

prevent water loss, syneresis, and phase separation, and increase the functionality of fresh-cut and prepackaged fruits in other food products. The present chapter deals with the application of alginates in food industry.

Keywords: Alginates, food additives, emulsions, flavors, antimicrobial agents

13.1 Introduction

Hydrocolloids are macromolecular hydrophilic substances that will either dissolve in water forming colloidal solution or swell in water forming gels. They are highly used in the food industry as emulsifiers, thickeners, and stabilizers. Hydrocolloids are divided into four types based on the source of extraction: hydrocolloids obtained from plants, fermentation, chemically modified sources, and animals. Alginates are one of the hydrocolloids used widely in food industry that have been isolated from marine algae. These polysaccharides are either purified as a sole component or modified from the original alginate as propylene glycol alginate [1].

Alginates are polyuron polysaccharides found in the cell wall and intercellular spaces of brown algae of order Phaeophyceae. They have been identified in the year 1881 and found to be applied in various industries such as textile industry, paper coating, pharmaceuticals, and food industry [2]. Alginates are composed of mannuronate units called M blocks and guluronate units called G blocks, which during extraction and purification can be modified into alginates containing MM blocks, GG blocks, or MG blocks. This modification of alginates is very essential as it determines the physical properties of the compound [3]. Alginates have been used in food industry as additives, emulsifiers, thickeners, gelling agents, stabilizers, food coating, etc. They have been found to have no health concerns and have no acceptable daily intake limits, but PGA was found to have acceptable daily intake (ADI) of 25 mg/kg body weight per day [1]. Alginates are used in various food products such as diet products, baked goods, frozen foods, mayonnaise, salad dressings, ice creams, foams, processed cheese, meat, canned vegetables, soups, noodles, pasta, etc. In Asian countries, alginates have not been used as additive but as food [4].

Apart from their use as a single compound, they have also been used in combinations such as sodium alginates, calcium alginates, starch–alginate (SA) combinations, alginate–stearic acid (SAS) combinations, tocopherol-coated SA and tocopherol-coated SAS, etc. [5]. The present chapter deals with the application of alginates in food industries.