

**LIPOSOMES IN INFECTIOUS DISEASES**

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Cystic fibrosis is the most common autosomal recessive disorder that primarily affects people of Caucasian origin. The leading cause of mortality in these patients is respiratory failure due to chronic lung infection with *P. aeruginosa*. The mode of growth of *P. aeruginosa* often occurs in the lungs of chronically infected cystic fibrosis patients where the bacteria are protected from antibiotics by a biofilm and the individual's immune response through production of a large quantity of exopolysaccharides (alginate) and other virulence factors. *P. aeruginosa* resist the bactericidal effect of antibiotics by producing antibiotic inactivating enzymes. In addition, these bacteria have a high intrinsic resistance to various antimicrobial agents. For this reason, there is a strong need for new ways to deliver antibiotics that can be effective against *P. aeruginosa* in these conditions. We tested the efficacy of several liposomal formulations containing antibiotics against *P. aeruginosa* in both *in vitro* as well as in infected animals. These liposomal formulations were evaluated *in vitro* for their stability at different physical and biological conditions (i.e. temperature, buffer, human sera, and bronchoalveolar lavage). Their *in vitro* antimicrobial activity (including time-killing kinetics) were performed against several Pseudomonal clinical isolates (sensitive and resistant strains) from cystic fibrosis patients. In addition, the distribution and fate of these liposomal-entrapped drugs, administered by various routes were studied in healthy and infected animals.