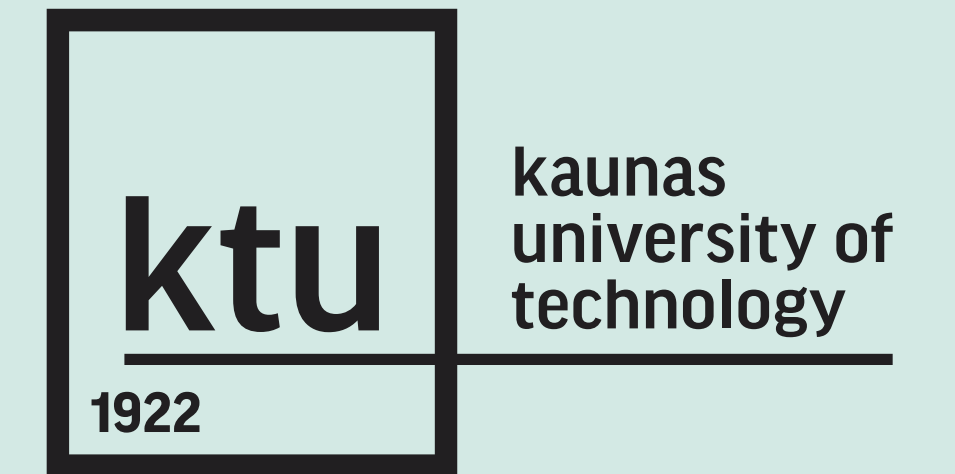


ELECTROSPUN BIOACTIVE POLYVINYL BUTYRAL / GELATIN COATINGS

Ugnė Zasčiurinskaitė, Joana Sinkevičiūtė, Milda Savickaitė, Akvilė Andziukevičiūtė-Jankūnienė, Virginija Jankauskaitė

Department of Production Engineering, Kaunas University of Technology ugne.zasciuriskaite@ktu.edu



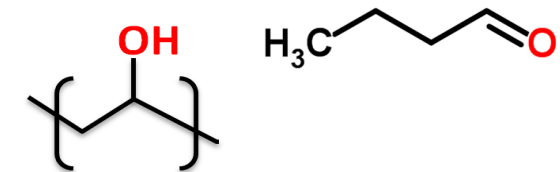
Introduction

Different skin injuries in daily life are common. The most common wound healing method is using different wound dressings, which protect the wound against external contamination and support the wound healing process. Innovative multifunctional wound dressings are urgently needed. Electrospun micro-nanofiber mats have attracted intense attention as advanced wound dressing materials which can provide a faster healing process [1]. Gelatin is an extremely important biopolymer for the fabrication of medical dressings, however, it exhibits poor electrospinnability [2]. Additives of bioactive substances can accelerate the healing process [3].

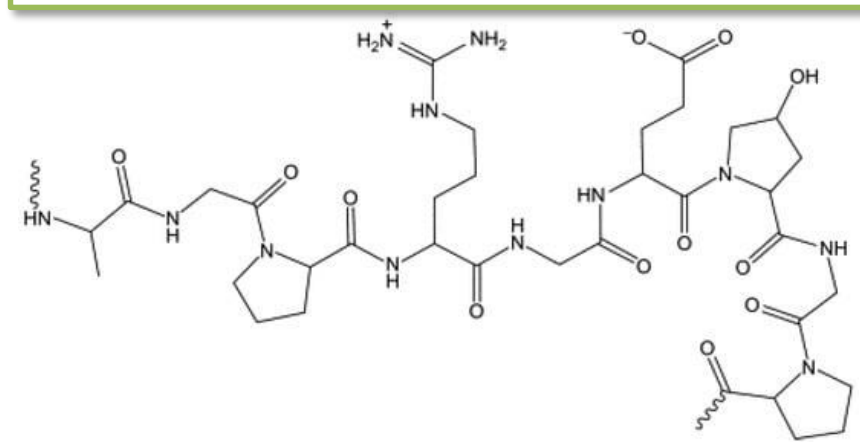
The goal is to develop micro-nanofibrous PVB/gelatin wound dressing.

