13.4 Use of Alginates for Pets

Apart from their variable application in human consumables, alginates have also been used as animal feed [82] and as a binder in feed for fishes [83]. Sodium alginate has no maximum level of usage, whereas potassium alginate has a usage level of 40,000 mg/kg feed on dry matter [84]. Alginates have been microencapsulated by animal feed supplements for controlled release in gastrointestinal tract [85]. It has also been found that sodium alginate oligosaccharides from brown algae inhibit colonization of *Salmonella enteritidis* in broiler chicken [86].

13.5 Effect of Dietary Alginates

In vitro treatment of dietary alginates was found to inhibit the digestive enzymes and was found to be used in obesity treatment. Adding alginates to bread vehicle was found to inhibit lipases rather than cooking and digestion and was found to be used as an effective treatment against obesity [87]. In another study by Jensen *et al.*, [88], alginate supplementation was found to improve weight loss in obese subjects who completed a 12-week dietary intervention. It has been found that alginate does not affect the hematological indices, plasma biochemistry parameters, urinalysis parameters, blood glucose, plasma insulin concentrations, and breath hydrogen concentrations. They were also found not to cause any allergic response in the tested individuals [89]. In addition to these, alginate increases the gut microbe Bifidobacteria and decreases the levels of harmful microflora Enterobacteriaceae and lecithinase-negative clostridia. There was no detectable change in other microorganisms during the period of alginate intake [90].

Besides their beneficial effects in humans, they were also found to increase the immune response in shrimp and increase the survival rate of fishes *Epinephelus bruneus* and *Epinephelus coioides* infected with *Streptococcus iniae* and *Streptococcus* sp. and iridovirus, respectively [91–93]. In addition to these, the alginates are found to increase the survival rate of Nile tilapia against *Streptococcus agalactiae* infection [94]. Apart from these, they were found to increase the gut flora in Indian shrimp *Fenneropenaeus indicus* [95]. Alginates were found to increase the meat quality of pig longissimus muscle during ageing [96] and increase the body weight of gilthead sea bream [97], common pheasant chicks [98], ad libitum-fed growing pigs [99], and rats [100].