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TITLE

Bactericidal activity of tetracycline- chitosan microspheres against *Pseudomonas aeruginosa* biofilms

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The aim of the study is to investigate an efficient bactericidal product using chitosan microspheres. Clinical isolates, from wound and bone infections or catheterization and endotracheal tubes of *pseudomonas aeruginosa*, were collected from patients at hospitals in Riyadh, Saudi Arabia and identified using standard methods. A modified microtitre plate test was used to determine the biofilm-forming capacity of the isolates, measured with an enzyme-linked immunosorbent assay reader. Two methods were used to prepare the different antibiotic-loaded chitosan microspheres; a coacervation method and a w/o emulsion method. Their bactericidal activity against *pseudomonas aeruginosa* biofilm and planktonic cells was tested. Results showed that most *pseudomonas aeruginosa* strains (92.9 %) were efficient biofilm producing strains. There were differences in the antibiotic susceptibility of planktonic and biofilm cell populations. Flouroquinolones (levofloxacin), aminoglycoside (amikacin) and tetracycline showed more potent activity than the other antibiotics (Minimum inhibitory concentration 50 was 0.8, 4.88, and 34.19 ug/ ml, respectively). The biofilms were completely eradicated by tetracycline-loaded chitosan microspheres prepared by the coacervation method and to a lesser extent eradicated by the w/o emulsion method followed by single antibiotic or unloaded chitosan. So, combining tetracycline-chitosan microspheres may be a new method for the development of a specific drug delivery system to increase the efficacy against biofilm-associated *pseudomonas aeruginosa* infection.

Biography

Hanaa Elsaghir is an Egyptian professor working at Faculty of Pharmacy, Cairo University. She is currently a professor and vice chairman of the pharmaceutics and pharmaceutical technology department at king Saud University. Professor Elsaghir has completed her PhD from Cairo University through a joint PhD program with school of pharmacy, Munster University, Germany. She had a post doctoral fellowship at the University of Georgia, Athens, Georgia, USA in 1989. She has published more than 40 papers in national and international scientific journals. In addition, she serves as a reviewer for several journals. Her research interest is in the development of nano- and microparticles as drug delivery system