIPOSOME PARTICLES

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Wound healing requires a suitable environment to promote the healing process. Therefore, treatment and management of wounds largely depend on the dressing material, which provides surface protection, drug delivery, and allows tissue regeneration [1][2].

Presented work is focused on the preparation and characterization of PHB nanofibers with immobilized PHB-liposome particles, that could function as novel potential wound dressings. Nanomaterials were further functionalized by the broad-spectrum antibiotic drug ampicillin.

Scanning electron microscopy and fluorescence microscopy were used to observe the structure of prepared combined nanofiber-nanoparticle mats. Materials were tested for the encapsulation efficiency and *in vitro* release of the incorporated drug into the model environment by spectrophotometric and chromatographic methods. The particle's size and colloid stability was defined by dynamic light scattering and zeta-potential. The antimicrobial activity against selected strains of gram-positive and gram-negative bacteria was also evaluated. To assess whether prepared nanostructured materials are suitable for local skin applications cytotoxicity assay on HaCaT cell line was carried out. Functionalized combined nanostructures showed promising results for local treatment of skin as prospective advanced wound dressings.

- 1] S. Dhivya, V. V. Padma, and E. Santhini, "Wound dressings – a review," *BioMedicine*, vol. 5, no. 4, pp. 24–28, Dec. 2015, doi: 10.7603/S40681-015-0022-9.
- 2] M. A. Sylvester, F. Amini, and T. C. Keat, "Electrospun nanofibers in wound healing," *Materials Today: Proceedings*, vol. 29, pp. 1–6, Jan. 2020, doi: 10.1016/J.MATPR.2020.05.686.