insulin. The single system is designed to be delivered into the patient's abdomen during laparoscopy procedure. Each multilayer microcapsule comprises the inner core of alginate (M/G ratio 60:40) cross-linked with calcium chloride and coated with poly-L-ornithine-(PLO-) polycationic polymer responsible for strengthening the capsule wall. To reduce the risk of immunogenicity arisen from the presence of PLO, the additional outer layer prepared of alginate is present [43, 44].

NTCELL® with choroid plexus cells encapsulated within Immupel platform has been displayed to regenerate damaged tissue and significantly restore function in humans with Parkinson's disease. Following implantation into an impaired site within the brain of model animals, NTCELL® was found to promote the production of cerebrospinal fluid as well as nerve growth factors. In addition to Parkinson's disease, the product may have the potential to be utilized in a number of other neurodegenerative disorders, including Huntington's, Alzheimer's, or motor neuronal diseases [45].

## 5.5 Future Perspective of the Use and Biomedical Applications

Modified cell encapsulation technology, stem cell research, and different genic therapy strategies point to a rapid development of grafting techniques, as well as the use of scaffold 3D as support for tissue engineering with simultaneous use of the treatment of inflammatory processes of intelligent and progressive delivery.

Additionally, aginates have potential for application in the biomedical area, due to their high biocompatibility and bioabsorption for wound regeneration and artificial organs production, thus presenting a path of great scientific and technological growth.

On the other hand, a preparation of biopolymer nanomaterials points to the use of biological control systems for the biomarkers of specific targets in the treatment of cancer, among others.

Alginates have also been applied in nutritional and functional foods, thus demonstrating the great versatility of this natural polymer.

## References

1. Nikolić, G.S. and Cakić, M.D., Analysis of bioactive oligosaccharide-metal complexes by modern FTIR spectroscopy: Copper complexes, in: *Fourier Transforms—New Analytical Approaches and FTIR Strategies*. pp. 15–44, In Tech., 2011.