

CHAPTER 6

BIOCHEMISTRY

Doctoral Theses

028. GULAM MUSTAFA HASAN
Liposome Mediated Delivery of Antimalarial Drugs for the Treatment of Malaria.
Supervisor : Prof. Prahlad C. Ghosh
Th 16651

Abstract

Evaluates the efficacy of different formulation of stearylamine liposome for the inhibition of growth of plasmodium falciparum in vitro. Incorporation of monensin in liposomal membrane and its effects on the inhibition of growth of plasmodium falciparum in vitro and plasmodium berghei in vivo in murine model. Loading of chloroquine in conventional and sterically stabilized liposomes by transmembrane pH-Gradient : Efficacy of liposomal chloroquine in the treatment of Malaria.

Contents

1. Introduction. 2. Review of literature. 3. Objectives. 4. Materials and Methods. 5. Results and Discussion. 6. Summary and Conclusion. Bibliography.

029. GUPTA (Prachi)
Lipid Rafts in Bronchial Asthma : A Study on Membrane Lipid Metabolism in Asthmatic Patients Using Erythrocyte Membrane as the Model.
Supervisors : Prof. S. K. Bansal and Prof. V. K. Vijayan
Th 16650

Abstract

Inferred that in asthma, there is no change in the total erythrocytic counts as compared to the healthy subjects. The changes in protein contents and phospholipids suggest a reciprocal metabolic relationship in the two molecules in the disease. An increase in sphingomyelin and PI and a decrease

in PC, PE and PS and neutral lipids, besides a fall in the ratio of cholesterol : sphingomyelin and an increase in cholesterol : PE ratio, suggest a compositional change in the lipid raft molecules in erythrocyte membrane in asthma. An increase in caprylic acid in phospholipids suggests tight packing and increased in caprylic acid in phospholipids suggests tight packing and increased rigidity of the plasma membrane in asthma. A significant increase in phospholipases A2 PLC and sphingomyelinase in asthmatic erythrocyte membrane suggests increase in the formation of arachidonic acid ceramide which are known to play a direct role in inflammation of arachidonic acid and thus, their increase in the membrane may be responsible for the persistent airway inflammation in the lungs, which is a characteristic feature of asthma. Thus, the changes in composition of lipids of the rafts may change their structure as well as functions, particularly transmembrane signalling that may impair or modify the response of the cells to the triggers (stimuli) of asthma, which might be the cause of development of the pathophysiology and the manifestation of the disease.

Contents

1. Introduction. 2. Review of literature. 3. Aims & objectives. 4. Study design. 5. Materials and methods. 6. Results and observations. 7. Discussion. 8. Summary. 9. Conclusion. 10. Recommendations. Bibliography. Annexures and Appendices.

030. SHARMA (Nishi Raj)
Role of Cell Signalling in the Regulation of Membrane Fusion Mediated Entry of Enveloped Virus.
 Supervisor : Prof. Debi P. Sarkar
Th 16652

Abstract

Investigates the mechanisms of the counteracting roles of pAKTI and MAPKs in the fusion process. Using a series of cell-cell and virosome - cell fusion experiments. Concludes that pAKTI significantly reduces fusion efficiency by phosphorylating the T234 residue of F protein. The claim is further supported by the enhancement of F (alone) - induces cell - cell fusion by I_{AKT} and its inhibition by PD. Interestingly, the failure of H247AHN to activate F-induced cell - cell fusion (Krishnan et al.,2009), could be rectified by the presence of I_{AKT} , suggesting an alternate and novel role of HN in supportinf fusion through AKT inhibition.

Contents

1. Introduction and review of literature. 2. Materials and methods. 3. Results. 4. Summary and conclusions. Bibliography.