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Effect of Lemongrass Oil Containing Polycaprolactone Nanofibers on Biofilm Formation of Proteus mirabilis

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Abstract : Proteus mirabilis strains which are natural colonizers of healthy individuals' gastrointestinal tract are also known as common causes of catheter-associated urinary tract infections. Nowadays, as a result of an increased resistance to various antimicrobial drugs, there has been a growing interest in natural products. Therefore, the aim of this study is to investigate biofilm formation of P. mirabilis strains on lemongrass oil containing polycaprolactone nanofibers. Polycaprolactone nanofibers with different lemongrass oil concentrations were successfully prepared by electrospinning and biofilm formation of P. mirabilis on these nanofibers were determined by 'Crystal Violet Staining Assay'. According to our results, polycaprolactone nanofibers with some lemongrass oil concentrations, decreased biofilm formation of P. mirabilis and this effect increased in parallel with the increase in lemongrass oil concentration. Our results indicate that, polycaprolactone nanofibers with some concentrations of lemongrass oil may provide a treatment against catheter-associated urinary tract infections by means of causing an inhibition on biofilm formation of P. mirabilis.

Keywords : anti-biofilm, biofilm formation, essential oils, nanofibers, proteus mirabilis
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