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CHAPTER 7

A RECENT UPDATES OF POLYSACCHARIDE BASED NANOPARTICULATE ORAL PREPARATION OF INSULIN WITH SPECIAL EMPHASIS ON *IN VIVO* APPLICATION

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In the 21st century, diabetes has appeared as curse to human civilization. According to a recent WHO report, approximately 346 million people worldwide are suffering from this deadly disease. A large number of diabetic patients require subcutaneous daily doses of insulin which is painful and associated with many other complications. For obvious reason of patient incompliance with existing therapy, the search for alternative simple, noninvasive and patient friendly delivery modes are being explored by scientists all over the world. So far, polysaccharides like chitosan, alginates, and pectin based insulin nanoparticles have produced limited but encouraging in vivo results for oral delivery of insulin. The present review article deals with polysaccharide based oral nanoparticulate formulations of insulin and their in vivo success storey.

7.1 Introduction

Diabetes is one of the major causes of premature illness and death worldwide. It is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body can't effectively use the insulin it produces. *Insulin* is a peptide hormone which mainly regulates blood sugar. It is composed of 51 amino acids that is synthesized, packaged, and *secreted* in *pancreatic beta cells*. Hyperglycemia or increased blood sugar is a common effect of uncontrolled diabetes and over time it leads to serious damage to many of the body's