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On the use of ion-crosslinked nanocellulose hydrogels for wound healing solutions: physicochemical properties and application-oriented biocompatibility studies

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Highlights

- Ca²⁺-crosslinked nanocellulose self-standing hydrogels are proposed for wound healing applications.
- Water retention properties indicate the material's potential to maintain a suitable moist environment for different types of wounds.
- The hydrogels present excellent biocompatibility towards dermal fibroblasts and blood-derived monocytes/macrophages.
- The hydrogels are non pro-inflammatory in terms of cytokine secretion and reactive oxygen species production.
- The great potential of nanofibrillated cellulose hydrogels for the development of advanced wound healing dressings is highlighted.

Abstract

Calcium ion-crosslinked nanofibrillated cellulose (NFC) hydrogels were investigated as potential materials for wound healing dressings. The physicochemical properties of the hydrogels were examined by rheology and water retention tests. Skin cells and monocytes were selected for application-oriented biocompatibility studies. The NFC hydrogels presented entangled fibrous networks and solid-like behavior. Water retention

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