Materials and Methods

Polyvinyl butyral (PVB)



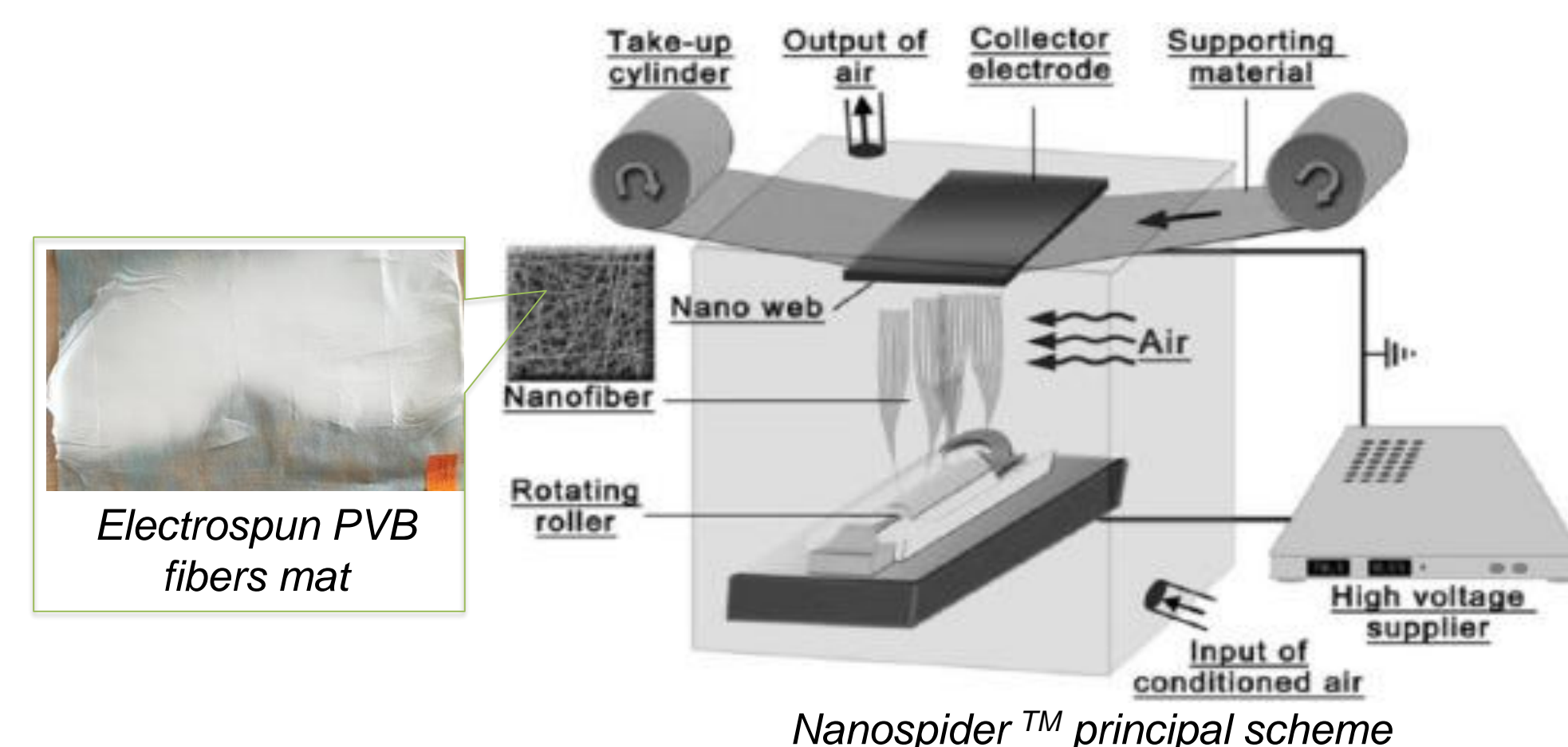
Gelatin



Extract of comfrey (*Symphytum officinale*)

