

Alginate-Based Biomaterials for Bio-Medical Applications

Reena Antil¹, Ritu Hooda², Minakshi Sharm² and Pushpa Dahiya^{1*}

¹Department of Botany, M.D. University, Rohtak, India

²Department of Zoology, M.D. University, Rohtak, India

Abstract

Alginate could be a natural novel bioactive compound isolated from seaweeds because of their high biocompatibility, nonimmunogenicity, nontoxicity, high versatility, and gelling properties used in medicine, pharmaceutical, and food industries. Alginate is nondegradable to the human alimentary canal because of the absence of alginase enzymes. There are different types of modified alginate according to their functional activity like calcium, sodium, ammonium, and potassium, and other modifications are propylene glycol alginate. These modifications form simply processable and assignable three-dimensional alginate, which could be simply transferred to human cell like hydrogels, foams, and microspheres. Alginate hydrogel features a pleasant potential to deliver with chemical synthesized drugs, proteins and cell delivery for tissue regeneration, cell transplantation, cell primarily based microparticles, proliferation, and producing contact lenses and wound dressing. Alginate conventionally plays a role in medical and pharmaceutical industries, most frequently used as oral dosage for the treatment of heartburn, esophagitis, obesity, and type-2 diabetic treatment, and to conjointly treat hypocholesterolemic activity. Alginate is conjointly used as an antioxidant, anti-inflammatory drug; its role is to reduce or stop the production of reactive oxygen species. The focus of this chapter is to elucidate the biological, pharmacological activity and medical application of alginates and to discuss the present use and future potentialities of alginates as a tool in drug formulation.

Keywords: Alginate, biomaterial, biomedical, pharmaceutical

*Corresponding author: Pushpa.dahiya@hotmail.com