

## ABSTRACT

# DRUG DEPOSITION OF ALGINATE SODIUM-CARRAGENAN MICROSPHERES IN RAT'S LUNG BY FLUORESCENCE MICROSCOPE

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Ciprofloxacin HCl is a drug of choice for respiratory tract infection, due to enhance its pulmonary distribution and minimize its clearance from lung, in this study ciprofloxacin HCl was formulated as lung targeted microsphere loaded in mucoadhesive polymer. Mucoadhesive alginate-carrageenan microspheres 1%; 1,5%; and 2% crosslinked to  $\text{CaCl}_2$  incorporating Rhodamine-B as fluorochrome were prepared by ionotropic gelation method. The formed microspheres were spherical, smooth and respirable size. This study aimed to evaluate the drug deposition of alginate-carrageenan microsphere with different polymer concentration on rat's lung. Dry powder microspheres were administered to rats by nose only inhalation as described on Kaur, 2008. The deposition on left lobe, caudal lobe and trachea were investigated by fluorescence microscope. The microspheres particle size increased simultaneously as the polymer concentration increased. All formulas were able to deposit on rat's lungs and it was found that the intensity on left lobe, caudal lobe and trachea were respectively decreased due to increase of polymer concentration. Alginate-carrageenan microspheres 2% were very few deposited on lungs since it has the biggest particle size among the formula. The intensity on lungs and trachea on average were decrease at the 4<sup>th</sup> hour, the remained intensity at 4<sup>th</sup> hour indicated that the microspheres were able to maintain the drugs loaded due to its mucoadhesive property.

Keywords: Alginate-carrageenan, microspheres, ionotropic gelation, fluorescence microscopy, drug deposition, rat's lungs.