microsphere encapsulation methods enable us to analyze and quantify the cell growth effectively and feasibly using high throughput analysis. Development of 3D alginate tumor spheroid culture system for murine osteosarcoma (OS) allows the researchers in investigating the pathobiology of OS. The alginate bead transplantation model serves as a spontaneous pulmonary metastatic model [128]. A combination of alginate, marine collagen, and agarose possesses higher cytocompatibility, and the usage of cell-tracking chemicals has been kicked out due to its transparency [129]. Adapting alginates in regenerative medicines in the form of 3D culture supports and improves the function of the organ [130].

14.6.2 Impressions

Natural alginates are found to be one of the commonly used impression materials due to their easy manipulation, comfort to the users, and being relatively inexpensive for the dentists. Irreversible hydrocolloids (alginates) are the impression material widely used in making dental cast for diagnosis, treatment, and fabrication. Elastic recovery is one of the abilities of the alginates. The greater the elastic recovery, the more accurate the impression will be. According to Frey *et al*., [131], three different alginate polymers (Identic, Jeltrate, and Kromopan) were tested for their mechanical property and tear energy using two different mixing procedures, which finally proved that both the mixing method and three polymers were found to be effective. According to Cook [132], both the permanent set and tear energy were improved by increasing the alginate content and reducing the filler level.

A study carried out by Cohen *et al*., [133] explains the dimensional stability of three different alginates (Jeltrate, Hydrogum, and a new hydrophilic alginate) stored in three different conditions, where 160 casts were fabricated and measurements were taken buccolingually, mediodistally, and diagonally. Few alginates were found to possess higher compatibility with dental stones. According to Morrow *et al*., [134], few alginates used in dental impression possess compatibility with dental stone (gypsum); the article also states that it is important to remember that for compatibility with gypsum, the alginate impression material must fulfill only one of the 13 requirements to achieve certification.

14.6.3 Cell-Based Microparticles

Controlled or sustained drug delivery has been used for several ailments in which a natural or synthetic polymer is combined with an active compound. This controlled delivery of drugs in living environment helps in