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Alginates in Pharmaceutical and Biomedical Application: A Critique

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Abstract

Alginate is one of the most widely used polymers in the pharmaceutical, cosmetic, food, and biomedical industry. One of the reasons for its widespread use is its biocompatibility with body fluids, which make it suitable for human use. The present chapter mainly focuses on wide application of alginate usage in pharmaceutical and biomedical industry. Various studies have found that alginate is suitable in biomedical applications such as 3-D tissue culture, antibiotics, antiviral agents in cell transplant in diabetes, and various neurodegenerative diseases. Alginate helps in wound dressings as it maintains a moist microenvironment and minimizes bacterial infection at wound site. In pharmaceutical field, it is used as a tablet binder, disintegrant, and release modifying agents, and also possesses mucoadhesive behavior and has a unique ability to undergo *in situ* gelation, which makes it useful in a wide range of injectable vehicles, for tissue engineering and topical drug delivery system, taste masking, etc. While in biomedical field, it is used for reduction of secretion of inflammation cytokines, cell carrier with mechanical stability and relative permeability, immobilization of bacteria, etc. In the physiological medium, alginate biodegrades so there is no chance of toxicity with alginates. There are many other properties that are possessed by alginates that make it a promising tool for many industries.

Keywords: Alginate, biocatalysts, biomedical, glycol, glycosidic, microsphere, polymer

6.1 Introduction

There are various natural biomaterials that are being used for many years; one of these are alginates. Alginate was first discovered by British chemist

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