Electrospinning of Fucoidan Based Nanofiber Mats with Antibacterial and Antioxidant Activity from Brown Algae Extracts Based on Natural Deep Eutectic Solvents

Kyung Ju Jang, Sang Eun Hong, Jong Jin Jung and Kuk Ro Yoon*
Department of Chemistry Hannam University, Organic Nanomaterial Lab, 1646 Yuseong-daero Yeseong-gu Daejeon 306-811 Korea

Abstract: In this work, Natural Deep Eutectic Solvents(NDES) using choline chloride as salts and glycerol and ethylene glycol as hydrogen bond donors were prepared. The different water content in NDES was used for extraction parameter optimized. The fucoidan from brown algae extracted using NDES as solvents. The fucoidan extracts based on NDES with polycaprolactone(PCL) were electrospun to obtain nanofibers. The Paper disc method used for anti-bacterial assay(against S. aureus and E. coli) and the 2,2–diphenyl-1-picrylhydrazyl (DPPH) method used for antioxidant assay were evaluated. NDES on fucoidan from brown algae extracts were characterized by FT-IR (Fourier Transform Infrared Spectroscopy), HPLC (High Performance Liquid Chromatography), UV vis-spectroscopy, GFC (Gel Filtration Chromatography). PCL-fucoidan nanofibers were characterized by Optical microscope (OM), Scanning Electron Microscopy (SEM). These results nanofiber mats were promising for the potential application of cosmetic and medical ingredients.

Keywords: Deep Eutectic Solvents(NDES), Fucoidan, Nanofibers mats, antioxidant, etc.

1. References


