Abstract

Natural Bio-Inks for 3D Bioprinting of Cancer Tumor Models [†]

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Abstract: The engineering of convenient three-dimensional (3D) *in vitro* tumor models presents many challenges, but they are increasingly identifying as one of the best preclinical drug-screening platforms and a developed method to research cancer in controlled conditions in the lab. Recently advanced 3D bioprinting techniques can be enhanced to produce biomimetic and complex tumor structures. The native tumors have complex structures originating from different extracellular matrix materials, cell types, and biomolecules. To obtain this, multifactorial bio-inks to consist of multiple hydrogel biomaterials (alginate, collagen, fibrin, gelatin, and chitosan as natural bio-inks), patient-derived different types of cancer cells, and soluble factors have been advanced. 3D bioprinting of live human cells has shown that effective in vitro replication of tumor biology is achievable. Several last research outline current improvements in the use of bio-printed tumor models used in cancer research, enhancing a new boundary for the understanding of tumor biology and the progress of cancer therapies.

Keywords: natural bio-inks; 3D bioprinting; cancer tumor models