8

Alginates in Drug Delivery

Srijita Basumallick

Asutosh College under Calcutta University 92, Kolkata, India

Abstract

Alginate is a biocompatible biopolymer and is widely used as a drug delivery vehicle in different forms. In this chapter, we will discuss the applications of different cross-linked networks of alginates, their microspheres, and hydrogel in relation to drug encapsulation and delivery processes with a brief introduction of chemistry and pharmaceutical chemistry of alginates. Biomedical applications of alginate–chitosan composites with special reference to their unique hydrogel-forming ability have been discussed. In conclusion, we have highlighted the promising features of alginates as an ideal biomaterial for drug delivery.

Keywords: Biocompatible, alginate–chitosan composites, microspheres, hydrogels, cross-linked alginates

8.1 Introduction

Drug delivery materials are selected and designed to overcome the defensive mechanism of our immune system, which resists introduction of foreign materials within its border. Thus, biocompatible materials and materials with natural origin-fulfilling criteria [1–4] of an ideal delivery system should be the first choice. Bio-friendly and biodegradable materials with drug-encapsulating and -release properties are a basic requirement for this purpose. Targeted delivery and controlled release are the most important criteria for designing material for drug delivery. A drug designer addresses many of these criteria in selecting an ideal material for drug delivery. In spite of hundreds of challenges like nature of drugs, their doses, and side effects, delivery materials are selected to minimize the interactions with

Email: srijitabasumallick@gmail.com

Shakeel Ahmed (ed.) Alginates, (141–152)