Poly(vinyl alcohol) electrospun nanofibers containing antimicrobial *Rhodomyrtus tomentosa* extract

Senait Sileshi Zeyohanness, Hazrulrizawati Abd Hamid and Farah Hanani Zulkifli

Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, Gambang, Kuantan 26300, Pahang, Malaysia.
Email: hazrulrizawati@ump.edu.my

ABSTRACT

Electrospun nanofibers were prepared from *Rhodomyrtus tomentosa* extract and poly(vinyl alcohol). The antimicrobial effect was assessed against two Gram-negative bacterial strains (*Escherichia coli, Pseudomonas aeruginosa*) and two Gram-positive bacterial strains (*Bacillus subtilis, Enterococcus faecalis*) by paper disc diffusion method. Ethyl acetate extract of *R. tomentosa* was selected for fabrication of nanofibers because it shows the most active antimicrobial activity with zone of inhibition ranging from 9.33 ± 0.21 to 13.67 ± 0.32 mm. The presence of high abundance of myricetin and rhodomyrtone might contribute to the antibiotic activity against all tested bacterial strains. The average diameter of the *R. tomentosa* extract/poly(vinyl alcohol) nanofibers increased from 120.4 to 214.8 nm with increasing concentration of *R. tomentosa* extract from 0.5% to 2.5%. The antimicrobial activity of *R. tomentosa* extract/poly(vinyl alcohol) nanofibers was relatively higher at concentration of the extract (1.5% and 2.5%) against all test organisms with a clear zone of inhibition 7–12 mm. The results demonstrated that *R. tomentosa* extract/poly(vinyl alcohol) electrospun nanofibers are an interesting platform for delivery of bioactive compounds as wound dressing or other strategies for combating bacterial infections.

Keywords
Electrospun nanofibers, antimicrobial, *Rhodomyrtus tomentosa*, poly(vinyl alcohol)