1.2. Delivery of protein

Proteins are important to all living organisms; they are the major structural and functional components of cells. Peptides are very similar to proteins (Wilson & Hunt, 2002); technically, all proteins are peptides, but not all peptides are proteins. The difference between a peptide and a protein is that a protein is typically larger, folded, and has biological significance.

Peptides and proteins are highly potent and specific in their physiological activities. The effective and potent action of the proteins and peptides makes them the drugs of choice for the treatment of numerous diseases (Kim, 2013).

A variety of new therapeutic proteins have been developed showing therapeutic benefits in the treatment of ailments like diabetes, rheumatoid arthritis, hepatitis, cancer which offer several advantages over the conventional small molecule drugs. Firstly, proteins often serve a highly specific functions in the body that the chemical compounds cannot mimicked it. Secondly, since the action of proteins is highly specific, there is often less potential for therapeutic protein to cause adverse effects. Thirdly, because the body naturally produces many of the proteins that are used for therapeutic purpose, these agents are often well-tolerated and are less likely to elicit immune responses. Fourthly, for diseases in which a gene is mutated, protein therapeutics can provide an effective replacement for the treatment without the need for gene therapy (Leader et al., 2008; Dulal, 2010).

Delivery of therapeutic proteins has found an important position in therapeutics. Recent advances in pharmaceutical biotechnology have led to an increase in the number of protein products in the market.