



Figure 9.3 Possible junction points in alginates. (a) GG/GG junctions, (b) MG/MG junctions, and (c) GG/MG junctions [15].

the cationic cross-linking agent at the aqueous medium. The G blocks in the synthesized alginate biopolymer are the main component to create the gel form of the alginate in the presence of divalent cations. The MG blocks also help to form weak bonds during gelation process. There are different divalent cations such as $\text{Pb} > \text{Cu} > \text{Cd} > \text{Ba} > \text{Sr} > \text{Ca} > \text{Co}, \text{Ni}, \text{Zn} > \text{Mn}$ as per the affinity of the alginate with the same. Moreover, the most usable cation is Ca^+ to help in gel formation of the alginate. Figure 9.3 shows a schematic representation of the different possible junctions with the Ca^+ into the alginate biopolymer during gelation process.

9.4 Biomedical Applications of Alginate

Over the last few years, researchers have drawn most attention to research on the different natural biopolymers, particularly alginate. Alginate has different suitable properties, including biocompatibility and suitability of sol-to-gel transformation capability in the presence of cationic cross-linking agents, which promotes its various biomedical applications.