Abstract

The respiratory system is endowed with a number of structural and functional barriers that protect it against harmful and innocuous material from taking advantage of its vast surface area to gain access into the organism. These barriers include; 1) the surfactant system 2) a highly efficient mucociliary escalator system 3) a population of highly phagocytic macrophages and 4) an epithelium endowed with tight junctions. However, despite these barriers, pulmonary immune responses are easily generated by introduction of antigens into the airways. These responses are thought to be mediated via dendritic cells, which are located in the basal aspect of the epithelium,and the most potent antigen presenting cells in the lung. Although there is substantial information on the nature of interaction between dendritic cell and particles from in vitro experiments, there is little information on how the particles breach the barrier to reach the immunocompetent cells. An understanding of how these particles pass the epithelial barrier to reach the immunocompetent cells is important in the development of mucosal vaccines. Insights into how this may happen are discussed.