Chapter 2

Literature Review

Dipak et al. [16] developed a planar three layer quasi-steady laminar flow model in cough machine that simulates mucus gel transport in trachea due to mild forced expiration. Here the flow is represented by time dependent pressure gradient which is generated in trachea due to mild forced expiration and analysed to study mucus gel transport due to mild forced expiration.

Arti et al. [17] developed the model with simultaneous and coaxial flow of moist air, mucus and serous fluid in a circular tube under time dependent pressure gradient representing prolonged cough and analysed to study mucus transport in an airway due to prolonged cough.

Arti et al. [18] developed a two layer mathematical model of mucus transport in the large airways due to prolonged mild cough and cilia beating. The prolonged mild cough is represented by a time dependent pressure gradient function and analysed to study mucus transport due to prolonged mild cough and cilia beating.

Dipak et al. [19] developed a quasi steady state model to study mucus transport in the circular airways. Here air and serous fluid are considered as Newtonian fluids while mucus is treated as a visco-elastic Voigt material. The flow in the mucus layer and serous layer are considered as laminar whereas the flow of air is taken laminar in the smaller airways and turbulent in the larger airways.