

**ABSTRACT**

**EFFECT OF POLYMER CONCENTRATION ON  
ANTIMICROBIAL ACTIVITY OF CIPROFLOXACIN HCl IN  
MICROSPHERE ALGINATE-CARRAGEENAN AGAINST  
*Staphylococcus aureus* ATCC 25923**

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*Staphylococcus aureus* is the earliest infecting bacteria and is commonly carried out among individuals affected by Cystic Fibrosis. Ciprofloxacin HCl is a broad-spectrum antibiotic and the most potent group of fluoroquinolones and mostly used for the treatment of infections, such as the upper and lower respiratory tract. To increase the therapeutic effect of ciprofloxacin HCl, a local drug delivery system such as the microsphere was suggested. The composites of microspheres are consisting of alginate and carrageenan combination. These polymers then crosslinked by calcium chloride. In the previous studies, microspheres were made from ciprofloxacin HCl 1,2% formulated into alginate-carrageenan (1:1) composite with calcium chloride 0,3 M as the crosslinking agent.

This research aimed to investigate the antimicrobial activity of microsphere ciprofloxacin HCl using alginate and carrageenan as polymers of the matrix. The antibacterial test was performed by diffusion method using *Staphylococcus aureus* ATCC 25923. Antibacterial activity of microsphere ciprofloxacin HCl microspheres in phosphate buffer solution pH  $7,4 \pm 0,05$  as stimulated of pH condition of cystic fibrosis's patient. Fresh ciprofloxacin HCl in alginate-carrageenan microspheres and ciprofloxacin HCl release samples at the interval time of 0, 4, 8, 12, 16, 20 and 24 hours. The result showed an equal between ciprofloxacin HCl standard, microsphere ciprofloxacin HCl and microsphere ciprofloxacin HCl with release samples from microsphere on the treatment of *Staphylococcus aureus* ATCC 25923.

**Keyword:** Ciprofloxacin HCl, Microspheres, Antimicrobial Activity, *Staphylococcus aureus*