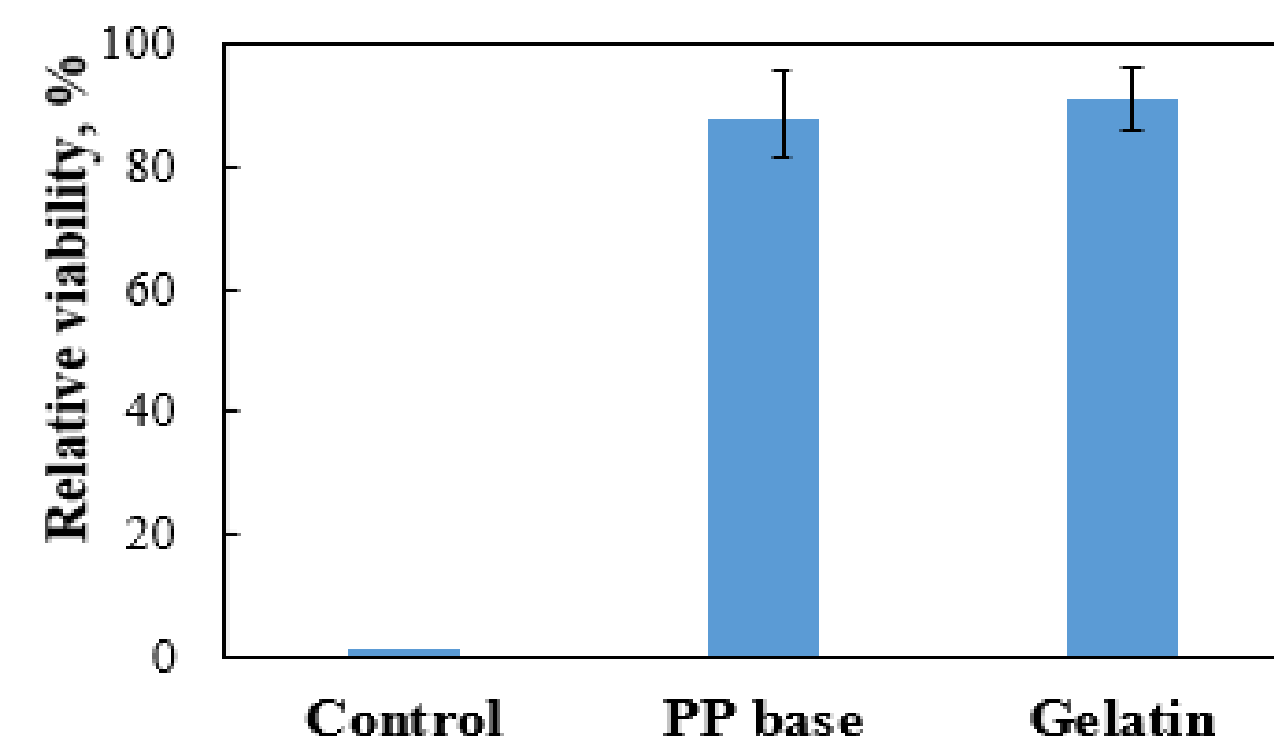


Electrospinning

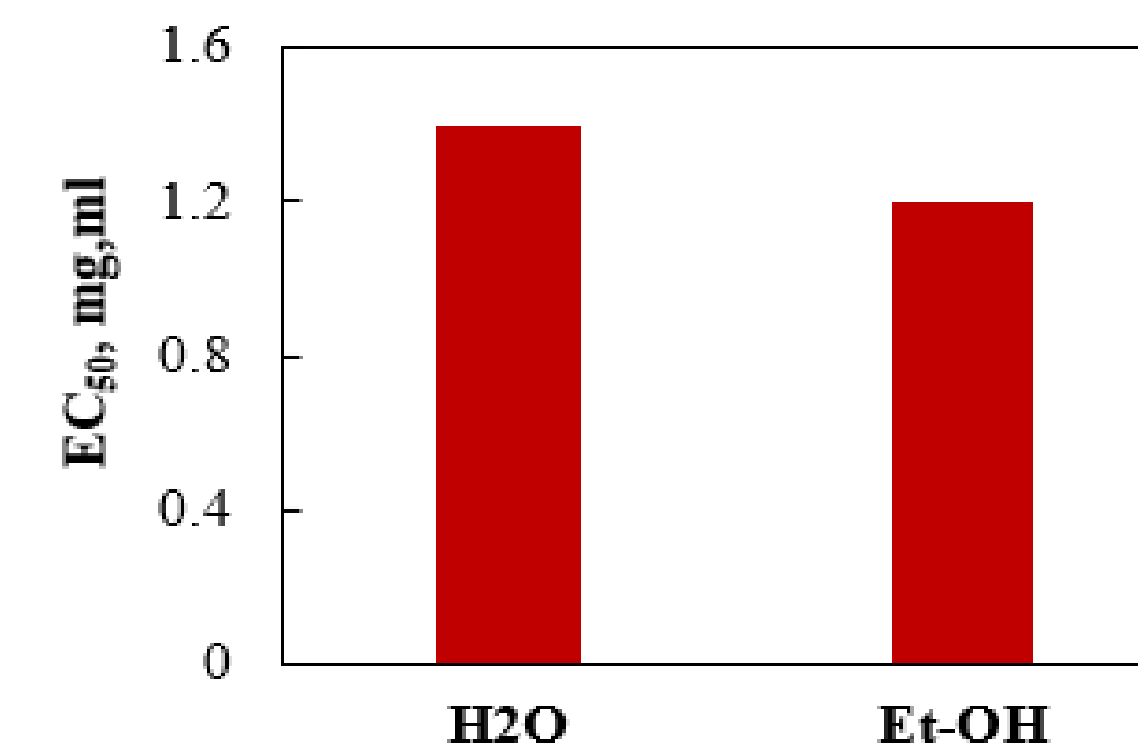


Results

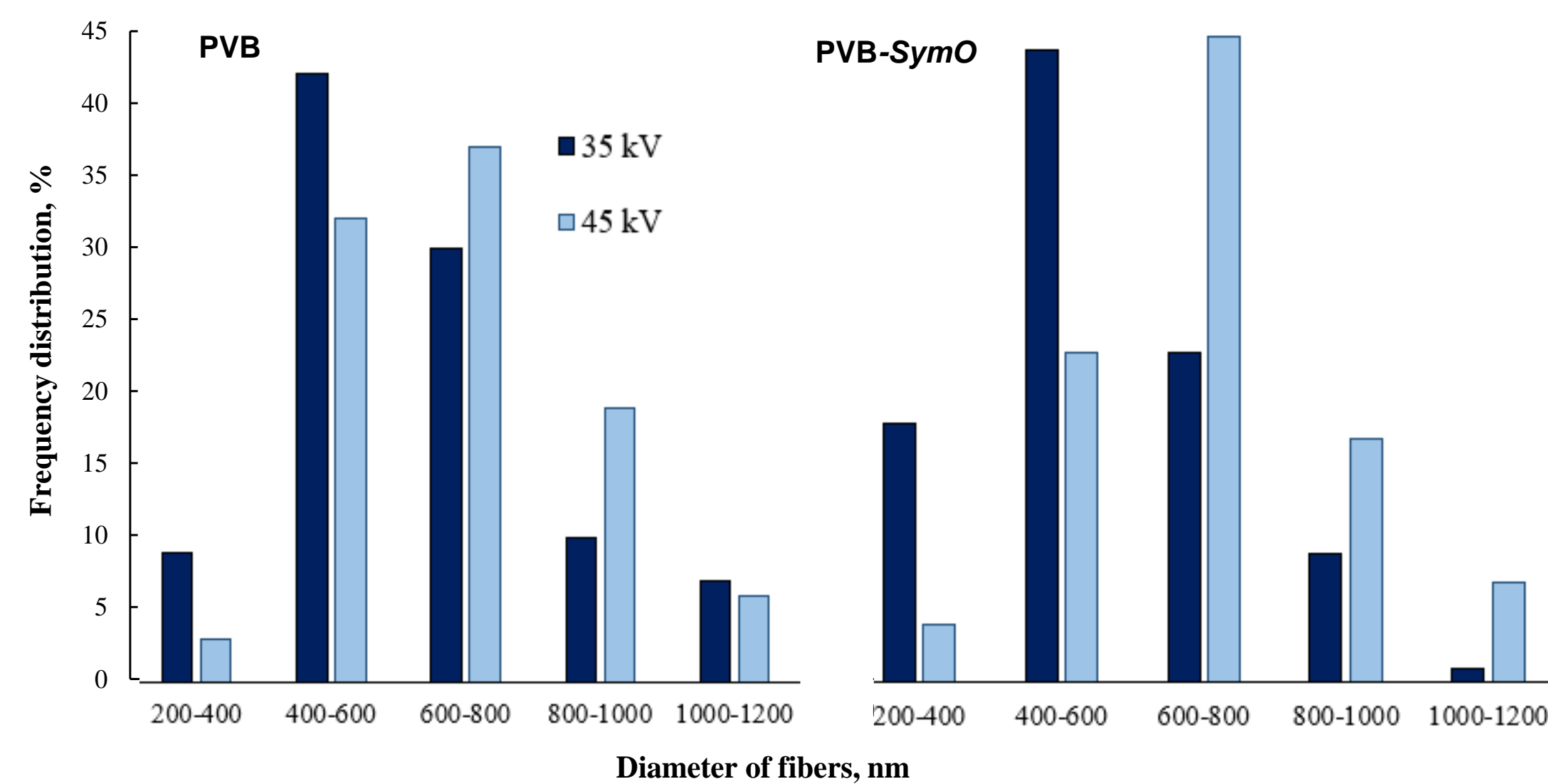
Cytotoxicity of gelatin



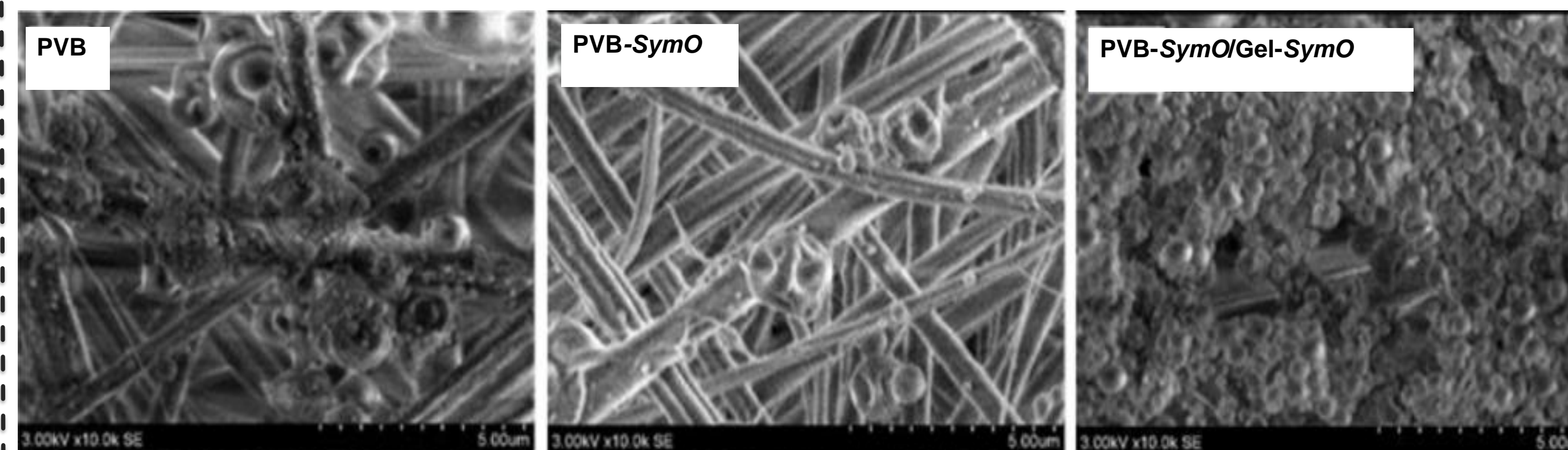
Half maximal effective concentration EC50 of *Symphytum officinale* (SymO)



Micro-nanofibers diameter distribution histograms



SEM images of gelatin droplets on the micro-nanofiber surfaces



Conclusions

- Gelatin exhibits poor electrospinnability, but it can be formed on the polyvinyl butyral fibers by the electro spraying process. The density of the droplet coating depends on the site of incorporation of bioactive extract of *Symphytum officinale* (comfrey) root extract.
- The size of the electrospun polyvinyl butyral micro-nanofibers and gelatin droplets depends not only on the composition, but also on the operating voltage. Higher voltage induces larger diameter of the droplets.

References

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2. Li, T.; et al. (2022). State-of-the-art review of electrospun gelatin-based nanofiber dressings for wound healing applications. *Nanomaterials*, 12(5), 784.
3. Balčiūnaitienė, A., et al. (2022). *Eucalyptus globulus* and *Salvia officinalis* extracts mediated green synthesis of silver nanoparticles and their application as an antioxidant and antimicrobial agent. *Plants*, 11, 1085.

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