Characterization and kinetics study for rhamnolipids produced by an environmental *Pseudomonas aeruginosa* isolate

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Pseudomonas aeruginosa produces glycolipidic surface-active molecules (rhamnolipids) which have potential biotechnological applications. A previously identified biosurfactants producing environmental isolate P*seudomonas aeruginosa* (Ps. 6) was selected. Comparing the kinetics of cell growth and biosurfactants production by Ps. 6 in bioreactor with that of shake flask, the bioreactor was characterized by about 35% higher cell density than that of shake flask. However, the production of rhamnolipids was higher in shake flask culture than in bioreactor culture, where their minimum surface tension values obtained were 12 mN/m and 13.9 mN/m, respectively. The Ps.6 produced biosurfactants solution was stable to all tested temperatures and pH range 2-14. However, the surface tension of the biosurfactants solution increased with increasing salinity. Moreover, its emulsification indexes EI24 varied from 33.3% to 58%. It was also demonstrated that this biosurfactants solution form water in oil emulsion. Furthermore, the biosurfactants had greater antimicrobial activity against *Bacillus spp*. than *S. aureus* and *M. flavus* with undetectable activity against Gram negative bacteria. On testing the efficiency of the biosurfactants solution as preservative, it was found that <0.3 g% of the crude biosurfactants solution was not sufficient for preservation. Finally, the anti-biofilm activity of the produced biosurfactants reduced the biofilm formation of *S. aureus* ATCC 6538p by more than 2 log units.

Biography

Mervat Kassem has completed her MSc in Pharmaceutical Science in 1995 and her PhD in 1999 from Alexandria University; Faculty of Pharmacy, Department of Microbiology. She holds positions of an Associate Professor and Coordinator for the postgraduate courses.

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